

The Connection Between Resilience and Academic Success in High School and Higher Education

A Systematic Review and Synthesis of Empirical Research Studies Available in
the Database of the Education Resources Information Center (ERIC)
Till the Year 2015

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Abstract

The aim of this publication is to investigate the connection between resilience and academic success in high schools and higher education institutions. The resilience concept is used as a seven-part framework developed by the author from the literature, which can be applied to describe how individuals overcome risks and adversities despite the odds being stacked against them. Research on academic resilience has not provided a comprehensive overview on resilience processes at advanced education levels as yet, a shortcoming this thesis addresses. The author asks: How does the resilience concept impact empirical research on the academic success of students in high schools and higher education institutions? As is frequently shown in the literature, the number of at-risk students in high schools and higher education institutions is on the rise and a large number of studies confirm that social background still has a considerable impact on successful navigation through the education system in many countries. Answering the above-stated research question is thus asserted to be of high relevance to theory and practice for assisting students in need. To do so, this publication used the Database of the Education Resources Information Center (ERIC) and employed a systematic review design with two major stages: first, at the mapping stage, the author collected, described, and categorized relevant publications of the years 2004 to 2015 to discuss how empirical research studies examine the connection between resilience and academic success in high school and higher education. Second, a framework synthesis of a subset of these studies was conducted to investigate how explorative, qualitative research on resilience and academic success addresses the seven elements of the resilience concept. The core results stem from the framework synthesis and can be summarized describing a typical student in the examined empirical studies: A typical student is part of a minority – he or she is academically resilient because of his or her high motivation, firm family support, and well-functioning cultural adaptation strategies. The student’s educational pathway is researched using a process perspective on resilience and a cross-sectional methodological approach. Neither the institution types nor specific subjects are found to play an important role in the analysis. The author closes with five areas of recommendations for the support of at-risk students in educational institutions derived from the framework synthesis: (a) fostering social connections, (b) getting to know the students’ backgrounds, (c) learning from students, (d) focusing on transitions and life turning points, (e) teaching resilience at high schools and universities.

Zusammenfassung

Ziel dieser Publikation ist es, den Zusammenhang zwischen Resilienz und akademischem Erfolg an der gymnasialen Oberstufe und an Hochschulen zu untersuchen. Das Resilienzkonzept wird dabei als ein vom Autor aus der Literatur entwickeltes, siebenteiliges Rahmenwerk verwendet, um zu beschreiben, wie Individuen risikobehaftete und widrige Lebensumstände überwinden. Die Forschung zur akademischen Resilienz umfasst bisher keinen umfassenden Überblick über Resilienzprozesse auf höheren Bildungsstufen – eine Wissenslücke, die diese Publikation schließt und anhand folgender Frage bearbeitet: Wie wirkt sich das Resilienzkonzept auf die empirische Forschung zum akademischen Erfolg von Oberstufenschüler_innen und Studierenden aus? Diese Forschungsfrage ist aufgrund der stetigen Zunahme von Individuen aus Risikogruppen an Schulen und Hochschulen von hoher gesellschaftlicher Relevanz. Zudem zeigen zahlreiche Studien, dass der soziale Hintergrund nach wie vor großen Einfluss auf die erfolgreiche Navigation der Bildungssysteme vieler Länder hat. Unter Zuhilfenahme der Onlinedatenbank des *Education Resources Information Center (ERIC)* wurde eine *Systematic Review* der Forschungsliteratur in zwei Phasen durchgeführt, um die Forschungsfrage zu beantworten: In einer *Map* wurden zunächst die themenrelevanten Publikationen der Jahre 2004 bis 2015 gesammelt, beschrieben und kategorisiert, um zu erörtern, wie empirische Forschung den Zusammenhang zwischen Resilienz und akademischem Erfolg auf höheren Bildungsstufen untersucht. In einem zweiten Schritt wurde eine *Framework Synthesis* einer Teilmenge dieser Studien durchgeführt, die zeigt, wie explorative, qualitative Forschung die sieben Elemente des Resilienzkonzepts behandelt. Die Kernergebnisse der Synthese lassen sich mit der Beschreibung einer typischen Person in den untersuchten empirischen Studien zusammenfassen: Diese Person gehört einer Minderheit an – ihre akademische Resilienz ist insbesondere von einer hohen Erfolgsmotivation, einem starken Rückhalt der Familie und gelingenden Strategien kultureller Anpassung beeinflusst. Die akademische Laufbahn der Person wird zumeist aus der Prozessperspektive der Resilienz betrachtet und mit einem Querschnittsdesign untersucht. Institutionstyp und Schul- bzw. Studienfächer spielen in den Untersuchungen eine untergeordnete Rolle. Die Arbeit schließt mit fünf aus der Synthese abgeleiteten Empfehlungen zur Unterstützung von Schüler_innen und Studierenden: (a) das soziale Umfeld fördern, (b) kritische Faktoren überblicken, (c) von Schüler_innen und Studierenden lernen, (d) Übergänge fokussieren, (e) Resilienz vermitteln.

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1. Introduction

“Resilient students give us hope and encouragement, for it is clear that despite unfavorable odds, they have succeeded. We need to learn from them and put into practice what we have learned” (McMillan & Reed, 1994, p. 140).

Imagine a high school graduate who goes on to study at university and drops out during the first two semesters. Would this seem odd, or would we quickly find reasons to answer why it happened? If we know nothing more about the student, we would probably assume that he or she realized to have chosen the wrong study program and decided to move on to new endeavors either inside or outside the higher education system. Now imagine the same scenario for a student about whom we know that he or she originates from a family with low economic status. Would we presume the same or similar reasons for dropping out, or would we, for instance, speculate that his or her social environment did not leave the decision to quit the study program entirely up to the student? No matter how we would think of this scenario, it might be safe to say that the assessment of dropout reasons can quickly shift from a student’s free decision to his or her circumstances. This assessment is not wrong: In Germany, many studies confirm that social background, for example, has a large impact on successful navigation through the education system (Baumert et al., 2009; Heublein et al., 2017; Müller & Ehmke, 2016; Stifterverband, 2017; Tophoven, 2011). It has been outlined in the literature that the level of parental educational attainment can have a high impact on both the chances of students to advance to higher education (Stifterverband, 2017) and the likelihood for them to drop out from higher education institutions (Heublein et al., 2017).

Research on equal opportunities for different student groups is on the rise today. While it provides many correct assumptions about the negative influences of various conditions in students’ lives on their academic success, often related to their social backgrounds, such research can have unintended effects. For one, it can lead to underestimating students with risk preconditions. They might be stereotyped as being less capable of succeeding than other students (Fujimoto, 2013; McGee, 2013; Williams & Bryan, 2013), which might transform into a self-fulfilling prophecy and contribute increasingly to their challenges in the education system. A second consequence might be that when it is shown that at-risk students are successful, the underlying reasons often tend to be mystified. Stories might then be reiterated about the high school prodigy who came from terrible conditions, overcame the odds, went to university, and gained exceptional yet unexpected success in education and beyond. Contrary to such myths of success, the publication at hand aims to contribute to a de-

mystification of success. It aims to underline that academic success of at-risk students in high school and higher education can be explained by observable factors and mechanisms which enable high achievement despite challenging conditions. These factors and mechanisms should be understood and utilized to improve the situation for other students in similar difficult situations. Research on the resilience concept in education commonly does that, and so attempts this doctoral thesis.

The author is convinced of the high value the resilience framework offers to the field of education. There is much to learn from studies on the connection between resilience and positive academic outcomes. While a systematic review can be considered one of the best ways to do so, the scoping search for this publication indicated that this has not been done to date. Search queries in the PROSPERO database of the National Institute for Health Research (<https://www.crd.york.ac.uk/prospero/>) as well as in the library catalogue at University Kassel (KARLA, <https://hds.hebis.de/ubks/index.php>), Google Scholar (<https://scholar.google.de>), and via Google (<https://www.google.de/>) have shown that there are few systematic reviews on the resilience concept in general, let alone on academic resilience. The author considers this scarcity of systematic reviews a shortcoming in today's research landscape, since an overview and synthesis of research in the field is asserted to be of high relevance to theory and practice regarding the support of at-risk students. To the author's knowledge, the last comprehensive overview of research on educational resilience was carried out more than 15 years ago by Waxman and colleagues (Waxman et al., 2003). Instead of conducting one more individual research study, it is, therefore, proposed that carrying out a systematic review and synthesis of empirical research literature will provide the greatest value for researchers and practitioners at the moment. The publication at hand focuses on the education levels of high school and higher education as well as the transition between the two. The author considers research on these levels highly relevant to the resilience framework because of the potential challenges they represent in the educational pathways of students (Allan et al., 2014), in particular regarding the transition stages from one level to the other (Hernandez-Martinez & Williams, 2013; Langenkamp, 2010; Plunkett et al., 2008).

1.1 Resilience and Education

The concept of resilience explains how individuals overcome severe risks and adversities despite the odds being stacked against them. One of the most used definitions for the concept is:

“A class of phenomena characterized by good outcomes in spite of serious threats to adaptation or development” (Masten, 2001, p. 228).

The concept’s essence encompasses two distinct components: negative circumstances or events on one side and the achievement of positive outcomes on the other (Luthar, 2006; Luthar & Cicchetti, 2000; Luthar et al., 2000). At the beginning of resilience research, the concept has mostly been applied in development psychology by pioneers in the field like Michael Rutter (Rutter, 1985, 1987) and Norman Garmezy (Garmezy, 1991, 1993), to describe the positive development of at-risk children. It was made popular in psychology in the 1980s by the work of Emmy Werner and Ruth Smith, who observed the successful development of children on the Hawaiian island of Kauai in a longitudinal study (Werner, 1993; Werner & Smith, 1982, 2001). The children in this study faced tremendous developmental risks caused, for instance, by poverty, their parents’ mental health, and various other risk factors. It was thus a surprising result for the authors to discover that a subset of children were not as negatively affected by the risk factors as one would have expected. Instead, these children demonstrated positive developmental outcomes. They were resilient.

Both the resilience concept’s framework and its range of applications have been growing throughout the last five decades. In the 1990s, the concept progressively crossed over to disciplines other than psychology. This process has been described as the second wave of resilience research in which considerations of environmental factors and a stronger emphasize of resilience processes gained momentum (O’Dougherty Wright et al., 2013; Wang & Gordon, 1994). In education, it was adapted under the terms of academic resilience or educational resilience. These terms describe the ability of students to deal with significant adversities in the domain of education. Resilience researchers in education strive to gain a deeper understanding of how some students thrive academically despite various threats to their success. One of the most applied definitions of academic resilience is:

“The heightened likelihood of success in school and other life accomplishments despite environmental adversities brought about by early traits, conditions, and experiences” (Wang et al., 1994, p. 46).

Today, the resilience concept is increasingly used in educational contexts. Authors like Margaret Wang and Edmund Gordon (1994), James McMillan and Daisy Reed (1994), Nan Henderson and Mike Milstein (1996), Eric Morales and Frances Trotman (2004), and

Andrew Martin and Herbert Marsh (2008, 2009) have provided some of the best-known works on the connection of resilience to the academic success of at-risk students at different education levels. There have been highly impactful resilience studies on the mechanisms of academic resilience in high school and higher education (Hartley, 2011; Martin, 2013; Morales, 2010; Perez et al., 2009). In addition, besides research on the successful adaptation and development of students in the domain of education, research on the resilience of pre-service teachers and school teachers in demanding environments gained popularity in the field during the last two decades (Bobek, 2002; Castro et al., 2010; Gu & Day, 2007; Howard & Johnson, 2004; Le Cornu, 2009).

Resilience has been employed in education research for over three decades now. Nonetheless, a lack of research has been observed by various authors (Dole, 2014; Martin & Marsh, 2006; Martin & Marsh, 2009). Moreover, it has been stated that – when used in education – resilience should be increasingly considered at advanced education levels like high school and higher education (Allan et al., 2014; Martin & Marsh, 2009). The publication at hand indicates that the latter might already be the case. A query on the 6th of April 2016 in the database of the Education Information Resources Center (ERIC) (<https://eric.ed.gov>), which is the prime data source for this systematic review, indicates a steep rise of attention to both education levels, particularly in the last ten years. From 2003 to 2015, out of 912 publications tagged with a resilience-related keyword as well as a specific education level in the ERIC database, 464 (51%) represent research on the high school level or above. Taking into account the limited scope and scale of this doctoral thesis, the data thus imply that the resilience concept gains popularity in research on high school and higher education students today. However, as demonstrated in detail in this publication, these numbers are to be considered with caution. The term ‘resilience’ has become increasingly popular in education research and is often disconnected from the conceptual framework of resilience this study refers to in its analysis.

1.2 Problem and Motivation

All over the world, an increasing number of young people gain higher education degrees. For the European Union, it is a political goal to achieve a rate of 40% of higher education graduates among the population of 30 to 34-year-old individuals in most countries until the year 2020, as expressed in one aim of the ‘Europe 2020’ strategy (European Commission, 2010). In Germany, where such rates have often been considered unreachable because of the strong standing of vocational training in the dual education system (Hüther & Krücken,

2016), this objective – depending on the definition of which education levels ‘higher education’ entail – has either already been achieved (Statistisches Bundesamt, 2013) or the country is well on its way to achieving it, with a current rate of around 33% (European Commission, 2018). While the rising numbers can be considered positive for the further social and economic development of Germany, a secondary effect should be addressed: With the rising numbers of individuals striving for higher and more educational credentials, the proportion of students with preconditions supposedly bearing a negative influence on study success is not necessarily on the rise as well, but the growing student numbers at high schools and higher education institutions make student diversity more visible at individual institutions (Middendorf, 2015; Wolter, 2015). It has been claimed that educational institutions need to be more aware of student diversity if they intend to increase the likelihood of students succeeding today (Bosse, 2015). Using terms relevant to resilience research, it can be stated that high schools and higher education institutions have to cater to at-risk students to a greater extent than they had to before.

The purpose of this publication is to inform the supporters of at-risk students. It aims to address the usefulness of academic resilience both for explaining how at-risk students overcome challenges and collecting ideas as well as best practice examples to support them in doing so. This approach differs from traditional approaches in research on student attrition which can often be quite ‘gloomy’, meaning that academic work in this field is frequently deficit oriented with studies aiming to find out what went wrong in the students’ educational pathways. Early examples of resilience research likewise mostly focused on risk factors only (Borrero et al., 2013; Freeman et al., 2004; Williams & Bryan, 2013; Williams & Portman, 2014). Current research efforts on academic resilience, on the contrary, offer a strength-based perspective on academic success, while not neglecting the students’ risk factors (Toland & Carrigan, 2011). The principle guideline of such undertakings is the interest of examining successful students, particularly if they achieve highly, despite a considerable likelihood for them to fail. This doctoral thesis adheres to the same principle. It aims to contribute to the discussion of student success from the strength-based perspective of resilience research. There are various ways in which resilience research can contribute to our understanding and the enhancement of positive academic outcomes in high schools and higher education institutions.

The high practical relevance of the resilience framework to practitioners in high school and higher education is the author’s main motivation for investigating the connection between resilience and academic success. As a practitioner in the field of strategic planning

at the University of Kassel, the author is concerned with questions of how to improve the study experiences of students enrolling in this institution, in particular those threatened by high-risk conditions and adversities at the beginning or during their studies. Empirical research on academic resilience offers valuable insights for practice. It has been shown by various scholars that it provides applicable knowledge for the support of students on their way to academic achievement (Knaggs et al., 2015; Rawana et al., 2015; Shepard et al., 2012). As a part of the third wave of resilience research, the design of interventions to support at-risk individuals has become a major aspect of what it means to conduct studies in the field (Masten, 2001; Rutter, 2000; Schoon, 2006). Today, many studies are carried out with the objective of supplying practical insights in different areas relevant to the personal and professional lives of individuals. In this vein, the publication at hand will conclude with recommendations for practitioners in high school and higher education (see Subchapter 7.5). While it is crucial to understand what could be improved in educational institutions, it is even more valuable to apply this knowledge in the support of students.

1.3 Review Question and Contributions

It is argued in this publication that a systematic review carried out with empirical studies on resilience in high schools and higher education institutions is a valuable measure to further understand the academic success of students, in particular for those students under threat of failure. The author aims to provide a comprehensive overview about some of the most relevant empirical research studies and how they apply the resilience concept to explain positive outcomes of adolescents and young adults in the education system. The following review question summarizes this intention:

How does the resilience concept impact empirical research on the academic success of students in high schools and higher education institutions?

Answering this question will entail two steps: a map and a synthesis. At the mapping stage, the author will collect and categorize studies in which the academic resilience of students in high school and higher education is measured, explained, and/or enhanced. Assorted information about these studies will be presented (see Subchapter 4.1) and they will be grouped according to a typology representing the position of the resilience concept in their research designs (see Subchapter 4.2). Subsequently, a framework synthesis of a subset of studies identified at the mapping stage is conducted. For the synthesis, the author has

developed a conceptual framework of resilience that includes the major elements of the concepts (see Figure 1). It is the aim of the framework synthesis to outline how empirical research on high school and higher education students relates to the elements of the resilience framework.

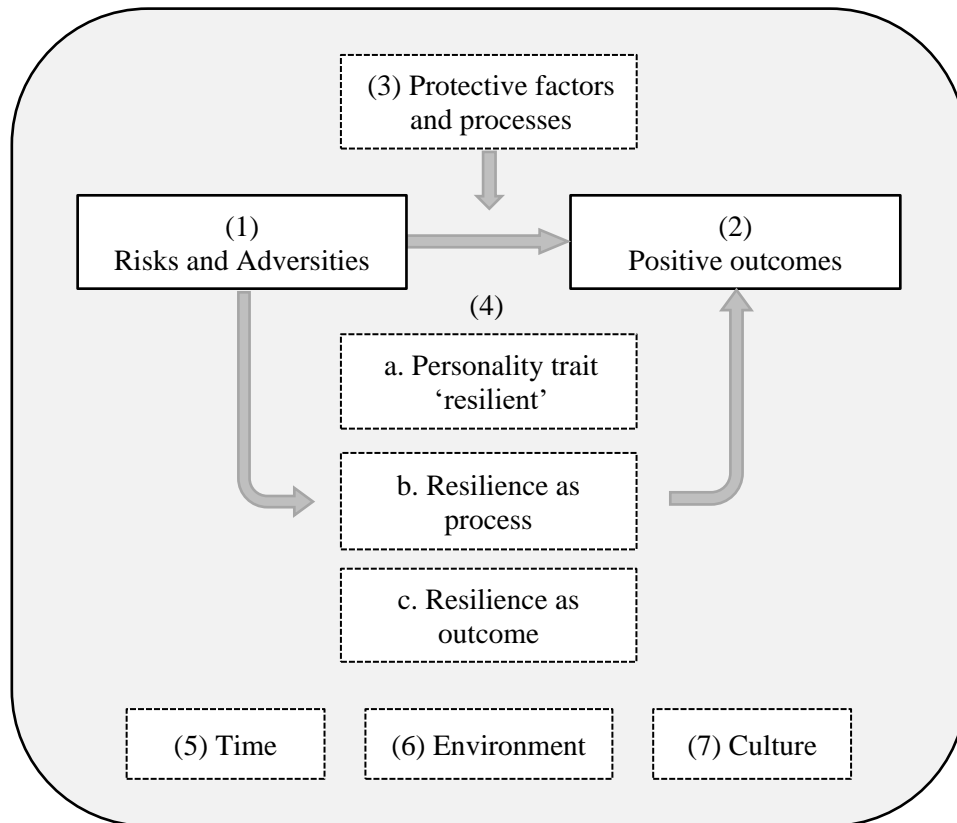


Figure 1. *Conceptual framework of resilience*
(Created by the author)

The conceptual framework applied in this publication contains seven elements (see Figure 1): The first two elements – (1) risks and adversities and (2) positive outcome – depict the essence of resilience which can be summarized as the process in which individuals conquer severe challenges and obstacles in one or more domains of their lives. The characteristics and mechanisms supporting this transition are described as (3) protective factors and processes in the framework. They offer explanations as to why and how individuals achieve positive outcomes despite the often-dire situations they find themselves in. The second main component of the framework are the three conceptualizations of resilience. The concept can be defined as (4 a.) a trait, (4 b.) a process, or (4 c.) an outcome. A perspective of resilience as a process represents the wide consensus in research today, because this view captures the dynamic nature of resilience in individuals lives the best

(Egeland et al., 1993; Rutter, 2000; Toland & Carrigan, 2011). The trait and the outcome perspectives are still in use today, however, as demonstrated several times in this publication. Last, the three context elements of (5) time, (6) environment, and (7) culture are parts of the framework. They refer to the necessity of being aware of developmental, environmental, and cultural aspects in resilience research.

Overall, this publication aims to contribute to the research efforts on the academic success of students in high school, higher education, and the transition between the two education levels. It attempts to add to the knowledge about the connection of resilience and academic success, the opportunities the method of systematic reviewing provides to examine this connection, and what practitioners in education can learn about supporting the resilience processes of students. The contributions of this doctoral thesis can accordingly be split into three categories:

- *Theoretical:* The author aims to provide theoretical contributions to current and future research on the resilience concept at the education levels of high school and higher education.
- *Methodological:* The second objective is to provide methodological contributions concerning the use of a systematic review for the study of academic resilience.
- *Practical:* The publication aims to provide practical contributions delivered as recommendations for practitioners in high schools and higher education institutions on how to improve the educational pathways of students.

The contributions of this publication will be evaluated in the conclusion chapter (see Subchapter 7.4).

1.4 Methodological Design

“How, then, do we go about finding out what has already been studied, how it has been studied, and what this research has found out” (Gough et al., 2012a, section 1, para. 1)?

The methodological approach of this publication is a systematic review. Systematic reviewing is defined as “a review of research literature using systematic and explicit, accountable methods” (Gough et al., 2012a, section 1, para. 2). The definition refers to three

central aspects of the method: First, the review process is *systematic*. This point relates to the use of a rigid and well-ordered review process that follows a sequence of elaborate steps (see Figure 2). Second, the definition stresses the aspect of systematic reviews being *explicit*. Describing each step to the reader is considered a necessity in this regard. By making the steps performed as transparent as possible, the reviewer enables other scholars to repeat the review, for instance, to expand on the knowledge about the same or a similar research problem (Brunton et al., 2012; Dickson et al., 2014). Third, systematic reviewing – when carried out in a systematic and explicit way – represents a highly *accountable* research method. Its successful applications for over 50 years contributed immensely to its standing as a highly effective and reliable research method. For some, Gough and colleagues (2012a) argue, “so influential has the use of research through systematic reviews become that their development can be considered to be one of the turning points in the history of science” (section 2, para. 1). Other authors share this positive assessment when they claim that systematic reviews are “the best (‘gold standard’) way to synthesize the findings of several studies investigating the same question, whether from health, education or other disciplines” (Dickson et al., 2014, section 2, para. 2).

A systematic review commonly contains three phases: designing, sampling, and analyzing (see Figure 2). The process starts with developing a review design which includes at least the following parts: the review’s topic and purpose, followed by the definition of the review question, the conceptual framework as well as the appropriate synthesis method. In addition, the measures for information management need to be prepared and tested. The second phase of systematic reviewing is devoted to collecting a sample of studies suitable for answering the review question. It consists of seven individual steps. The most crucial steps are the search for relevant publications and the iterations of screening and selecting to determine which studies are relevant to the subsequent analysis phase in the systematic review. The results of the sampling process are presented in a PRISMA Flow Diagram (PRISMA, n. d.). The third phase is devoted to the analysis of the sample studies selected in the sampling phase. In the publication at hand, this stage comprises three stages: the first stage represents the development of a map of the empirical research on the connection between resilience and academic success in high school and higher education. Besides providing an overview of the research landscape, the map serves the purpose of selecting a subset of the sample studies to be used in the synthesis. The quality of the studies in this subset is evaluated at the quality appraisal stage. Last, a framework synthesis of the studies is completed.

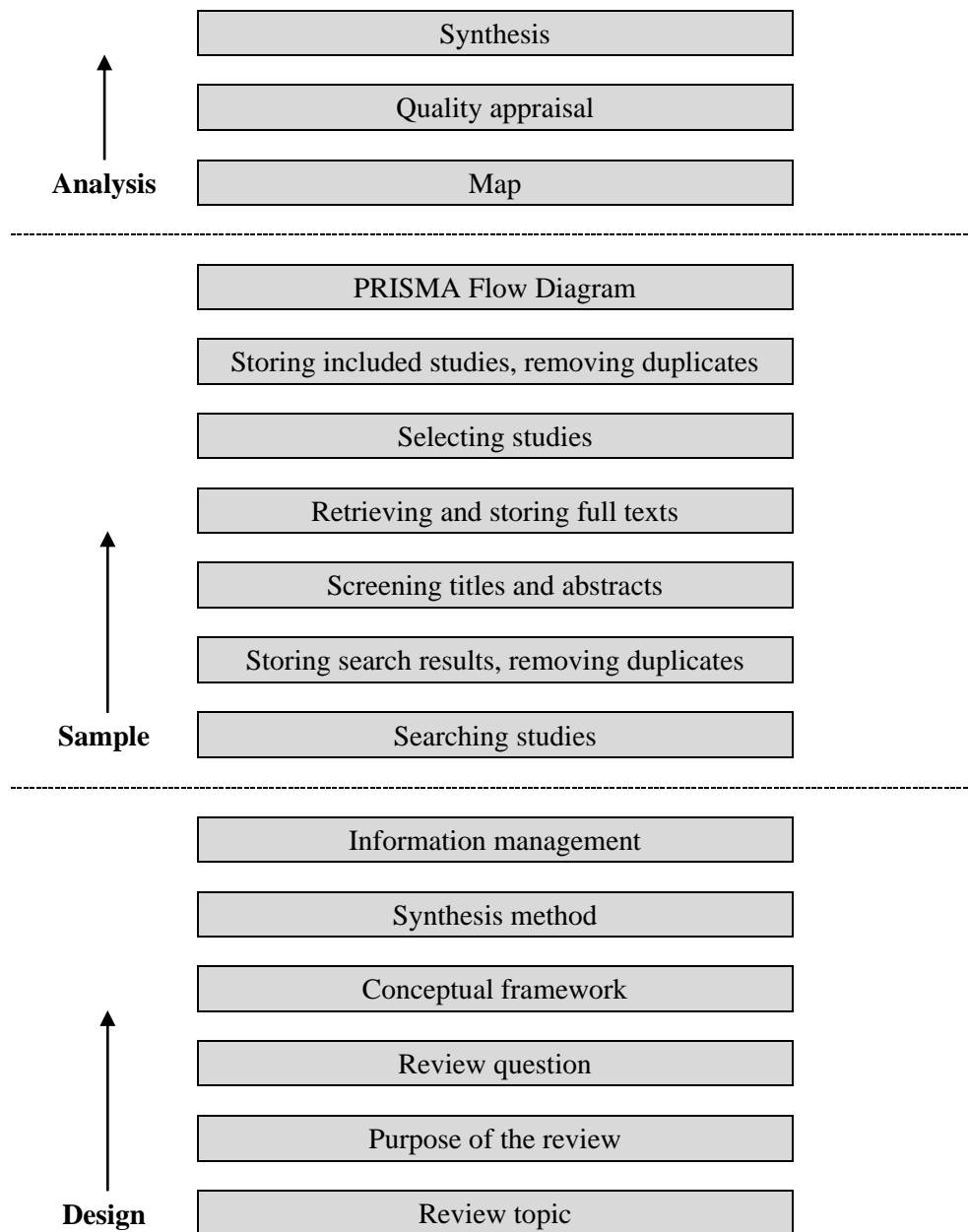


Figure 2. *Systematic review process*
(Created by the author, adapted from Brunton & Thomas, 2012)

This systematic review focuses on the Anglo-Saxon sphere to a large extent. Most included studies investigate students in high school and higher education in the United States, Australia, Canada, and the United Kingdom. The reason for this is that the database of the Education Information Resources Center (ERIC) (<https://eric.ed.gov>) is the only source used for collecting the studies for synthesis in this publication. ERIC can be considered one of the most important databases in education today. Nonetheless, the focus on exclusively this database can be considered a limitation of the author's work, which will be discussed in the conclusion chapter (see Subchapter 7.3). In Germany, the discussion of

resilience has gained considerable traction in academia during the last two decades. A variety of research activity can be observed in different fields (Alicke et al., 2010; Kustor-Hüttl, 2011; Leuzinger-Bohleber, 2009; Ringler, 2017). In addition, the academic interest has also been institutionalized via the founding of “Deutsches Resilienz-Zentrum Mainz (DRZ) [German Resilience Center Mainz]” (<https://www.drz-mainz.de/>) in the year 2014 at the Johannes Gutenberg University of Mainz, which is the first German research center for the study of resilience. Moreover, the resilience concept has gained popularity in the German public, for instance, through the book “Resilienz: Das Geheimnis der psychischen Widerstandskraft” by Christina Berndt (2013), which has been on several national bestseller lists.

1.5 Content and Structure

This publication is composed of seven chapters. The content and structure of each chapter are presented shortly in the following:

- *Chapter 2:* The introduction chapter is followed by a thorough description of the resilience concept in Chapter 2. This chapter presents the conceptual framework of resilience on which the author bases the synthesis in this publication. It starts with a description of the origin and development of resilience research in Subchapter 2.1. Subchapter 2.2 then provides the definition of the resilience concept. The concept’s essence, well-received definitions in the literature, and its delineation from similar concepts are outlined in three sections. Subsequently, Subchapter 2.3 discusses the seven elements of the conceptual framework of resilience: risk and adversities (Section 2.3.1), positive outcomes (Section 2.3.2), protective factors and processes (Section 2.3.3), the conceptualizations of resilience (Section 2.3.4), and the elements time (Section 2.3.5), environment (Section 2.3.6), and culture (Section 2.3.7).
- *Chapter 3* covers the review’s design, its search strategy, and the selection process of the publication used at the mapping stages of this publication. The chapter’s main purpose is to generate a sample of empirical research studies that can be used to describe the research landscape on resilience and academic success in high school and higher education. It starts with a description of the review design in Subchapter 3.1, in which the review’s topic and purpose (Section 3.1.1), the review question, the conceptual framework, and synthesis method (Section 3.1.2) as well as the information management

procedures used by the author (Section 3.1.3) are discussed. Then, in Subchapter 3.2, the search for relevant publications is outlined. This includes a description of the search characteristics (Section 3.2.1), search parameters (Section 3.2.2), and an overview of the way the search for studies relevant to the education levels of high school and higher education was carried out in Section 3.2.3. Last, Subchapter 3.3 presents the sampling process for publications to be used in subsequent steps in this publication. It includes a description of the five inclusion criteria (Section 3.3.1) and a detailed discussion of how relevant studies were selected (Section 3.3.2). At the end of the subchapter, in Section 3.3.3, a PRISMA Flow Diagram (PRISMA, n. d.) summarizes the steps and results of the selection process.

- *Chapter 4* outlines the mapping stage. It aims to illustrate the empirical research landscape on the connection between resilience and academic success in high schools and higher education institutions. To do so, the characteristics of the empirical studies selected in Chapter 3 are presented in Subchapter 4.1. This comprises the dates, countries, and fields of publication (Section 4.1.1), the education level distribution (Section 4.1.2) as well as data types, data collection methods, and approaches for measuring the students' resilience (Section 4.1.3). Subchapter 4.2 then presents a typology of the studies, based on where in their research designs the concept of resilience is positioned. The author defined three types: "Type 1: Resilience as an independent variable" (Section 4.2.1), "Type 2: Resilience as a dependent variable" (Section 4.2.2), and "Type 3: Intervention studies" (Section 4.2.3). At the end of Chapter 4, Subchapter 4.3 summarizes the results of the mapping stage and defines the subset of empirical studies used for the next stages of the analysis.
- *Chapter 5* provides the reader with information on the quality of the empirical studies selected at the mapping stage. The chapter aims to enhance the trustworthiness of the synthesis results by illustrating the merits and limitations of the selected publications. As required by the systematic review method, quality appraisal follows a systematic approach which is outlined in Subchapter 5.1. The subchapter discusses common quality measures of the method (Section 5.1.1), the data for quality appraisal (Section 5.1.2) as well as the quality appraisal tool selected by the author (Section 5.1.3). In Subchapter 5.2, each of the ten quality criteria of the quality appraisal tool is applied to the sample studies, covering two attributes about the study samples (Section 5.2.1), three about the participants (Section 5.2.2), three about data collection (Section 5.2.3), and two about

data analysis (Section 5.2.4). The results of quality appraisal are presented in Subchapter 5.3.

- *Chapter 6* illustrates and discusses the results of the synthesis of the conceptual framework of resilience. Together with the results of the mapping stage, this chapter includes the main outcomes of this publication to answer the review question on the impact of the resilience concept on empirical research on academic success in high school and higher education. First, the characteristics of the synthesis, the data used, and the method of a framework synthesis are described in the chapter. Subchapters 6.1 to 6.7 subsequently provide analyses of how the sample studies used for synthesis relate to the seven elements of the resilience framework. These elements are risks and adversities (Subchapter 6.1), positive outcomes (Subchapter 6.2), protective factors and processes (Subchapter 6.3), the three conceptualizations of resilience (Subchapter 6.4), time (Subchapter 6.5), environment (Subchapter 6.6), and culture (Subchapter 6.7).
- *Chapter 7* is the last chapter in this publication. It summarizes the results of the systematic review at hand, discusses the publication's limitations and contributions, and provides recommendations for practitioners in high school and higher education. The chapter starts with restating the review question. To answer this question, subchapters 7.1 and 7.2 subsequently sum up the main outcomes of the mapping and synthesis stages. Thereafter, for a fair assessment of the doctoral thesis, both the publication's limitations (Subchapter 7.3) and its theoretical, methodological, and practical contributions (Subchapter 7.4) are discussed. In addition, an outlook to future research opportunities is provided in Subchapter 7.4. The publication concludes with recommendations for practitioners aiming to improve the academic outcomes of students in high schools and higher education institutions (Subchapter 7.5).

Throughout the publication, figures and tables are used to present the data in the most comprehensive way possible. In addition, more data on the review process are offered in the appendices.

2. The Conceptual Framework of Resilience

A thorough understanding of the resilience concept can be considered the foundation on which subsequent steps in this publication are based on. The main aim of this chapter is to provide this foundation, meaning, for one, that the resilience concept will be described in detail. For this purpose, the author provides a comprehensive overview of the key terms, conceptualizations, and contexts of the resilience concept, in reference to some of the most relevant publications in resilience research. At the same time, as a second purpose of Chapter 2, the author develops and introduces a conceptual framework of resilience (see Figure 3), comprising seven elements, which will each be discussed in Subchapter 2.3 and analyzed at the synthesis stage of this publication in Chapter 6. All in all, Chapter 2 prepares the synthesis of the publication at hand. It translates the resilience concept into a conceptual framework which can be used for synthesizing data from empirical studies, so we can determine, how the main elements of the resilience concept are handled in empirical research concerned with academic success in high schools and higher education institutions.

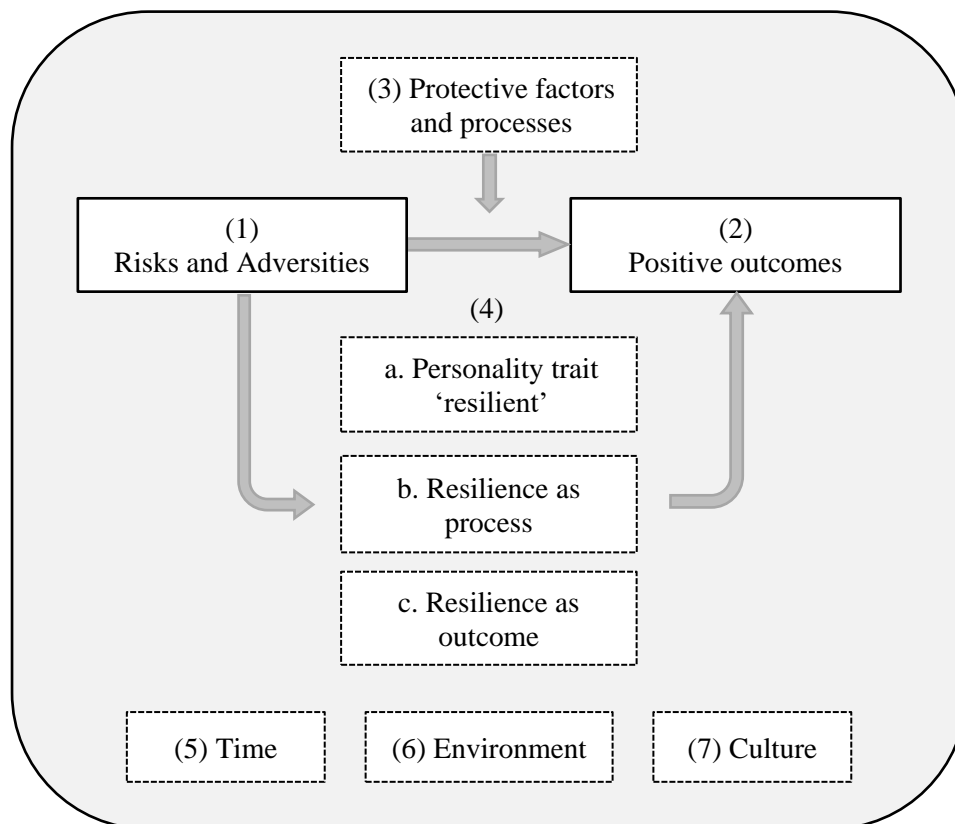


Figure 3. *Conceptual framework of resilience*
(Created by the author)

The conceptual framework developed for this publication includes seven elements of the resilience concept. It is presented in Figure 3. First, the framework shows the duality of (1) risks and adversities, on the one side, and (2) positive outcomes, on the other side. This duality represents the essence of resilience. It describes the mechanism of individuals overcoming difficult circumstances and hardships, achieving positive outcomes in the process. In addition to this, the third element is represented by (3) protective factors and processes, which help to explain why and how individuals overcome risks and adversities. The fourth element of the framework comprises the (4) three views on what resilience represents, i.e. the three ways in which the connection between risks/adversities and positive outcomes can be conceptualized: as (4 a.) a trait, (4 b.) a process, or (4 c.) an outcome. Last, the framework considers three context elements of resilience: the element of (5) time entails, for instance, how the developmental processes of individuals might impact their resilience processes, the element of (6) environment includes considerations about influences of social connections in family and community, and the element of (7) culture reminds us to acknowledge both individuals' and researchers' cultural backgrounds in the analysis of resilience.

Chapter 2 consists of three subchapters. It starts with a description of the historical roots and the four-wave development process of resilience research in Subchapter 2.1. The second subchapter (2.2) is devoted to the definition of the resilience concept, beginning with a clarification of the concept's essence, followed by a presentation of some of the most relevant resilience definitions in the literature and the delineation of the resilience concept from other, similar concepts. In Subchapter 2.3, the seven elements of the conceptual framework of resilience – as applied in this publication – are presented. The two essential elements of the resilience concept – risks and adversities (Section 2.3.1) and positive outcomes (Section 2.3.2) – are discussed first. Then, Section 2.3.3 outlines the concepts of protective factors and processes, which are used in resilience research for describing the mechanisms behind individuals achieving positive outcomes despite of hardships in their lives. A list of some of the most relevant protective and promotive factors, which can be repeatedly found in the literature, is presented in this section (see Table 2). Subsequently, in Section 2.3.4, the three main conceptualizations of resilience as either a trait, an outcome, or a process are outlined. Last, the author discusses the three major contexts to consider in resilience research in one section each: time (Section 2.3.5), environment (Section 2.3.6), and culture (Section 2.3.7).

2.1 Origin and Development

Research on resilience originated about 45 years ago in psychiatry, when researchers studying the development of children, who faced highly negative circumstances in their lives, started to shift their attention towards those children who showed normal developmental outcomes despite the odds being stacked against them (Masten, 2001; Masten & Reed, 2002; O'Dougherty Wright et al., 2013). Up to this point, psychiatrists and psychologists were mostly focused on risks, i.e. negative influences on children's development (Luthar, 2006; Luthar et al., 2000). Nevertheless, when this approach proved inefficient to explain why and how some children are able to succeed despite living through substantial negative experiences, it became evident that the focus of research was to be expanded (Rutter, 2000; Schoon, 2006). As a result, researchers changed their perspective from a focus on risks to a focus on strengths (Masten & Reed, 2002; Richardson, 2002). This can be considered a "paradigm shift" (Richardson, 2002, p. 307) for the field and marked the defining moment at the beginning of resilience research. At first, the new focus on strengths was often connected to the assumption that extraordinary factors might have to be at play to counteract the misfortunes of individuals at risk. Later on, however, Ann Masten (2001) refuted such claims in a seminal article. She illustrates that it is mostly the 'ordinary' which facilitates resilience processes:

"What began as a quest to understand the extraordinary has revealed the power of the ordinary. Resilience does not come from rare and special qualities, but from the everyday magic of ordinary, normative human resources in the minds, brains, and bodies of children, in their families and relationships, and in their communities" (Masten, 2001, p. 235).

During the origin and development of resilience research, the resilience concept has frequently been assigned an almost mythical quality. Despite the best efforts of many researchers to formalize the discussion on resilience (Masten, 2001; Schoon, 2006), stories of individuals overcoming hardships in miraculous ways lingered through the early phases of scholarly work (Masten & Reed, 2002). In the beginning, children who achieved positive outcomes in defiance of considerable risks and adversities were regularly labeled 'invulnerable' by pioneers of the field (Luthar, 2006; Masten, 2001; Rutter, 2000). Researchers aimed to find and describe the personality traits that protected these outliers like a "character armor" (p. 16), as O'Dougherty Wright et al. (2013) describes it, and thus distinguish them from their less fortunate peers. Nonetheless, the label of the "invulnerable

child” (Anthony, 1987) was soon abandoned and replaced by the term resilience. The more research was carried out on the topic, the more it became clear that the connotation of invulnerability is too definite and constant to reflect the dynamic nature of resilience and positive adaptation (Luthar et al., 2000). As Hauser and colleagues (2006) summarize, “there is no shield that keeps (...) [children] safe from all harms, no intrinsic toughness such as the older terms imply. It is not the illusory invulnerability of resilient children that should command attention and respect, but their powers of self-healing” (p. 4).

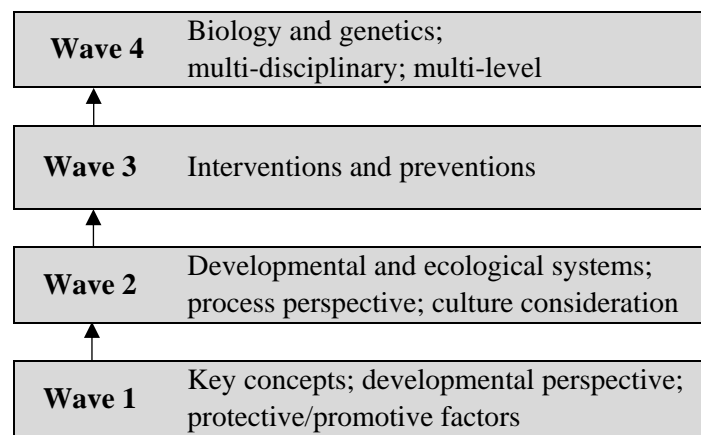


Figure 4. Four waves of resilience research
(Created by the author, adapted from O’Dougherty Wright et al., 2013)

Various authors have categorized the development of resilience research into distinct stages or waves (O’Dougherty Wright et al., 2013; Richardson, 2002). The work of O’Dougherty Wright, Masten, and Narayan (2013), who divided the development process into four waves, is a prominent example. The four waves are illustrated in Figure 4, and they will be described next:

- *Wave 1:* The “working vocabulary” (O’Dougherty Wright et al., 2013, p. 16) of resilience research was developed in the 70s and 80s of the last century. Researchers focused on developing the key terms and elements of the resilience concept, so they could investigate and describe the essential mechanism by which individuals overcome risks and adversities against the odds (Masten, 2007; O’Dougherty Wright et al., 2013). In this process, research efforts were mostly focused on individuals, meaning that scholars often investigated resilience using a developmental perspective, for instance, defining positive outcomes via the accomplishment of stage-salient tasks (Luthar, 2006; Masten, 2001; Schoon, 2006). Moreover, researchers aimed to collect protective and/or

promotive factors that support individuals to overcome difficult situations (Masten, 2007).

- *Wave 2:* After a solid foundation was built in the first wave, resilience research started to gain further momentum in the 1990s. Researchers began to expand their view on elements to consider for understanding resilience. In addition to investigating the impact of specific personality characteristics and factors in the family as well as the community on resilience, individuals were conceived as part of developmental and ecological systems (O'Dougherty Wright et al., 2013). This allowed for more complex models, in particular, regarding interactions and transactions between individuals in different contexts. In general, Wave 2 research intends to understand the mechanisms behind resilience, i.e. the processes by which protective and promotive factors come to bear in the lives of people at-risk (Fletcher & Sarkar, 2013; O'Dougherty Wright et al., 2013). Concerning methodology, a main insight going hand in hand with this process view was the use of longitudinal studies (Masten, 2007), and more attention was given to the cultural backgrounds of individuals (Ungar, 2008; Ungar & Liebenberg, 2011). In addition, the advancement of the concept reached a point that allowed for a transfer to domains other than that of the healthy development of children. For example, the domain of education became of particular interest for resilience research at the time of Wave 2 research (Wang & Gordon, 1994).
- *Wave 3:* In Wave 3 research, the resilience concept was applied to practical settings. It was presumed early on by scholars that understanding resilience processes can be highly beneficial for designing and conducting intervention- and prevention studies in various domains (Masten, 2001; Rutter, 2000; Schoon, 2006). In essence, there are three strategies to do so: strategies for risk reduction, asset enhancement, and process design. It is thus possible to apply interventions which try to decrease the impact risks have on individuals, aim to enhance the assets and resources available in an individual's life, and intend to change the mechanisms by which resilience operates (Masten & Reed, 2002). For the latter, it is often claimed that there is a better understanding of resilience processes necessary so we can apply our knowledge more effectively to the fields of intervention and prevention. As O'Dougherty and colleagues (2013) state, "only by identifying the multifaceted processes underlying successful adaptation under adverse conditions will we find ways to intervene successfully in the lives of those who remain vulnerable" (p. 29). The literature further describes the importance of basic human

adaptation systems (Masten, 2001; Masten & Reed, 2002) as well as the right timing to carry out interventions (O'Dougherty Wright et al., 2013). In addition, the possibility of reciprocal effects between research and practice is frequently underlined (Luthar, 2006; Luthar et al., 2000; Masten, 2007).

- *Wave 4:* The fields of biology and genetics gained significance during the course of Wave 4 research, for instance, concerning biological processes of emotional regulation or gene x environments (Luthar, 2006; Masten & Obradović, 2006; Rutter, 2000). Researchers began to recognize that it is important to examine physical influences alongside psychological factors and to understand the connections between the two (Luthar et al., 2000). As Masten and Reed (2002) state, “the study of healthy physical development must be integrated with the study of healthy psychological development, for children growing up under favorable and unfavorable conditions” (p. 86). In this regard, Leuzinger-Bohleber (2009) highlights the usefulness of physiological insights for prevention efforts in early life. She refers to the concepts of embodiment and neuronal plasticity, and the ability to use the malleability of neurological processes to support children in overcoming or even compensating for traumatic events in their lives. An integral part of this is fostering and nurturing new positive relationships in the children’s social environments. Projects that aim to do so are, for instance, described by Meurs (2013) or Lebiger-Vogel and colleagues (2013). Nonetheless, there are calls for caution in the literature as well (Cicchetti, 2010; Rutter, 2000). It is claimed that resilience should not be limited to biological factors or genetic influences, since this might lead to a standpoint that the requirements for positive adaptation are unchangeable, which would neglect the dynamic nature of resilience. In addition, Wave 4 researchers underline the necessity for research to span multiple disciplines as well as to consider multiple levels at which resilience processes might be influenced. This is crucial because of the complexity of the concept itself (Luthar, 2006; Luthar et al., 2000) and the complexity of the problems arising, in particular, when using the resilience concept for efforts of intervention and prevention in practice (O'Dougherty Wright et al., 2013).

All in all, the four waves show the vivid evolution of the resilience concept over the past five decades. As it is true for many research areas, the advancement and availability of new sophisticated methodological and technological possibilities had a lasting impact on the development of resilience research (Feder et al., 2009; Masten, 2007; Masten & Obradović,

2006). This is not only relevant to Wave 4 research but for the further development of Wave 2 (understanding resilience processes) and Wave 3 (designing interventions and preventions). There are many opportunities for further research, with a lot of work ahead, and many new insights to discover (O'Dougherty Wright et al., 2013).

2.2 Definition

Numerous research studies have shown the high relevance of the resilience concept for the study of positive adaptation despite considerable risks and adversities as well as the usefulness of the concept for practical applications in interventions and preventions in many areas of life. Nonetheless, the concept has been criticized by various scholars as well (Bartelt, 1994; Kaplan, 1999; Kaplan, 2013; Liddle, 1994). One of the main criticisms is that there is still much ambiguity surrounding resilience, in particular concerning its definition and main elements (Fletcher & Sarkar, 2013; Luthar et al., 2000; Masten & Reed, 2002). In this regard, Kaplan (2013) states that “the deceptively simple construct of resilience is in fact rife with hidden complexities, contradictions, and ambiguities” (p. 39). In other words, it might be claimed that the essence of the resilience concept is easy to grasp, but that the details are highly complex. Therefore, it marks a vital step for every publication on resilience to introduce the resilience definition used (Fletcher & Sarkar, 2013), and to rely on and refer to the achieved consensus in the field concerning the concept’s essence as well as its main elements and relevant contexts of application (O'Dougherty Wright et al., 2013). As Hauser, Allen and Golden (2006) state: “Resilience is a theme of mythic stature and allure. But the pitfalls of imagining it as a discrete or stable property are real, and precise definitions are important” (p. 4).

The Essence of the Resilience Concept

The essence of the resilience concepts comprises two distinct parts: (1) encountering negative circumstances or events and (2) overcoming them (Luthar, 2006; Luthar & Cicchetti, 2000; Luthar et al., 2000). The two parts are often summarized as risks/adversities and positive outcomes. They are discussed next in more detail:

- a. *Risks and adversities:* In resilience research, threats to development, adjustment, or adaptation are commonly described by either or both of the terms ‘risks’ and ‘adversities’. They constitute the preconditions for the resilience concept to apply. As Rutter (2000) claims, “unless this first step is satisfactorily dealt with, there is a very real

danger that the supposed phenomenon of resilience may turn out to be purely artifactual and mean nothing more than that the individual has not really had a risk experience” (p. 653). Therefore, risks and adversities are necessary antecedents of resilience (Windle, 2011). Without the claim that individuals are at-risk, the question as to why they achieve positive outcomes would lose much of its urgency, since there are no odds to overcome. In short, “one has to suffer before the consequences of suffering can be assuaged” (Kaplan, 2013, p. 42).

- b. *Positive outcomes*: The achievement of positive outcomes despite risks and adversities marks the second constituting element of the resilience concept. Positive outcomes have been defined as “the criteria by which the quality of adaptation or developmental outcome is assessed or evaluated as ‘good’ or ‘OK.’” (Masten, 2001, p. 228). They are important indicators for the applicability of the concept, in that the fact that they are not expected – due to the often severe and long-lasting risks and adversities individuals are afflicted by – opens up the possibility for resilience research to explain why and how positive outcomes are still possible for some individuals.

In summary, researchers have to ask two questions when determining whether the resilience concept is applicable: first, are individuals subjected to one or multiple risks and/or adversities which might impede their development process, adjustment, or adaptation? Second, do these individuals develop, adjust, or adapt to a sufficient degree in relation to the severity of the risks and/or adversities they encounter? These two questions are referred to as the two main judgments of resilience research (Masten, 2001; Masten & Obradović, 2008; Masten & Reed, 2002; O’Dougherty Wright et al., 2013; Schoon, 2006). In a nutshell, resilience can support our understanding of the success of individuals who are facing various hardships in their lives. We can use the concept to investigate why and how these individuals succeed, i.e. how they overcome risks and adversities to achieve positive outcomes against all probabilities (Luthar et al., 2000; Schoon, 2006; Toland & Carrigan, 2011). The elements of risks and adversities as well as positive outcomes will be described in further detail below, in sections 2.3.1 and 2.3.2.

Resilience Definitions in the Literature

Over the last 30 years, researchers have established various definitions of the resilience concept. Table 1 lists a selection of some of the most common ones:

Table 1. List of popular resilience definitions in the literature

“(…) the process of, capacity for, or outcome of successful adaptation despite challenging or threatening circumstances” (Masten et al., 1990, p. 426).
“(…) a dynamic process encompassing positive adaptation within the context of significant adversity” (Luthar et al., 2000, p. 543).
“(…) a class of phenomena characterized by good outcomes in spite of serious threats to adaptation or development” (Masten, 2001, p. 228).
“(…) the personal qualities that enable one to thrive in the face of adversity” (Connor & Davidson, 2003, p. 76).
“(…) a phenomenon or process reflecting relatively positive adaptation despite experiences of significant adversity or trauma” (Luthar, 2006, p. 742).
“The capacity of a dynamic system to withstand or recover from significant challenges that threaten its stability, viability, or development” (Masten, 2011, p. 494).
“Positive adaptation in the face of risk or adversity; capacity of a dynamic system to withstand or recover from disturbance” (O’Dougherty Wright et al., 2013, p. 17).

While there is a certain heterogeneity observable in the definitions of resilience in Table 1, there are significant similarities. All the definitions reflect the above-discussed essence of resilience, for instance. In other words, scholars use different terms, but the main construct stays unaltered: to overcome difficult circumstances and to achieve positive outcomes.

Delineation From Other Concepts

As a last step in this subchapter, the resilience concept is delineated from similar concepts. It is assumed that this can further foster our understanding of resilience, because the main idea of overcoming hardships is reflected in other concepts as well, and resilience has been compared to such concepts in the literature (Kaplan, 2013). The three examples of coping, hardiness, and sense of coherences are discussed next:

- *Coping* is a concept that is frequently discussed regarding the ability of individuals to overcome difficult circumstances and situations in their lives. It has been defined as “constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the person’s resources” (Lazarus & Folkman, 1984, p. 141). Coping is thus similar to resilience because of its basic idea of overcoming risks and adversities. In addition, other connections between

coping and resilience can be observed in the literature (Leipold & Greve, 2009), for instance, some authors use it as part of their understanding of resilience (Sinclair & Wallston, 2004; Tugade & Fredrickson, 2004) and it has also been described as part of the resilience processes through which individuals overcome adverse situations in their lives (Fletcher & Sarkar, 2013). Nonetheless, resilience and coping are different concepts. For one, coping can be considered a strategy to deal with adversities, while resilience commonly describes the processes of overcoming adversities (Campbell-Sills et al., 2006). Second, it has been shown that coping mechanisms can be unhealthy or harmful to individuals (Rutter, 2000; Van Vliet, 2008). For instance, a person under stress might resort to substance abuse to remain functioning and achieve a certain goal. Resilience, in contrast, does not include such negative mechanisms. The resilience processes for achieving positive outcomes are not accompanied by negative side effects.

- *Hardiness* is defined as “a constellation of personality characteristics that function as a resistance resource in the encounter with stressful life events. The personality dispositions of hardiness are commitment, control, and challenge” (Kobasa et al., 1982, p. 169). Like coping, the concept is similar to resilience because it relates to individuals overcoming hardships (Kaplan, 2013; Luthar, 2006). However, a closer examination shows that it solely describes personality traits of individuals and that it can thus clearly be delineated from the dynamic concept of resilience (Schoon, 2006).
- *Sense of coherence* can be defined as “a feeling of confidence that demands are comprehensible, manageable, and meaningful” (Leipold & Greve, 2009, p. 41). It can be instrumental for dealing with adversities, but – as has been described for hardiness above – sense of coherence is a personality trait as well, and it can thus clearly be delineated from resilience.

In the literature, the question has been raised, if resilience can be a stand-alone concept or if the similarities with other concepts are too striking for this to be the case (Luthar, 2006). As has been demonstrated above – at least for three concepts in proximity –, the resilience concept represents an independent concept. There are similarities compared to other concepts, which are mostly due to the same mission of providing explanations for individuals overcoming risks and adversities. Nevertheless, the differences outweigh the similarities. In most cases, the main delineating factor is that other concepts refer to one or multiple personality traits that make individuals achieve in certain domains of their lives or, like with coping, to certain strategies of individuals, which support them in dealing with difficult

situations. Resilience, conversely, is not a personality trait, but is commonly conceived to be a dynamic process.

2.3 Elements of the Resilience Framework

In the following, the seven elements of the conceptual framework of resilience used for this publication are described: (1) risk and adversities, (2) positive outcomes, (3) protective factors and processes, (4) the conceptualizations of resilience as a trait, an outcome, or a process, (5) time, (6) environment, and (7) culture.

2.3.1 Risks and Adversities

Risks and adversities both pose major threats and obstacles for the ability of individuals to reach positive outcomes. They represent the first essential element of the resilience concept. This section starts by describing the element of risk: The term risk stands for an increased probability of a negative outcome (Kraemer et al., 1997; Kraemer et al., 2001; Obradović et al., 2012). It describes the higher statistical likelihood for individuals to show signs of unwanted outcomes in terms of adjustment, achievement, or adaptation in different life domains (Luthar & Cicchetti, 2000). Risk relates to groups rather than to individuals. As O'Dougherty Wright and colleagues (2013) states, "it is a group or population term, in that a risk factor does not identify which individual or individuals in a group considered at risk will eventually display difficulties in adaptation, but rather that the group of people with this risk factor is less likely to do well in some regard" (pp. 16-18). In resilience research, it is thus common to define at-risk groups, for which researchers assume a high probability of maladaptation (Obradović et al., 2012; Schoon, 2006). The individuals in these at-risk groups can be considered vulnerable. Vulnerability, in that sense, is an important term within resilience research, meaning the predisposition of individuals or systems to unsought outcomes (O'Dougherty Wright et al., 2013).

Vulnerability often results from one or more risk factors. Risk factors are predictive of negative outcomes as their occurrence implies a certain statistical likelihood for negative outcomes to follow (Masten, 2001; Masten & Reed, 2002; Obradović et al., 2012). They can usually be measured, and are, therefore, one of the main indicators used by scholars to define the risk status of a population of interest (O'Dougherty Wright et al., 2013). Examples for risk factors external to individuals are maltreatment by parents, a low socio-economic status, or exposure to community violence. Concerning personality characteristics, one frequently

connected to negative outcomes is low cognitive ability (Luthar, 2006; Masten, 2001). A further aspect to consider for risk factors is that these factors often represent the negative pole of bipolar constructs, meaning that most factors can both be phrased negatively, and, therefore, be presented as a risk factor, or as having positive influences, which makes them assets or resources for individuals to achieve positive outcomes (Masten & Reed, 2002; Rutter, 2000). An example would be low socio-economic status as a risk factor, opposed by high socio-economic status as an asset or resource (O'Dougherty Wright et al., 2013). Consequence, while there are pure risk factors (e.g., accidents) and pure assets/resources (e.g., talents), most risk factors should be assumed to have a second, positive dimension (Luthar, 2006; Masten, 2001).

Resilience research distinguishes between two main types of risk factors: proximal and distal risk factors:

- *Proximal risk factors* are direct experiences of risks. Examples are incidents of low parenting quality or violence in the community (Luthar, 1993; O'Dougherty Wright et al., 2013).
- *Distal risk factors*, conversely, describe risks in the circumstances of individuals caused by adverse environments or difficult situations in their lives. They are experienced through proximal risk factors, for instance, when individuals living in a high-crime neighborhood (distal risk factor) experience the negative effects of their living situation by being exposed to community violence (proximal risk factor). One of the most important distal risk factors is the socio-economic status of a family (Luthar, 1993; O'Dougherty Wright et al., 2013).

In addition, resilience research is concerned with causal risk factors. A causal risk factor is a “factor that, when changed, is shown to change the outcome” (Kraemer et al., 2001, p. 848). In other words, it makes a considerable difference for an individual whether a causal risk factor is in effect or not. An example would be the use of the same needle among drug addicts as a causal factor for contracting AIDS (Kraemer et al., 1997). If a needle wouldn't be used more than once, the risk of transmitting AIDS would not be present in that situation. However, while it is possible to connect particular risk factors to particular outcomes, the notion of causal risk does not describe the mechanisms and processes in effect behind the factors (Kraemer et al., 1997; Rutter, 2000).

Defining the at-risk status of a group can be a delicate task. In the literature, a lack of precision and specificity of descriptions of risk factors affecting individuals has frequently

been criticized (Masten, 2001; Masten & Reed, 2002; O’Dougherty Wright et al., 2013). When defining risk, it is important to refer to heightened statistical probabilities for negative outcomes (Luthar, 2006; Luthar et al., 2000; Masten, 2001). We should be able to statistically show the expected negative influence of particular risk factors on the outcomes of individuals in one or more domains of interest. In this respect, Schoon (2006) refers to the “predictability of life chances” (p. 9) through the definition of at-risk groups. Nonetheless, despite the importance of statistical data for risk definitions, it is necessary to consider the distinction between statistical and actual risk. There is a probability that individuals in at-risk groups experience other outcomes than the ones projected by statistics, because every individual in the group will experience specific circumstances in their lives (Luthar et al., 2000). As Schoon (2006) states, “even in circumstances where significant associations have been established between risk exposure and adjustment problems, questions may remain about the specific living conditions of different individuals in a particular sample” (p. 10). Therefore, it is recommended to leave room for interpretation, so that one does not rely solely on preconceived assumptions about groups which can often appear to be more homogeneous outwardly than they are in reality. Furthermore, research has demonstrated that different risk factors might not be perceived in the same way by members of an at-risk group. There is a certain subjectivity in how risk is experienced, which does often not conform with what researchers postulate in their studies (Luthar et al., 2000; Schoon, 2006).

Adversities are the obstacles and hardships individuals encounter in their lives. Research distinguishes between two forms:

- *Disturbances:* Adversities can be obstacles which suddenly appear in an individual’s life, for instance, when they strike as accidents or natural disasters (O’Dougherty Wright et al., 2013).
- *Experiences:* The second form of adversities are situations in which obstacles are manifested in an individual’s life for a longer time, for example, by the daily negative effects poverty or homelessness have on well-being (O’Dougherty Wright et al., 2013).

Adversities are distinct from as well as connected to risk. They are distinct because of their initial independence from risk. A natural disaster, as exemplified above, will not discriminate between individuals at risk and those not at risk. It is, therefore, one characteristic quality of adversities that everybody can be affected by them, not only at-risk individuals, because adversities can strike suddenly. Nonetheless, adversities are connected to risk in that risk factors might influence the severity of adversities individuals are exposed to in the long run.

Considering the example of a natural disaster, it is, for instance, more likely for a person with a low socio-economic status to experience more and graver daily adversities in the aftermaths of the disaster than it is for a person with a high socio-economic status. Similarly, it seems reasonable to assume that members of at-risk groups are destined to experience more adversities throughout their lives.

Resilience researchers have been discussing the question, how severe adversities need to be for the resilience concept to apply. It has long been the norm to assume acute or severe adversities to be most relevant (Rutter, 2000). During the last two decades, however, more diversity concerning the study of adversity has found its way into investigations (Fletcher & Sarkar, 2013). As a result, more and more scholars started to focus on common adversities in peoples' day-to-day lives, for instance, in relation to stressful situations in the family or workplace (Davis et al., 2009; Jackson et al., 2007; Neff & Broady, 2011). They argue that it would be unadvisable to exclude milder adversities from analysis, because this could diminish our understanding of the resilience concept as well as research opportunities on the subject (Fletcher & Sarkar, 2013). Furthermore, the literature indicates that a direct connection between adversities and negative outcomes should not be assumed in every case. Instead, it is shown that adversities can have positive impacts. In fact, various researchers argue that hardships and obstacles – if not too severe – can support positive outcomes of individuals in various domains of their lives (Kaplan, 2013; Neff & Broady, 2011; Seery, 2011; Seery et al., 2010). Difficult events and experiences might trigger behaviors in individuals that would not have emerged any other way. On the contrary, it has also been demonstrated that events commonly considered as positive, like promotions or weddings, can have adverse effects on individuals (Fletcher & Sarkar, 2013).

Individuals in at-risk groups are usually not affected by one risk factor or one adversity only, but they experience multiple of such negative occurrences at the same time. This phenomenon is commonly referred to as 'cumulative risk' in the literature (Dong et al., 2004; Luthar, 2006; Masten, 2001; Masten & Reed, 2002; Masten & Wright, 1998; O'Dougherty Wright et al., 2013; Obradović et al., 2012; Sameroff et al., 2003). Individuals can be affected by various distinct risk factors, the same risk factor can affect them several times, and long-lasting adversities – often over extended time periods throughout their lives – can have a cumulative negative effect (O'Dougherty Wright et al., 2013). It has further been stated that it is much more realistic to assume the impact of multiple negative factors instead of one negative factor only (Luthar, 2006; Rutter, 2000). The more such factors are present in an individual's life, the higher the probability of negative outcomes (Masten, 2001; Schoon,

2006). Another important aspect to consider is time, as longer exposure to various risks and adversities often result in a larger negative impact on individuals (Dong et al., 2004; Masten & Reed, 2002; O'Dougherty Wright et al., 2013; Toland & Carrigan, 2011). All in all, the phenomenon of cumulative risk underlines the complexity of research endeavors about resilience, where both different factor combinations and their effects as well as processes of interaction and transaction between these factors have to be considered (Masten & Wright, 1998; Obradović et al., 2012). In addition, the phenomenon appears to be highly useful for our understanding as to why positive adaptation is particularly difficult for members of at-risk groups. We can expect poorer outcomes the more risk factors and adversities accumulate in a person's life.

2.3.2 Positive Outcomes

The achievement of a positive outcome is – alongside of risk and adversity – the second constituting element of the resilience concept. Positive outcomes are various good manifestations in the lives of individuals, for instance, concerning their mental well-being, academic achievement, or success at work. As Masten and Reed (2002) put it, “there is a judgment that individuals are ‘doing OK’ or better than OK with respect to a set of expectations” (p. 75). An important aspect of positive outcomes is that these outcomes occur unexpected considering the instances of risk and adversities individuals have to endure, meaning that the outcomes are always better than we would expect from the circumstances a person is in (Kaplan, 2013; Luthar, 2006; Schoon, 2006). There are three main forms of positive outcomes to consider in resilience research: for one, positive outcomes that occur despite considerable risk and adversity, second, those in which individuals keep high levels of positive adaptation regardless of continuous threats in their lives, and, third, outcomes that signify individuals' ability to recover from traumatic events (Luthar et al., 2000; Schoon, 2006). All three of these most prevalent forms are frequently used in research to show the manifestation of resilience.

In the literature, various authors have discussed the difficulty of determining positive outcomes. There are various criteria available to do so, for instance, in relation to tasks expected at certain developmental stages of individuals or concerning achievements in social or academic settings (Masten & Reed, 2002; O'Dougherty Wright et al., 2013; Schoon, 2006). Nonetheless, a lack of clarity on the matter is frequently criticized. For example, there is no agreement whether we should use external criteria, like success in academia and in social settings, internal criteria, like happiness and well-being, or both to define the

achievement of positive outcomes (Masten, 2001). In addition, scholars debate the question, if ‘normal’ or average outcomes are appropriate for the resilience concept or if excellent forms of achievement should be relevant only (Luthar et al., 2000). The definition of positive outcomes ultimately is a judgment that needs to be taken in every resilience study and it is recommended to be aware of the subjectivity of such judgments (Kaplan, 2013). As Leipold and Greve (2009) describe, “a fundamental element of subjectivity seems unavoidable here: What one person considers being a ‘successful’ way of dealing with a developmental constellation can be seen as an escape or even as a failure by another” (p. 41). All in all, many scholars agree that there is more work necessary concerning the definition of suitable criteria for positive outcomes in different domains (O’Dougherty Wright et al., 2013). Moreover, it is strongly recommended to be as transparent as possible about which criteria are used to do so in a study (Schoon, 2006). In the following, two more aspects are explained, which are important to our understanding of how to determine what constitutes a positive outcome in resilience research: stringency and domain-specificity.

Researchers are required to use stringent criteria when they determine positive outcomes of individuals. This means they have to consider the connection between the type and severity of risks and adversities that individuals experience and the outcomes that follow. The summarizing term in the literature for this is stringency (Luthar, 2006; Luthar et al., 2000; Rutter, 2000). As has been discussed above, in Section 2.3.1, the severity of risks and adversities can vary, and some researchers claim that we need to differentiate between long-lasting, acute hardships and more manageable obstacles in everyday life when we decide what accounts for a positive outcome (Davis et al., 2009; Jackson et al., 2007; Neff & Broady, 2011). In the case of traumatic events like severe accidents or illnesses, some argue, for instance, that positive outcomes can only mean recovery, i.e. the return to a normal state of functioning. On the contrary, in accordance with stringency, excellent functioning is not to be expected after trauma (Fletcher & Sarkar, 2013; O’Dougherty Wright et al., 2013; Schoon, 2006). George Bonanno has provided highly relevant examples for cases of recovery after trauma. His research indicates that many individuals recover from traumatic events (Bonanno, 2004; Bonanno et al., 2007). He states that “large numbers of people manage to endure the temporary upheaval of loss or potentially traumatic events remarkably well, with no apparent disruption in their ability to function at work or in close relationships, and seem to move on to new challenges with apparent ease” (2004, p. 20). In this respect, his studies on the resilience of survivors of the World Trade Center terror attacks in 2001

are particularly noteworthy. Even in the aftermath of this highly traumatic event, a good portion of survivors had successful recoveries (Bonanno et al., 2007).

Domains are the second main element to consider when determining what a positive outcome should look like. The connection between risks, adversities, and positive outcomes is a domain-specific one (Luthar, 1993). In other words, when we use the resilience concept to understand the processes by which individuals achieve positive outcomes despite challenging or adverse circumstances, we need to acknowledge that our understanding will often be limited to one domain in the lives of these individuals. As Luthar (2006) argues, “it was recognized that even considering only domains of behavioral competence, resilience is never an across-the-board phenomenon, but inevitably shows some domain-specificity” (p. 741). Examples for such specific domains are social resilience, emotional resilience, and behavioral resilience (Luthar et al., 2000; Schoon, 2006). In addition, educational resilience or academic resilience, respectively, is often the subject of resilience research in education (Wang & Gordon, 1994), as it is likewise the case for the publication at hand. Consequently, positive outcomes must be defined in relation to specific outcome domains (Fletcher & Sarkar, 2013; Luthar, 2006). When we want to determine if the members of an at-risk group achieve positive outcomes in school, for instance, the definition of this achievement has to relate to the domain of education. A reasonable choice to determine a positive outcome in this domain would thus be academic success, for which specific indicators can be used, like grade point average or the persistence of students on their educational pathways.

In resilience research, it has frequently been shown that individuals are unlikely to achieve highly in all domains of their lives. As a matter of fact, positive outcomes are likely to vary from one domain to another, and individuals will often be successful in one domain but not another (Kaplan, 2013; Luthar, 1993; O’Dougherty Wright et al., 2013). It is conceivable, for instance, that children are successful in school and, therefore, show high achievements in the domain of education, but are not as successful sustaining healthy connections with friends and peers in their social domain (Cicchetti & Garnezy, 1993; Kaplan, 2013; Schoon, 2006). For research projects, this has two main consequences: For one, it is advisable to be careful with a general statement about the positive outcomes of individuals. Researchers should be transparent about the domains they refer to when describing adaptation and achievement, and they should state that success in this domain does not equal success in other domains. As Schoon (2006) describes, “it should be noted that success in a particular domain cannot be assumed to generalise to other spheres – as resilience is not an all-or-nothing phenomenon” (p. 13). Second, to achieve a more

comprehensive picture, research needs to focus on more than one domain (Cicchetti & Garnezy, 1993). Therefore, investigations should assume a multi-finality of outcomes (Luthar, 2006; Masten & Reed, 2002). In most cases, multiple outcomes will have to be considered in a study, so we can gain a better understanding of the entirety of resilience processes an individual is involved in. Moreover, when working with multiple outcome domains, the critical next steps are to study the impacts of specific domains and possibilities of prioritization (Luthar et al., 2000) as well as the phenomena of mutual influences and interdependence of domains (O'Dougherty Wright et al., 2013).

2.3.3 Protective Factors and Processes

A large part of resilience research is concerned with investigating the factors and processes explaining the positive outcomes of individuals despite risks and adversities in their lives. The two constructs of protective and promotive factors are substantial for this purpose (Fletcher & Sarkar, 2013; Masten & Reed, 2002; O'Dougherty Wright et al., 2013):

- *Protective factors* are defined as the factors that can shield individuals from negative influences. They are predictive of positive outcomes in situations with high risk and/or severe adversities, i.e. the likelihood for an individual not to experience negative outcomes from risks and adversities is increased, if one or more protective factor/s is/are present in critical situations in their lives (Luthar, 2006; Masten & Reed, 2002; Rutter, 1985). Examples to illustrate the connection between protection and negative events or circumstances are the availability of emergency services in emergency situations, a well-established health care system in cases of disease, or airbags in cars during accidents (O'Dougherty Wright et al., 2013).
- *Promotive factors*, conversely, are not relevant to critical situations only. Instead, these factors describe measurable supportive traits of individuals and/or factors in their environments which enhance positive outcomes both in situations in which risks and adversities are present as well as in situations in which this is not the case (O'Dougherty Wright et al., 2013; Sameroff et al., 2003). Promotive factors have also been referred to as resources or assets of individuals (Luthar 2006; Masten & Reed, 2002). An example of an asset in education would be the cognitive ability of students. A high socio-economic status would be a more general example, which can impact many resilience domains (O'Dougherty Wright et al., 2013). In addition, promotive factors can be conceived as the opposite of risk factors, as Sameroff and colleagues (2003) state, “for

example, where a negative family climate had been a risk factor, a positive family climate now became a promotive factor; where a parent’s poor mental health was a risk factor, her good mental health became promotive” (p. 378).

The literature shows that protective and promotive factors are not clearly separable (O’Dougherty Wright et al., 2013). O’Dougherty Wright and colleagues (2013) demonstrate this with the example of having loving parents, which, on the one hand, can be considered promotive, in that loving parents are and will be an asset for children during their childhoods and beyond. On the other hand, parental love can be considered protective, because loving parents will likely attempt to shield their children from negative influences when they occur.

Table 2. List of commonly agreed upon protective and promotive factors for children (Adapted from O’Dougherty Wright et al., 2013, p. 21)

Child characteristics
Social and adaptable temperament in infancy
Good cognitive abilities, problem solving skills, and executive functions
Ability to form and maintain positive peer relationships
Effective emotional and behavioral regulation strategies
Positive view of self (self-confidence, high self-esteem, self-efficacy)
Positive outlook on life (hopefulness)
Faith and a sense of meaning in life
Characteristics valued by society and self (talents, sense of humor, attractiveness to others)
Family characteristics
Stable and supportive home environment
Parents involved in child’s education
Parents have individual qualities listed above as protective for child
Socioeconomic advantages
Postsecondary education of parent
Faith and religious affiliations
Community characteristics
High neighborhood quality
Effective schools
Employment opportunities for parents and teens
Good public health care
Access to emergency services (police, fire, medical)
Connection to caring adult mentors and prosocial peers
Cultural or societal characteristics
Protective child policies (child labor, child health, and welfare)
Value and resources directed at education
Prevention of and protection from oppression or political violence
Low acceptance of physical violence

In resilience research, we can rely on a set of commonly agreed upon protective and promotive factors. Researchers have demonstrated early on that the same factors are found

during resilience processes time and time again (Luthar et al., 2000; Masten, 2001; Masten, 2007; Masten & Reed, 2002; O'Dougherty Wright et al., 2013; Toland & Carrigan, 2011). This consensus has accumulated in a "short list" (Masten, 2001; Masten, 2007; Masten & Reed, 2002) of protective and promotive factors in resilience research, which have repeatedly been shown to have a positive influence on resilience processes over the last 45 years. Table 2 shows a short list of factors relevant for children. The factors can commonly be categorized into four sets: those concerning characteristics of the individual, the family, the community, and society respectively culture. Cultural and societal influences have not been specifically addressed until recently. Many authors have described three categories of protective and promotive factors (Luthar, 2006; Luthar et al., 2000; Rutter, 2000; Schoon, 2006), but aspects of culture and society, which are seen to have a large impact on resilience processes today (Ungar, 2008; Ungar & Liebenberg, 2011), have not been addressed for quite some time. Furthermore, it is to be expected for well-adapted individuals to have several protective and/or promotive factors available in one or more of the four sets. Similar to what has been described for risk factors, we thus need to be aware of accumulation effects. In most research endeavors, scholars will have to deal with a constellation of different, often interrelated factors, which exert their full influence through effects of accumulation and interplay (O'Dougherty Wright et al., 2013; Schoon, 2006; Toland & Carrigan, 2011).

Research has shown that we should conceive singular protective and/or promotive factors to be part of larger protective systems (Masten & Obradović, 2008; Masten & Reed, 2002; O'Dougherty Wright et al., 2013). These systems are considered being the basic frameworks responsible for fostering positive adaptation processes of individuals as well as enhancing their ability to recover from adverse situations (Masten, 2001; Masten, 2007). Various scholars argue that positive outcomes are closely related to functioning protective systems. Masten & Reed (2002), for instance, state that "the evidence indicates that the children who 'make it' have basic human protective systems operating in their favor" (p. 85). Examples for such systems regarding personality characteristics are systems of self-regulation or motivation. Concerning conditions external to individuals, protective systems often relate to family, educational institutions, religious communities, or social groups with similar cultural backgrounds (Masten & Reed, 2002; O'Dougherty Wright et al., 2013). Alongside the advantages that functioning adaptive systems bring, it is important to recognize their vulnerability. It has been shown that where negative circumstances result in one or more of protective systems to fail, the ability of individuals to achieve positive outcomes can be weakened drastically (Masten, 2001; Masten, 2007). Consequently, for

intervention efforts using resilience processes, it is often recommended to focus on mending whole protective system rather than singular factors, if disruptions occur, to achieve the best effects (Masten, 2001; Masten & Reed, 2002; O'Dougherty Wright et al., 2013).

Besides a focus on protective systems, modern resilience research is concerned with protective processes. This is connected to the general switch of focus from a perspective of fixed personality traits towards a process perspective in resilience research (see Subchapter 2.1). Researchers today do not trust in the explanatory power of protective and promotive factors alone, but are mostly concerned with underlying processes, i.e. how protective and promotive factors work – the mechanisms behind their contribution to positive outcomes of individuals despite risks and adversities (Luthar, 2006; Luthar et al., 2000; Masten & Reed, 2002; Rutter, 1987; Rutter, 2000). Early on, in 1987, Michael Rutter stated already that “the focus of attention should be on protective processes or mechanisms, rather than on variables” (p. 329). And Luthar and colleagues (2000) remind us that, in empirical research on resilience, work “has shifted away from identifying protective factors to understanding underlying protective processes” (p. 544). It is inherent to the process view on protective and promotive factors to acknowledge adaptation and change over time. In particular, this has been discovered to be the case for when individuals switch contexts, for instance, at life turning points. A popular example is the development from a close to a more distant relationship with parents, as it is the case for most adolescents and young adults. During this switch, it is likely that new social contacts outside the family might change assets and/or protective resources regarding the influence of close social relationships on resilience processes (O'Dougherty Wright et al., 2013).

In resilience research, there are two main ways to examine the factors and processes which support individuals in conquering risks and adversities to achieve positive outcomes: variable-focused and person-focused approaches.

- *Variable-focused approach:* Research models using a variable-focused approach examine the influence of various variables on the positive outcomes of individuals affected by high adversity and/or risk. The variables can be related to risk factors, protective and promotive factors – chosen from the four sets of individual-, family-, community-, and cultural attributes presented above – as well as demographic variables like gender or socio-economic status (Masten, 2001; Masten & Reed, 2002; O'Dougherty Wright et al., 2013). Either main effects or interaction effects are commonly studied. The main effects are characterized by clear-cut connections between specific variables and positive outcomes (Masten, 2001). Interaction models,

conversely, are more complex, in that they investigate how protective/promotive factors disable the negative influences of risks and adversities, so that positive outcomes can be achieved (Masten & Reed, 2002). While interaction models yield interesting questions and findings to discuss, it is stated in the literature not to overestimate their significance (Luthar, 2006). Scholars have shown, for instance, that there is not much consistency concerning the findings of different studies researching the same variable interactions (Masten, 2001). Moreover, it has been criticized that such studies often cannot produce large statistical effects (Luthar et al., 2000). In fact, when studies investigate interaction effects between several protective and/or promotive factors, with risk factors, and, as it is additionally often the case, with demographic variables, they can easily lose “statistical power” (Luthar, 2006, p. 747). Furthermore, as critics further state, research of this kind can be over-complex because of the number of variables used. Valuable main effects might be buried as a result (Luthar, 2006).

- *Person-focused approach:* Person-focused resilience studies compare the factors and processes which differ for those individuals reaching positive outcomes despite high amounts of risk and/or adversity in their lives compared to other groups of individuals (Luthar, 2006; Luthar et al., 2000; Masten, 2001; Toland & Carrigan, 2011). Regarding the constellations of the comparison groups, there is more than one option available: It is most common to work with a sample of high-risk individuals and to compare the adaptive group with a maladaptive group (Masten, 2001). There are other possibilities, however. Luthar (2006), for instance, describes that “comparisons with low risk and high competence groups (...) are particularly useful in determining whether the high competence of manifestly resilient children is actually commensurate with the levels shown by youth with relatively benign life circumstances” (p. 744).

All in all, both approaches have advantages and limitations. A main advantage of the variable-focused approach is that researchers can use cutting-edge, multivariate data analysis methods to examine the influence of various protective/promotive factors on resilience processes (O’Dougherty Wright et al., 2013). Conversely, consistency and relevance of the results of the statistical analyses can be questioned, particularly in those cases in which complex between-variable interactions are examined. Person-focused research can uncover different patterns beneficial for or hindering resilience processes over time (Masten, 2001). By doing so, studies are commonly less focused on specific factors and outcomes but describe and examine a more complete picture of resilience (Masten & Reed, 2002). As a

major limitation, however, it has been criticized that the impact of protective and/or promotive processes uncovered in person-focused studies cannot be connected to the occurrence of positive outcomes with absolute certainty (Masten & Reed, 2002).

2.3.4 Conceptualizations of Resilience

Resilience has been conceptualized in three main ways: as a trait, an outcome, and a process. These different views on the concept perceive resilience as either an absolute (trait, outcome) or a relative (process) phenomenon (Luthar et al., 2000). They are discussed next:

- *Trait perspective:* The trait view of resilience builds on the assumption that resilience is a personality trait (Fletcher & Sarkar, 2013; Leipold & Greve, 2009). This entails the notion that an individual is or is not resilient; that he or she either has the right personality characteristics to achieve positive adaptation or does not. At the beginning of resilience research, the concept of ego-resilience was used to enforce this idea (Luthar, 2006; Schoon, 2006). Today, researchers commonly agree that resilience is not a trait. In fact, scholars brought forward various points of criticism of the trait view. For one, it is criticized that the trait perspective can lead to the (re-)enforcement of stereotypes, because it pigeonholes individuals as being able to succeed solely due to innate competences (O'Dougherty Wright et al., 2013; Riley & Masten, 2005; Toland & Carrigan, 2011). If resilience is conceived to be a deterministic assessment of the capability of individuals to succeed, it is easily possible to ascribe the label of being unsuccessful to those left behind in this assessment. In the worst case, this can lead to victim blaming, as Luthar and colleagues (2000) describe, “any scientific representation of resilience as a personal attribute can inadvertently pave the way for perceptions that some individuals simply do not ‘have what it takes’ to overcome adversity” (p. 546). As a result, the description of the resilience of individuals should be handled with great care. It is recommended, for instance, to be careful when using terms such as ‘resilient’ or ‘resiliency’ (Luthar et al., 2000; Schoon, 2006). Researchers should be aware that referring to individuals as resilient can contribute to new or further negative connotations for underprivileged groups in society. Moreover, the personality trait view can cause neglecting the mechanisms behind resilience (Leipold & Greve, 2009) as well as important context variables (time, environment, culture) with an influence on resilience processes (O'Dougherty Wright et al., 2013).

- *Outcome perspective:* Resilience has been conceived as an outcome, meaning that researchers have used the concept interchangeably with individuals' achievement of positive outcomes (Olsson et al., 2003). However, while a positive outcome represents an essential element of the resilience concept, it is not recommended to use it synonymously with resilience. Instead, it is advisable to conceive positive outcomes as indicators of resilience. All in all, the outcome view is criticized for three main reasons: First, it has been claimed that the equalization of resilience and success might lead to a determination rather than an explanation of resilience. Important questions about how positive outcomes are reached might be neglected that way (Leipold & Greve, 2009). Second, it is difficult to distinguish positive outcomes from the factors that might contribute to these outcomes (Kaplan, 2013). The concept is thus reduced to solely one of its constituting parts in the outcome view. Third, the view propagates a perception of resilience being equal to success, although good recovery, for instance, might often be enough to define a positive outcome, in particular, considering the highly negative experiences many individuals have to endure throughout their lives (O'Dougherty Wright et al., 2013).
- *Process perspective:* Resilience is conceptualized as a dynamic process by most researchers in the field today (Egeland et al., 1993; Rutter, 2000; Toland & Carrigan, 2011). In resilience research, one commonly aims to find out how individuals achieve positive outcomes. The process view thus is concerned with the understanding of the mechanisms behind resilience, i.e. how individuals overcome risks and adversities in their lives (Garmezy, 1991; Luthar, 2006; Olsson et al., 2003). A significant part of the conception of resilience as a process is that resilience is viewed as a dynamic phenomenon rather than a static one (Fletcher & Sarkar, 2013). As opposed to the trait view, the process view does not assume that an individual is resilient or not, but that the concept's occurrence is influenced by the situation an individual is in. Therefore, resilience should be considered a malleable phenomenon, meaning that "it is particularly helpful to think of a 'continuum of resilience' as well as a 'continuum of vulnerability' across multiple domains" (O'Dougherty Wright et al., 2013, p. 26). An individual can be resilient in one situation or at one life stage, but not another. In addition, resilience should be understood in relation to an individual's context, which commonly concerns his or her circumstances in a particular environment and at particular points in time. A vital part of this are interactions and transactions in social environments (Egeland et al., 1993; Schoon, 2006; Toland & Carrigan, 2011). Moreover, the process view

incorporates questions about how and to which degree individuals are able to interpret their circumstances. While it is often difficult to investigate this aspect, we should assume that most individuals are reflexive beings, who react to situations in their lives, for instance, by adapting their behavior (O'Dougherty Wright et al., 2013).

In summary, the views of resilience as a personality characteristic and as an outcome are important to understand certain aspects of the concept. Nonetheless, they do not represent the resilience concept. Instead, it is the process view of resilience that is most accepted and used in modern resilience research. Resilience should be understood as a dynamic process that can be summarized with the notion that individuals “don't ‘come’ resilient but become resilient” (Hauser et al., 2006, p. 4). As Rutter (2000) states, “it is also clear, whatever the outcome being considered, that resilience is not an individual trait or characteristic. Rather, it reflects a process or range of processes” (p. 670). The importance of the process perspective on resilience is shown in most of the definitions, and it can be argued that they offer insights both into the development process as well as the current state of the resilience concept. As O'Dougherty Wright and colleagues (2013) state, we can see that “later definitions have become broader and more dynamic, in keeping with efforts to integrate the concept across levels of analysis and across disciplines” (p. 16). A suitable example for this development is the definition provided by Masten (2011): “The capacity of a dynamic system to withstand or recover from significant challenges that threaten its stability, viability, or development” (p. 494). Nonetheless, there is one widely used resilience definition, by Connor and Davidson (2003), which is concerned with personality characteristics: “(...) the personal qualities that enable one to thrive in the face of adversity” (p. 76). This definition is still applied in studies today, in particular, in studies that attempt to measure the resilience of individuals. The Connor-Davidson-Resilience-Scale (CD-RISC), developed by the two authors stated above, is one of the most used scales for this purpose.

2.3.5 Time

The literature on resilience stresses the importance of paying attention to the influence of context elements on resilience processes (Luthar, 2006; Luthar et al., 2000; Masten & Reed, 2002; Wyman, 2003), concerning time, environment, and culture (Kaplan, 2013; Rutter, 2000; Schoon, 2006). Individual attributes are important. For instance, it is reasonable to assume that high cognitive functioning will be a factor that supports development and advancement in many domains of life (Luthar, 2006). However, it needs to be stressed that,

besides taking into account personality characteristics, it is crucial to analyze resilience processes on account of intertwined context factors and the way these factors influence individuals as well as individuals' interactions and transactions with them. As Riley and Masten (2005) describe, "an individual is a living system, with the dual task of self-regulation and organization on the one hand (maintaining coherence as a living and developing organism) and adapting to the world in which the individual lives and grows on the other hand" (p. 15). In this section, insights about the three context factors of time, environment, and culture will be presented.

Resilience research is closely connected to research on the developmental processes of individuals. It is essential to be aware of the impact time can have on resilience processes. The concepts of stage-salient tasks or developmental tasks are important to consider in this respect. Stage-salient tasks are defined as "psychosocial milestones or accomplishments expected for people of different ages in a given historical or cultural context, often serving as criteria for judging how well a person is doing in life" (O'Dougherty Wright et al., 2013, p. 17). In resilience research, the achievement of these tasks is often perceived to define positive adaptation of individuals who are threatened by risks and adversities, and they are usually defined in terms of societal and cultural expectations for positive development at different stages in life (Masten, 2001; Schoon, 2006). For young children, this can mean the formation of secure attachment¹ with parents or achievements in primary activity areas, for example, learning to walk and to communicate, while the expectations for older children and adolescents are often connected to success in school, the formation of healthy social connections outside of the family, as well as the attainment of a certain autonomy in their lives, without losing important connections to supportive family members (Luthar, 2006; Luthar et al., 2000; Masten & Reed, 2002). All in all, as Masten and Reed (2002) note, developmental tasks "may vary from one culture to another to some degree, but these broad tasks presumably depend on human capabilities and societal goals that will be widely shared across cultures" (p. 75).

The second aspect central to the discussion of resilience and developmental processes are the developmental pathways of individuals. Resilience research needs to take into account the life courses of individuals from a longitudinal perspective to observe and

¹ While secure attachment is frequently discussed as an important protective factor in resilience research, some authors caution against overstating its importance. Leuzinger-Bohleber (2009), for instance, argues that a focus on secure attachment might result in an oversimplification of resilience processes in social contexts. The dynamics of relationships between human beings are not easy to understand and explain, but multifaceted and complex.

describe the mechanisms of how positive outcomes are achieved despite of risks and adversities (Masten & Reed, 2002). This viewpoint has its roots in theories like developmental systems theory or organizational theory, which stress the importance of interactive processes in social environments (Masten, 2001; O'Dougherty Wright et al., 2013). It became clear early on that we have to consider the concept of “developmental progression” (Luthar, 2006, p. 741; Luthar et al., 2000, p. 544) in resilience research, because threats as well as the strategies of individuals to deal with threats are not steady phenomena, but are strongly connected to circumstances relevant at given stages in the lives of individuals. Consequently, it is frequently stressed in the literature that resilience processes are malleable, i.e. that the resilience of individuals becomes evident at one point in time, but not at another (Fletcher & Sarkar, 2013; Luthar, 2006). Related to this are age-dependent processes during developmental pathways. For instance, young children are naturally more dependent on close, caring relationships with their parents than older children. On the contrary, due to the less advanced cognitive processes of young children, they are more protected from adversities of which they cannot fully understand the impact of, like in the case of violent conflicts or natural disasters. Nonetheless, so-called ‘sleeper effects’ have been demonstrated, which show that the interpretative capabilities of children in terms of early traumatic events can increase over time, which can then exert negative consequences on resilience processes later on (O'Dougherty Wright et al., 2013).

The influence of experiences on resilience processes is important to consider in resilience research. Both negative and positive experiences have to be taken into account (Rutter, 2000). As for negative experiences, there is some agreement in the literature that they can have negative or positive influences on an individual's adjustment in later life. This dichotomy is often described as the difference between “a sensitizing or steeling effect” (Rutter, 2000, p. 667). Rutter (2000) clarifies, in this respect, that the influence is determined by how negative experiences are conceived. Where they are seen as challenges to be overcome and dealt with in productive ways, the likelihood of them allowing for a positive learning effect that enables the successful management of future negative experiences is high. The mechanisms behind this are comparable to strategies for individuals to overcome phobias by successful confrontation of these phobias. Similarly, in the medical field, vaccinations expose the body to the pathogen to achieve desired protective effects (Rutter, 2000). Second, there is the question of the influence of positive experiences on resilience processes. Early on, in research about depression among adults, the phenomenon of “neutralizing or fresh-start life events” (Rutter, 2000, pp. 667-668) was discussed. These

events were described to bring individuals back to positive adaptation processes. A further concept to consider regarding the influences of negative and/or positive experiences on resilience processes are developmental cascades (Masten & Cicchetti, 2010; O'Dougherty Wright et al., 2013). In essence, this concept describes negative or positive chain reactions in the development of individuals, which can be triggered by the accumulation of negative or positive experiences in the lives of individuals and are often relevant to different domains of development. As Rutter (2000) describes for negative developmental cascades, for instance, "one of the important ways in which the sequelae of early adversity persists is through negative chain effects by which one negative experience predisposes to another" (p. 656).

Life turning points mark one of the most important concepts in resilience research (Masten, 2001; Masten & Reed, 2002; O'Dougherty Wright et al., 2013; Rutter, 1987). Turning points can be considered those events in a person's life which have a lasting positive influence on their further development, usually in various outcome domains of adaptation and success. Many studies have discovered that turning points can be connected to certain close and important relationships, like a good marriage or other romantic relationships, or the ability to leave adverse conditions and start anew in a more supportive environment, like when switching to a new, better school or university, and, as has been discovered in some studies, when individuals join the armed forces, providing them with daily routine and practical skills (Masten & Reed, 2002; Rutter, 2000; Toland & Carrigan, 2011). All in all, it is important to keep in mind that life turning points are usually not triggered by factors external to individuals. In fact, it is stressed in the literature that it is the responsibility of individuals to provide themselves with the right circumstances for life turning points. As Masten (2001) describes, "resilient youth appear to place themselves in healthier contexts, generating opportunities for success or raising the odds of connecting with prosocial mentors" (p. 233). Nonetheless, intervention efforts focused on individuals' life courses can be guided by questions of how to increase the chances for individuals to set themselves up for positive turning points (Masten, 2001; O'Dougherty Wright et al., 2013; Rutter, 1987; Toland & Carrigan, 2011).

Last, in this section, three aspects should be addressed regarding the influence of time in research and practice. For one, it needs to be stressed that a longitudinal research approach is often considered most appropriate for studying resilience processes over time. Luthar and colleagues (2000), for instance, refer to the necessity of longitudinal studies to examine resilience as "a dynamic developmental construct" (p. 555) and O'Dougherty Wright,

Masten and Narayan (2013) underline the ability to address “changes within-individuals over time rather than focusing on between-individual analyses” (p. 24). Longitudinal data enables researchers to examine time-specific aspects of resilience, as they have been described in this section, considering the description of developmental pathways, the observation of the influence of negative and/or positive experience throughout these pathways on resilience processes, as well as the definition of life turning points of individuals. Second, while resilience research has its origins in the study of children, more and more research is focused on later life stages today. Investigations about adolescents (Fergus & Zimmerman, 2005; Olsson et al., 2003) and adults (Bonanno, 2004; Bonanno et al., 2007) are on the rise. In particular, the work by George A. Bonanno on the resilience of survivors of the 9/11 terror attacks in New York City gained considerable attention in the last couple of years (Bonanno et al., 2007). Such studies, and this is the third point to mention in this paragraph, underline and remind us that individuals – even when they suffered tremendous adversities in their lives – can recover (Masten, 2001; Masten & Reed, 2002). And this can be the case even late in an individual’s biography. As Rutter (2000) states, “radical changes for the better in life circumstances can do much to ameliorate early risks, even when the changes occur later in life” (p. 674).

2.3.6 Environment

Resilience research places great attention on the environment of individuals. For understanding resilience processes, it is substantial to consider environmental influences, in particular, those connected to individuals’ social contacts and circles. Doing so is often referred to as taking an ecological perspective, which was described for high school students by Williams and Bryan (2013) in the following way:

“Essentially, the ecological perspective considers a broad range of factors within the students’ social environment to help identify the individual characteristics and contextual conditions that contribute to student outcomes (...). Therefore, the ecological model allows researchers to look beyond the commonly cited causes of resilience (e.g., personality traits) and considered environmental factors (e.g., family, school, community) that might have a significant impact on the educational resilience of students” (p. 292).

The ecological perspective, for one, emphasizes a change in viewpoint from the individual to the environment. A second main aspect is the focus on interactions and transactions between individuals in different contexts. At its core, an ecological perspective on resilience

processes operates on the assumption that positive outcomes go hand in hand with the constitution as well as changes in the environment. When adopting this perspective, we examine how different environmental factors can either hinder or advance the possibility for positive outcomes of individuals (Luthar et al., 2000; O'Dougherty Wright et al., 2013; Schoon, 2006). Similar to the element of time discussed above, resilience processes can vary depending on the environment and, therefore, different outcomes can be expected for different environments (O'Dougherty Wright et al., 2013).

There are various ways to describe and analyze the interactions and transactions of individuals with their environments. The ecological perspective outlined above represents a basic approach to understanding individual-environment relationships. A more complex approach is the bio-ecological systems model developed by Urie Bronfenbrenner (Bronfenbrenner & Morris, 2007; Rosa & Tudge, 2013). The essence of this model is that development is influenced by the interplay of individuals' personal characteristics as well as factors in their immediate (e.g., family) and wider (e.g., community) environments (Schoon, 2006; Toland & Carrigan, 2011). It comprises four parts: process, person, contexts, and time (Bronfenbrenner & Morris, 2007). Proximal interaction processes of individuals with their environment are in the center of the model which Rose and Tudge (2013) define as "the mechanisms that drive development" (p. 244). When analyzing these processes, we have to consider influences of personality characteristics (person), the environments individuals are operating in (contexts) as well as the influence of past and present events (time). In addition to such models, which stress interactions, transactions between individuals are important to consider in resilience research. Masten & Reed (2002) state that "in reality, there are few 'one-way arrows' in life" (p. 80). As a result, it is recommended to keep in mind that individuals who are influencing others in their social environments are usually also influenced by others. Masten (2001) describes this effect as the "bidirectional nature of influence in living systems" (p. 230). Common examples are the influence children can have on their parents' mental health as well as parenting quality and how students can affect their teachers' behavior towards them (Luthar, 2006; Masten, 2001; Masten & Reed, 2002; O'Dougherty Wright et al., 2013).

Time and time again, the overwhelming significance of the social environment on resilience processes has been discussed in the literature (Luthar, 2006; O'Dougherty Wright et al., 2013; Rutter, 2000). A positive social environment provided, for example, by the family, classmates in school, or by supportive individuals in the neighborhood and the wider community has been shown to have a considerable positive influence on the ability of

individuals to overcome adversities. As Luthar (2006) states, “resilience rests, fundamentally, on relationships. (...) strong, supportive relationships are critical for achieving and sustaining resilient adaptation” (p. 780). In this regard, Leuzinger-Bohleber (2009) highlights that it requires merely one positive social connection inside or outside the family to foster the resilience processes of adolescents. A main reason social connections are so important for resilience processes is their protective function. Relationships can be significant protective resources to support individuals to overcome risks and adversities, which holds true for children as well as adults (Luthar, 2006; Rutter, 2000). Research shows that this protective function can mostly be ascribed to support and control. On the one hand, close social connections can provide support in difficult situations. On the other hand, they can also have a crucial function of control, for instance, to prevent individuals from engaging in harmful or risky behavior (Luthar, 2006). On the contrary, it has been shown that weak or lacking social relationships will likely have a negative influence on individuals (Rutter, 2000). Moreover, it has been demonstrated that negative social influences can be destructive to the point of rendering otherwise protective and/or promotive personality characteristics ineffective (Luthar, 2006).

The family can be considered one of the most important social environments (Luthar, 2006; O’Dougherty Wright et al., 2013). Foremost, the influence of parents has to be stressed. In their role as caregivers, they are particularly important for early life stages, but it has been demonstrated in the literature as well that the parents’ influence often remains effective after childhood (Luthar, 2006). A significant factor related to resilience processes is parenting quality. In this respect, the parents’ warmth in the relationship with their children has been identified to play a substantial positive role. This is often connected with the factor of discipline, all together defining parenting quality to be characterized by both a good amount of love and attention as well as control and discipline (Luthar, 2006; Masten, 2001; Masten & Reed, 2002; Rutter, 2000). Further important factors are shared routines promoted by parents, like eating meals together in the family, and – unsurprisingly – the parents’ socio-economic status (Luthar, 2006; Masten & Reed, 2002). Moreover, bad parenting quality can have a significant negative effect on children (Masten, 2001). In this regard, researchers have demonstrated the connection between parental difficulties and at-risk families. Some suggest that the community can serve an important function to increase parenting quality by providing positive relationships. As Luthar (2006) describes, “the benefits of community supports to at-risk children are paralleled by those to their parents” (p. 772). Concerning the specific roles mothers and fathers play for positive adaptation, research has shown that a

good relationship with one parent can be sufficient (Luthar, 2006; Rutter, 2000). Furthermore, the influence of the wider family like siblings and grandparents has been discussed in the literature, often stressing the positive role of grandparents (Luthar, 2006).

Besides the influence of family, the wider social environment, e.g. schools, neighborhoods, and communities need to be considered as well (O'Dougherty Wright et al., 2013). Among the social environments outside the family, schools play one of the most important roles (Luthar, 2006; Rutter, 2000; Toland & Carrigan, 2011). In educational institutions, teachers can have a potential impact on resilience processes (Luthar, 2006; Toland & Carrigan, 2011). Moreover, often connected to experiences in school, peers and friends can be considered important social connections. Their influence is often described to be positive, but as Luthar (2006) states, “just as positive peer relationships can ameliorate effects of adversity, problems in this domain can exacerbate vulnerability” (p. 770). In addition, the literature underlines the impact of mentors in and outside schools, in particular, when the relationships between individuals and their mentors last over a long time period, so that the effects of the mentor-mentee relationships can take effect at life turning points (Luthar, 2006; Masten, 2001; Masten & Reed, 2002; O'Dougherty Wright et al., 2013). Concerning neighborhoods, research has shown that cohesion among neighboring families can have positive effects. In this respect, the concept of “collective efficacy” (p. 82) was introduced by Masten and Reed (2002), which describes the characteristics of positive neighborly relationships as a mixture of cohesion and social control. Last, in the community, supporting community organizations as well as extracurricular activities for students in the community can be beneficial. Nonetheless, such institutional support needs to be of high quality and structured to be effective (Luthar, 2006). Religious communities have been shown to have both positive as well as negative influences on resilience processes, the latter, for instance, can be the case if people develop fatalistic thought patterns through their religious beliefs (Luthar, 2006). The biggest negative factor, however, is community violence. Luthar (2006) states: “As with chronic maltreatment in the family, chronic exposure to violence in the community can have overwhelming deleterious effects, difficult for other positive forces to override and affecting multiple domains” (p. 766).

2.3.7 Culture

Many researchers have pointed out the importance of cultural aspects for resilience research (Ungar, 2008; Ungar & Liebenberg, 2011). It is claimed that when resilience is contextualized, besides aspects of time and environment, we need to consider the

sociocultural imprint of individuals. Neglecting cultural backgrounds might lead researchers to overlook important aspects grounded in the culture that influence resilience processes (Fletcher & Sarkar, 2013; Ungar & Liebenberg, 2011). In resilience research, there have been attempts to develop measures of resilience that include dimensions of sociocultural background. One notable example for such efforts is provided by Claus-Ehlers (2008). He developed a measure for cultural resilience “to explore how adversity and resilience influence the development of youth from diverse cultural backgrounds” (p. 210). Several other concepts to connect cultural aspects with resilience research are provided in the literature. However, by and large, aspects of culture have not sufficiently been integrated in resilience studies to this day (Ungar, 2008; Ungar & Liebenberg, 2011; Waller, 2001). Regarding research on culture and protective/promotive factors, for instance, O’Dougherty Wright and colleagues (2013) state that “to date, there has been surprisingly limited systematic investigation of culturally based protective processes” (p. 27). Moreover, in respect to the influence of culture on the definition of positive outcomes, Ungar (2008) criticizes that “there has been little cross-cultural validation of findings, nor rigorous inquiry (qualitatively or quantitatively) into culturally determined outcomes that might be associated with resilience in non-western cultures and contexts” (p. 219).

Western bias is at the center of the critique of lacking cultural considerations in resilience research. This criticism focuses on researchers acting on assumptions relevant to Western culture when analyzing the resilience processes of individuals with non-Western cultural backgrounds. Therefore, if culture plays a role in research, for example, when resilience processes of minority groups are examined, this is often done in relation to the researchers’ ‘home culture’, with little regard to cultural norms of the individuals studied (Ungar, 2008; Ungar & Liebenberg, 2011). In the United States, for instance, researchers have been known to be influenced by notions of the American Dream – often summarized as the success journey ‘from rags to riches’ – when defining the meaning of positive outcomes (O’Dougherty Wright et al., 2013). Consequently, it is recommended for researchers in the field to be aware of their own cultural values (Schoon, 2006), and, for readers, to take into account researchers’ cultural biases when interpreting findings of resilience research (Waller, 2001). As Waller (2001) states, “global, unitary formulations are particularly problematic when findings based on middle-class, European-American samples are inappropriately generalized to other populations” (p. 295). All in all, it is important to be aware of culturally sensitive approaches both for studying and understanding resilience processes today.

Culture can influence various elements of the resilience concept, on account of various specific practices, behaviors, and characteristics connected to cultural differences concerning, for instance, ethnic identity or religious beliefs (Luthar, 2006; O'Dougherty Wright et al., 2013; Waller, 2001). For one, the cultural background of individuals can significantly alter the determination of positive outcomes in different domains (Mahoney & Bergman, 2002; Schoon, 2006). Masten (2001) states that “clearly, the choices made about the adaptation criteria defining resilience will influence who is included in studies and will reflect cultural norms, whether or not these are articulated in the study” (p. 229). For the domain of education, Bartelt (1994) provides an interesting example for different interpretations of what it means to succeed. He describes the situation of Hispanic students in the United States, who are often deeply ingrained in a culture in which providing for the family is regarded to be highly important. It could, therefore, be considered resilient behavior for them to drop out of school and pursue full-time employment to support their families. This example motivated Kaplan (2013) to ask: “How do we distinguish academic success as resilience from dropping out as resilience” (p. 43)? A second aspect to consider is the influence of culture on protective processes. This can relate to culture providing protective systems to individuals, for instance, if cultural identity is connected to strong family values of support and coherence (Luthar, 2006). Moreover, scholars have asked for more research on the impact of known protective processes in different cultural settings (O'Dougherty Wright et al., 2013). Last, resilience researchers as well as practitioners should consider the impact of cultural factors when designing interventions, so that the needs of individuals from various cultural backgrounds can be met more precisely (O'Dougherty Wright et al., 2013).

3. Design, Search, and Sample

This chapter presents how the stages of designing, searching, and sampling were carried out in this systematic review. It describes the steps leading up to answering the review question in chapters 4, 5, and 6. The three subchapters outlined here thus form the basis for the further steps in this publication. Subchapter 3.1 presents the design of the review. The design captures and describes the elements needed to complete the systematic review and acts as a roadmap for the reviewer as well as the readers. After outlining the review process and the timetable for the review at hand, the review elements are discussed in three sections, addressing topic and purpose (Section 3.1.1), review question, conceptual framework and synthesis method (Section 3.1.2) as well as aspects of information management (Section 3.1.3). Subsequently, Subchapter 3.2 outlines the search strategy. It comprises three sections, illustrating the characteristics of the search (Section 3.2.1), the search parameters used (Section 3.2.2), and how the search by the education levels of high school and higher education was carried out (Section 3.2.3). At the end of Chapter 3, Subchapter 3.3 maps out the process of identifying studies eligible for answering the review question. Five inclusion criteria are presented in Section 3.3.1. Section 3.3.2 then discusses the selecting process on account of each of these criteria, using figures to illustrate the percentages of publications included and excluded at each step. Last, the results of the sampling stage are presented in a PRISMA Flow Diagram (PRISMA, n. d.) in Section 3.3.3.

3.1 Review Design

Every systematic review starts with the review design. The design has three main purposes: The first purpose is to specify the steps of the systematic review. This is necessary, since the steps taken can vary between different reviews. In other words, there are common steps all systematic reviews share, but there are also variations in terms of how many of these steps are included and at which point in the review process they are applied. The review steps comprise the basic plan of the publication. As Oliver and colleagues (2012) state, “by their very nature, as pieces of research, systematic reviews need a clear plan to get started” (section 8, para. 1). The steps for the review at hand are illustrated in Figure 5, and they are discussed in the next paragraph. The second purpose of the review design is to establish the main elements of the review. Similar to variations in review steps, the method of systematic reviewing offers variety in terms of many of its dimensions (Gough & Thomas, 2012; Gough et al., 2012a). Review projects differ, for instance, regarding their topics, purposes, review

questions, conceptual frameworks, synthesis methods, and information management processes. These six elements are discussed in sections 3.1.1 to 3.1.3. Last, the review design considers aspects of research management, in particular regarding the development of a schedule for the main review stages and steps. The schedule of the review at hand is illustrated and described at the end of the introductory section of this subchapter (see Figure 7 below).

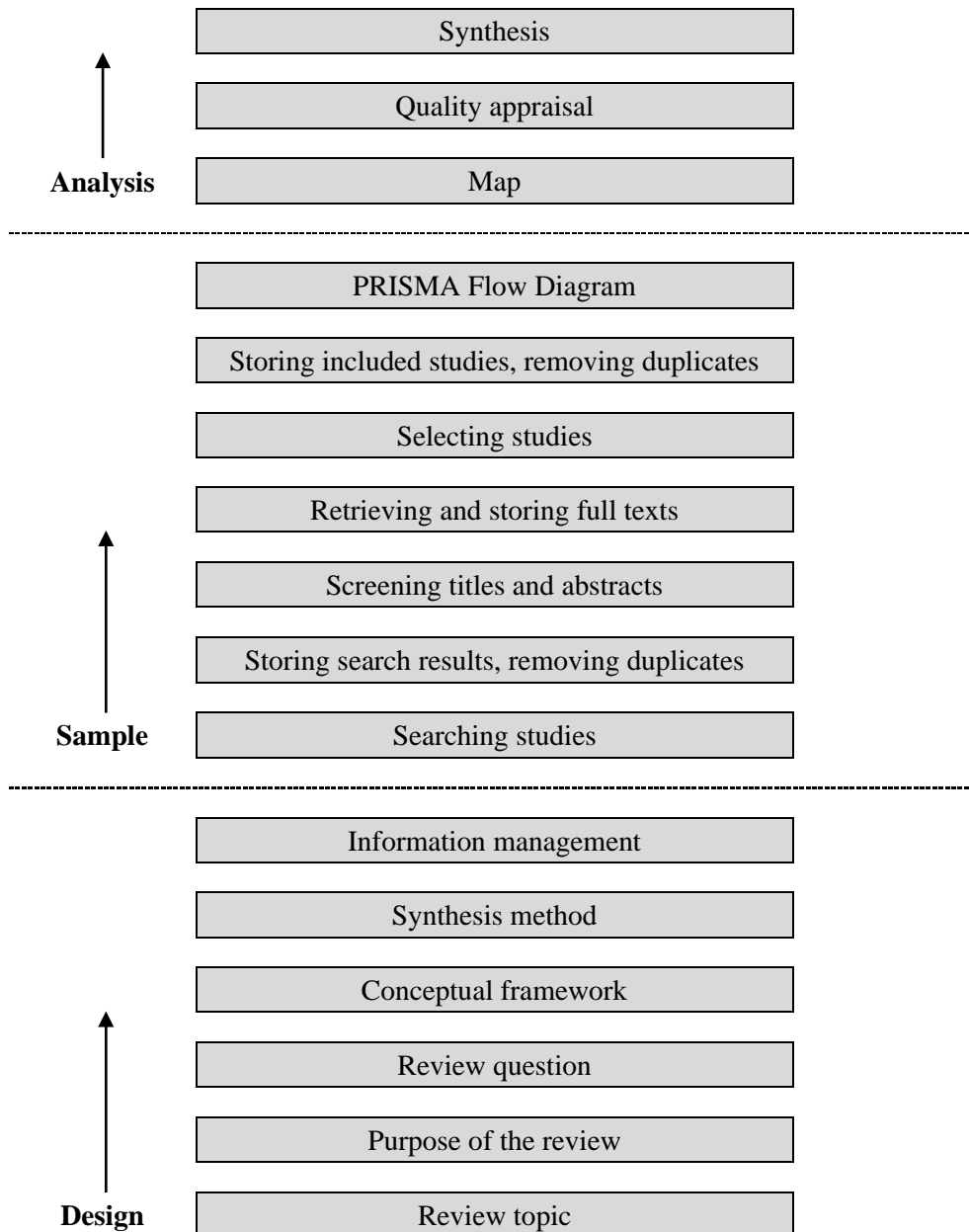


Figure 5. Systematic review process
(Created by the author, adapted from Brunton & Thomas, 2012)

The main phases and steps of the systematic review of this publication are illustrated in Figure 5. They can be summarized as developing the review design, collecting the sample studies, and analyzing these studies in a map, quality appraisal and synthesis. The individual steps within these phases have been adopted from Brunton and Thomas (2012). The review design phase comprises six steps in relation to six main elements of every systematic review. The second phase consists of the steps necessary to collect a sample of studies relevant to the review question. Seven steps describe how this sample is gathered. It begins by searching for studies relevant to the review topic and, in a second step, storing the search results and removing duplicates (see Subchapter 3.2). Thereafter, the reviewer initiates a screening and selection process (see Subchapter 3.3). At the screening stage, the titles and abstract of the search results are examined to determine which studies proceed to further review steps. A set of inclusion criteria developed considering the demands of the review question is used for this purpose. For the screening output, the reviewer retrieves the full texts, which are examined in a selection step, using the same pre-defined inclusion criteria employed for screening titles and abstracts. The selected studies are stored, and duplicates are removed where necessary. The results of searching, screening, and selecting are summarized in a PRISMA Flow Diagram (PRISMA, n. d.), which marks one of the most important figures in every systematic review (see Figure 18 in Section 3.3.3). The final phase of the review process is devoted to data analysis. The author groups the sample studies into different study types at a mapping stage (see Chapter 4). He then carries out a quality appraisal of these studies (see Chapter 5) and completes the review steps with a framework synthesis (see Chapter 6).

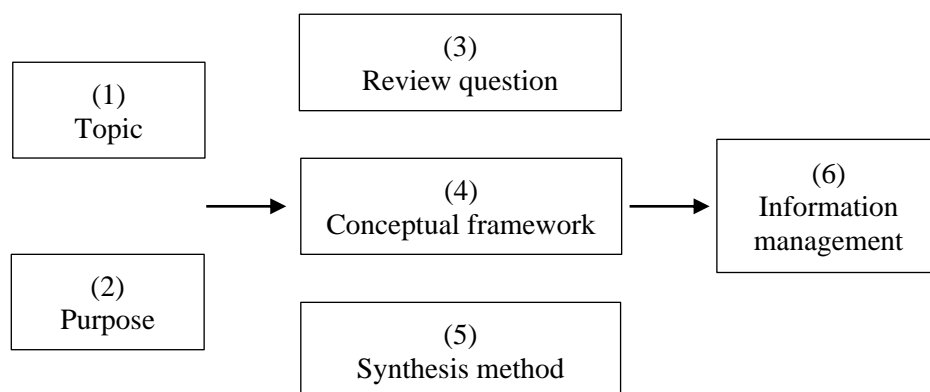


Figure 6. Elements of the review design
(Created by the author)

Figure 6 illustrates the core elements of the review design and the relationships between them. The review design starts with a topic of interest and a purpose. The topic summarizes what the systematic review is about while the purpose defines the circumstances of the review (see Section 3.1.1). As Gough and colleagues (2012a) state, “reviews and their findings vary on many different dimensions” (section 3, para. 3), which is due to them having different purposes to a large extent. In this publication, the author outlines the breadth, rigor, time, and structure of a systematic review with the purpose of a doctoral thesis. Further elements to consider for the development of the review design are the review question, the conceptual framework, and the synthesis method (see Section 3.1.2). All are influenced by the topic and purpose of the review, as Figure 6 illustrates. It is particularly important to gain a clear understanding of the review question early, because this question has a strong impact on many steps of the review process (Cherry & Dickson, 2014; Gough & Thomas, 2012). For the review at hand, the author developed a conceptual framework, which is a common characteristic of theory-driven systematic reviews (Gough & Thomas, 2012). The decision for the conceptual framework also influenced the choice of a framework synthesis (Thomas et al., 2012) as the synthesis method in this publication.

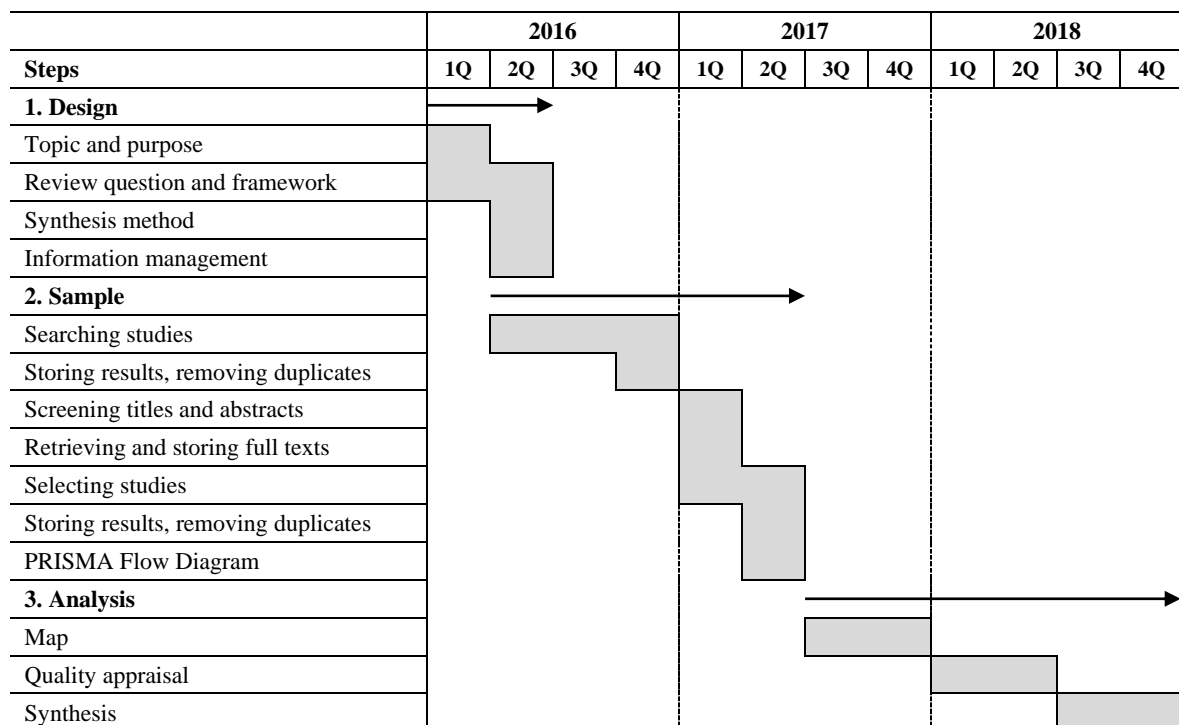


Figure 7. Schedule of this systematic review
(Created by the author)

Last, it is a crucial part of the review design to have a suitable process for handling various kinds of information in place (see Section 3.1.3). Systematic reviews generate large amounts of information, for instance, regarding literature selected for synthesis and the analysis of this literature. Proper information management procedures are a hallmark of high-quality reviews (Brunton & Thomas, 2012; Pilkington & Hockenull, 2014).

The last part of the review design is to build a review schedule in which the review steps and the time required to complete them are specified. Figure 7 shows the schedule for the systematic review at hand. It illustrates that the review process took three years, starting in January 2016 and ending in December 2018. Half a year was needed for the review design (January to June 2016). The review sample was collected in one year and three months (April 2016 to June 2017), the search for relevant publications and the selection of the review sample studies requiring the most time and effort. In the third and last review phase, data analysis demanded one and a half years of work (July 2017 to December 2018), half a year each for creating the review's map, quality appraisal, and synthesis. All in all, the review process was less linear than illustrated in Figure 7. There were overlaps between phases, and most of the steps required various iterations to complete. Moreover, before the start of the review schedule in 2016, much preliminary work had already been accomplished for this publication, in particular regarding the conceptual framework of resilience (see Chapter 2). The author had also carried out an extensive analysis of the literature on the systematic review method, using the excellent books on the method "An Introduction to Systematic Reviews" (Gough et al., 2012b) and "Doing a Systematic Review: Student's Guide" (Boland et al., 2014). While the latter offered practical guidelines for carrying out a systematic review, the publication of the EPPI-Centre (<https://eppi.ioe.ac.uk>) by Gough and colleagues (2012b) provided the theoretical underpinning for the review process.

3.1.1 Review Topic and Purpose

The review design starts with the development of a review topic by which the reviewer determines "what the review is about" (Oliver et al., 2012, section 1, para. 1). There are two main topic categories described in the literature: Reviews can either start with a theoretical topic or a practical topic (Oliver et al., 2012). The publication at hand is guided by a practical problem. Specifically, the author wants to answer the following question:

Why do some students perform well in high school, higher education, and the transition despite facing severe challenges and obstacles in their lives?

To answer this question, the author uses the resilience concept, which offers one of the most prevalent frameworks to explain individuals succeeding against the odds (Luthar 2006; Masten, 2001; Schoon, 2006). In particular, he aims to find out how the resilience concept can contribute to our understanding of the academic success of at-risk students in high schools and higher education institutions, and how we might use this knowledge to improve these students' academic success. Consequently, this systematic review is guided by a problem in education, and this problem seems worth to be addressed (Thomas et al., 2012). It is the author's belief that understanding and applying resilience processes can contribute to improving the academic success of students facing risks and adversities in their lives and educational pathways.

Table 3. Search results in PROSPERO from the 15th of January 2016

No.	Registered	Title	Status
1	26.09.2012	Adverse effects of video game play on health, behavioral and educational outcomes in longitudinal studies of young people	Discontinued
2	05.06.2014	Systematic review of universal school-based resilience interventions targeting adolescent tobacco, alcohol or illicit drug use: Review protocol	Ongoing
3	19.09.2014	School-based positive psychological interventions for improving well-being in adolescents: A systematic review	Ongoing
4	23.04.2015	The preventive effectiveness of the Penn Resiliency Program (PRP) and its adapted versions: Protocol for a systematic review and meta-analysis	Ongoing
5	10.06.2015	School-based anxiety and depression prevention programs for young people: A systematic review and meta-analysis	Completed, published
6	03.09.2015	Systematic review of universal resilience interventions targeting child and adolescent mental health in the school setting	Ongoing
7	24.11.2015	Are effects of mental health promoting interventions among students in tertiary setting sustainable? A systematic review	Completed, published
8	11.12.2015	The association between physical activity and happiness in university students	Ongoing

It is recommended in the methodological literature to carry out scoping searches to determine whether the same or a similar topic has been addressed in another systematic review. A further purpose of scoping searches is to investigate whether there is enough

research available on the topic of interest (Cherry & Dickson, 2014; Dunder & Fleeman, 2014). To answer this question, the author turned to the database of the Education Information Resources Center (ERIC) (<https://eric.ed.gov>), which is the prime data source for the publication at hand (see Subchapter 3.2). Using the search term ‘resilience’, those studies were searched in the database which potentially apply the resilience concept in the domain of education. The results indicated that there are many such studies available in the ERIC database, particularly for the education levels of high school and higher education. In fact, the scoping search instigated that most studies on academic resilience in ERIC refer to these two education levels, which is a result that was reproduced at the searching stage. Second, the author carried out a scoping search in the online database of PROSPERO (<https://www.crd.york.ac.uk/prospéro/>), to determine whether a systematic review with the same or a similar topic has been carried out before. Using PROSPERO for this purpose is recommended in the literature (Cherry & Dickson, 2014), because it is a comprehensive source to identify other systematic reviews. Two searches at two different times have been carried out in PROSPERO. The results are illustrated in tables Table 3 and Table 4, and they are discussed next.

Table 4. Search results in PROSPERO from the 10th of April 2018

No.	Registered	Title	Status
1	21.02.2016	Effectiveness of interventions to alleviate maths anxiety	Ongoing
2	10.05.2016	School-based resilience interventions for modifying salient risk factors which lead to the development of chronic diseases in children and adolescents: Systematic review protocol	Ongoing
3	27.07.2016	Understanding resilience among registered health care professionals and students: A literature review protocol	Ongoing
4	20.10.2016	Adult community learning and wellbeing	Ongoing
5	02.12.2016	A systematic review of burnout among nursing academics	Ongoing
6	12.05.2017	Universal classroom-based and teacher-delivered programs targeting social-emotional learning in primary education: A systematic review and meta-analysis	Ongoing
7	05.06.2017	Efficacy of psychological interventions in college and university students: A meta-analytical review	Ongoing
8	02.12.2017	Preschool and school-based mindfulness programmes for improving mental health and cognitive functioning in young people aged 3 to 18 years	Ongoing
9	09.01.2018	Effectiveness of educational interventions that promote/build resilience in undergraduate students: A systematic review	Ongoing

3. Design, Search, and Sample

10	11.01.2018	Systematic review of interventions targeted to the mental health and well being of university student populations	Ongoing
11	15.01.2018	A systematic review examining the relationship between self efficacy and resilience in adolescent pupils in school	Ongoing
12	19.01.2018	A systematic review of coping mechanisms used by school bully-victims	Ongoing
13	23.01.2018	Universal resilience training in school	Ongoing
14	12.02.2018	What is known about mental health interventions for students in higher education? A review of reviews	Ongoing
15	14.02.2018	Effectiveness of various strategies for reduction of stress among school students: Systematic review protocol	Ongoing
16	06.04.2018	The impact of universal school-based social and emotional learning interventions on adolescent mental health. A component-centred meta-analysis	Ongoing

The two scoping searches in PROSPERO yielded the following results: In the first PROSPERO search, which was carried out at the beginning of the review design phase, on the 15th of January 2016, 49 systematic reviews were found using the search term ‘resilience’. Of these reviews, only eight relate to the field of education (see Table 3), and none of them are connected to the topic of the publication at hand. The second scoping search in PROSPERO was carried out on the 10th of April 2018 during the data analysis phase for this systematic review. The author undertook this second step to assure that no other similar review had been carried out between 2016 and 2018, which would have been necessary to report on. Using the same search parameters as in the first search, 198 systematic reviews were found to be linked to the resilience concept. This time, 16 reviews were relevant to education (see Table 4). All in all, there were no similar systematic reviews found in the two PROSPERO scoping searches. When comparing the results for the two search terms, a substantial rise in the number of systematic reviews on resilience is evident between January 2016 and April 2018. The resilience concept appears to gain traction in the systematic reviewing community. Regarding the reviews relevant to education, an increase from eight in 2016 to 16 in 2018 is shown in the data.

The second step of the review design is to consider the review’s purpose and its impact on how the review is carried out. As Gough and Thomas (2012) emphasize, “reviews do not exist in isolation” (section 2, para. 1). We have to understand the review in context because the context influences the dimensions to consider in the review process. While most systematic reviews share commonalities, there are dimensions in which they can differ from each other (Gough & Thomas, 2012; Gough et al., 2009; Gough et al., 2012a). In fact, reviewers can choose between a variety of options for different elements of their work.

Defining these elements goes hand in hand with a review's purpose and it has been discussed in the literature that choices taken by the reviewers at this stage have consequences for all further steps in the review process (Gough & Thomas, 2012). For this publication, the design of the review elements is dictated to a high extent by its purpose of being a doctoral thesis. This does not affect the quality of the various steps carried out, but it influences the decisions on some of its aspects, in particular concerning the review's "extent of work" (Gough & Thomas, 2012, section 2, subsection 1, para. 1), which will be discussed next.

The purpose of a review impacts the extent of work required to complete it. Three aspects need to be considered: First, it needs to be determined early, how much work can be accomplished in a review (Gough & Thomas, 2012). This includes considerations about breath, depth, and rigor, which relates, for instance, to the number of sources in which publications are searched for the review or the breadth of the inclusion criteria defined to select the publications relevant to the review question (Gough & Thomas, 2012). A second important dimension to consider is the time and other resources available to the reviewer (Brunton et al., 2012; Gough & Thomas, 2012). The literature recommends paying close attention to the available resources when planning a systematic review. Reviewers should have a clear idea of the "work" to be done" (Brunton et al., 2012, section 1, para. 1) to succeed in their research endeavor. Last, the extent of work for a review also relates to its structure (Gough & Thomas, 2012). This entails important decisions on the review steps to be carried out, for instance, when determining whether the review should include a synthesis phase or whether it is enough to provide a map of the research literature (Gough & Thomas, 2012; Oliver & Sutcliffe, 2012).

In a doctoral thesis, the systematic reviewer is faced with limited possibilities concerning the extent of work that can be accomplished. This is the case for the searching stage, in particular, the breadth of searching has to be constricted to keep the workload manageable for a reviewer who is working without a team. A truly exhaustive search is thus impossible to conduct for a doctoral thesis. While the author can cover a small part of the research literature on the topic of interest only, he does so in great detail in this publication, however. The research literature included is studied in great depth. Moreover, the review steps are completed as rigorously as possible, paying attention to important quality aspects of systematic reviewing along the way like appropriate information management measures (Brunton & Thomas, 2012; Pilkington & Hockenhull, 2014). In general, the review's structure includes every step commonly addressed in the methodological literature, including a synthesis. Concerning resource constraints, two points must be mentioned for a

doctoral thesis. First, there are time constraints considering that a thesis should be completed within a certain timeframe. Second, the review cannot be executed as a team effort. Most systematic reviews are carried out by review teams to divide the workload and to enhance the reliability of the review steps, for instance, by carrying out data extraction and analysis independent from each other and comparing the results later on (Fleeman & Dundar, 2014; Greenhalgh & Brown, 2014; Harden & Gough, 2012; Oliver & Sutcliffe, 2012; Oliver et al., 2012). This lack of inter-reviewer reliability will be critically addressed when discussing the limitations of this publication in Subchapter 7.3.

3.1.2 Review Question, Conceptual Framework, Synthesis Method

The review question is the most important element of every review design. It is defined as “a formal statement of the intention of (...) [a] systematic review” (Cherry & Dickson, 2014, section 3, subsection 4, para. 2). Cherry and Dickson (2014) delineate between five main types of review questions, which are “descriptive”, presenting a certain idea, “normative”, intending to guide the reader in a certain direction, “observational”, examining the connections between different variables, “causal”, examining the impact some variables have on other variables, or “theoretical”, investigating how a framework of variables influences situations and processes (section 3, subsection 4, para. 2). The quality criteria of a review question can be summarized in three aspects: For one, the question should be of interest to the reviewer. Second, it should entail a reasonable “extent of work” (Gough & Thomas, 2012, section 2, subsection 1, para. 1), so that the reviewer can deliver a good-quality outcome in relation to how much time and other resources are available. Third, most of the required research literature to answer to review question should be accessible (Cherry & Dickson, 2014). All in all, every systematic review is built on its review question. Gough and Thomas (2012) state, “the review question drives all other aspects of the review (just as research questions drive the focus of primary research)” (section 7, subsection 2, para. 1). Most steps performed in a systematic review depend on the review question.

The systematic review presented in this publication is built on the following review question:

How does the resilience concept impact empirical research on the academic success of students in high schools and higher education institutions?

To answer this question, the author collects, categorizes, and analyzes empirical research studies retrieved from the database of the Education Information Resources Center (ERIC). He investigates how the connection between resilience and academic success is examined in research at the levels of high school and higher education (see Chapter 4). This provides an overview of the research landscape (Brunton & Thomas, 2012; Gough et al., 2003) and represents the first part of answering the review question. After a phase of quality appraisal (see Chapter 5), a subset of qualitative data studies is analyzed in a framework synthesis, which marks the second step of answering the review question (see Chapter 6). The synthesis illustrates how the seven main elements of the resilience concept are addressed in empirical research studies on resilience and academic success. Furthermore, the author intends to provide insights for practice in terms of the potential resilience research provides for our understanding of academic success in high schools and higher education institutions as well as the transition between the two education levels. Recommendations for applying the results of the synthesis in this publication to practice are presented in Chapter 7.

Three aspects should be addressed for the review question of this publication. The review question type is theoretical because it prompts the reviewer to apply the framework of resilience in the review (Cherry & Dickson, 2014). Regarding the three quality criteria of a review question described above it can be said that the author is motivated to answer the review question, in particular, because of the potential practical benefits it yields. As a practitioner in the field in higher education management, to broaden one's understanding of how to improve the success-rates of students is considered highly useful (see Chapter 1). Concerning the second quality indicator, the review question can also be addressed in a doctoral thesis in terms of the amount of work necessary. It is broad enough to include large areas of the research field, but also narrow enough, solely focusing on the education levels of high school and higher education, that the review effort remains manageable for an individual reviewer considering constraints of time and other resources as a doctoral student. In addition, regarding the third quality criteria presented by Cherry and Dickson (2014), the author is confident that the required research literature on resilience and academic success is available and accessible. In most cases, studies found in the ERIC database are easily obtained online or for the university's library. Last, as described in the literature (Gough & Thomas, 2012), the review question is the foundation for all further steps of this publication, starting with the conceptual framework which will be addressed subsequently.

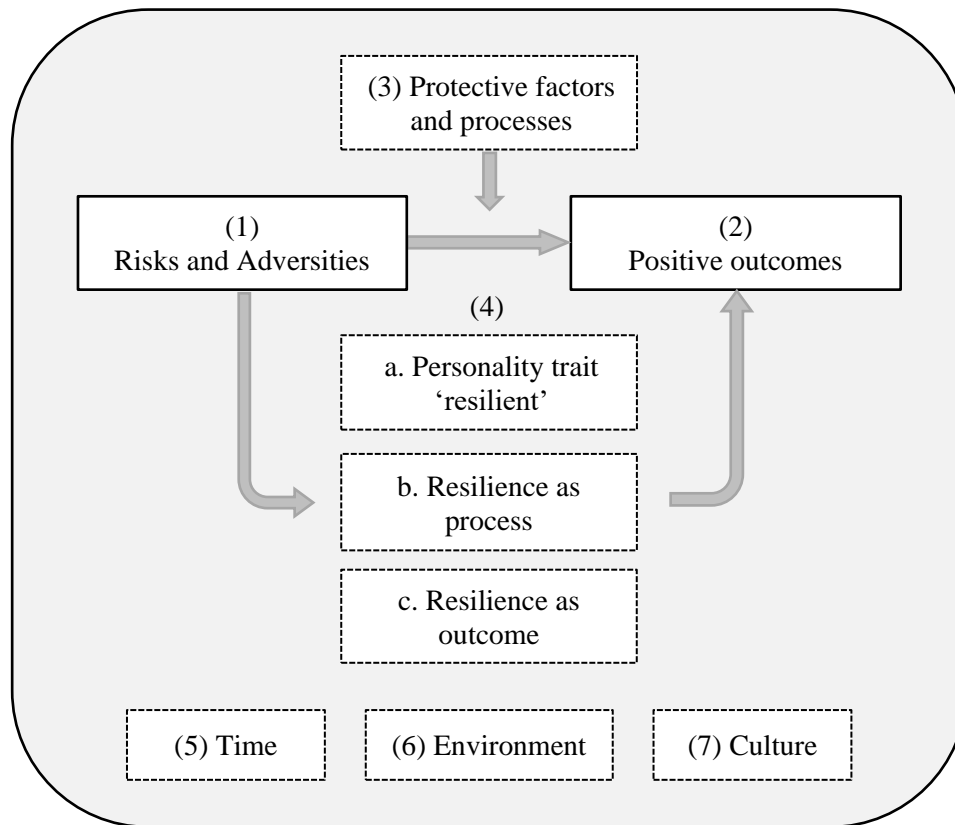


Figure 8. *Conceptual framework of resilience*
(Created by the author)

The next aspect to consider at the design stage of a systematic review is its conceptual framework. The conceptual framework of this publication serves to emphasize the elements of the resilience concept to consider for its synthesis. It outlines “what is already known” (section 1, para. 1), as Oliver and colleagues (2012) state. Figure 8 shows this publication’s conceptual framework of resilience. The framework comprises seven elements, starting with the essence of the resilience concept: (1) ‘Risk and adversities’ and (2) ‘Positive outcomes’. The third element describes the characteristics and processes that enable individuals to overcome their adverse situations: (3) ‘Protective factors and processes’. To illustrate the three different perspectives on resilience, the (4) ‘Conceptualizations of resilience’ as a trait, a process, and an outcome are shown as the fourth element. Last, the context elements of (5) ‘Time’, (6) ‘Environment’, and (7) ‘Culture’ are considered in the framework. Generally, the literature shows that systematic reviews are not required to include conceptual frameworks. In fact, some reviews stop after the mapping stage (Gough & Thomas, 2012). In this publication, however, the choice to apply a conceptual framework was evident, since the review question centers on resilience as a theoretical concept. The framework was

developed according to the state of research on resilience in the literature. It is described in detail in Chapter 2.

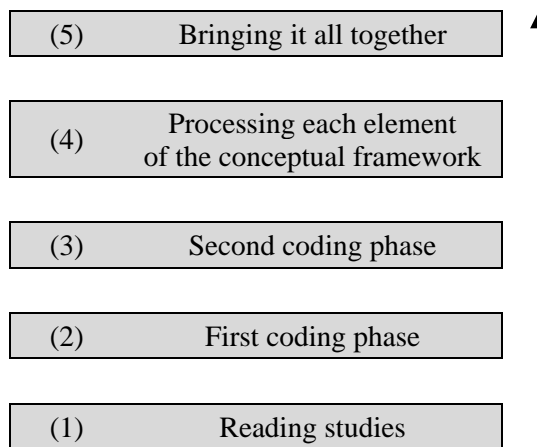


Figure 9. *Steps of a framework synthesis*
(Created by the author, adapted from Thomas et al., 2012)

Framework synthesis was chosen as the synthesis method of this publication (Thomas et al. 2012). The method was deemed the most applicable on account of the review's strong link to the conceptual framework of resilience. It consists of five steps, which are illustrated in Figure 9. Framework syntheses start with the reviewers immersing themselves in the literature. The studies included in the synthesis are thoroughly read, paying particular attention to results, interpretations, and conclusions. The aim of this step is to gain a comprehensive overview of the material available for synthesis. In addition, it is possible to carry out the first analysis steps, for instance, by defining initial themes for the synthesis (Thomas et al. 2012). Second, the reviewer starts the coding process of the included studies. In the first coding phase, the material is analyzed using categorical coding (Oliver & Sutcliffe, 2012). The studies are coded in terms of their relation to the elements of the conceptual framework. The second coding phase utilizes aspects of open and axial coding. In open coding, the reviewer codes the passages found in categorical coding with new themes to use for the analysis. Axial coding is then applied to establish connections between the themes found via categorical and open coding and to establish overarching themes for analysis. In the last two steps of framework synthesis, the results of the coding stages are processed (Step 4) and merged (Step 5) for synthesis. The reviewer defines how the results of the first three synthesis steps should be analyzed and presented for each element of the conceptual framework. The method of framework synthesis will be discussed in more detail in the introductory section of Chapter 6.

3.1.3 Information Management

The last part of the review design is to determine how the information used in the systematic review can be managed in a stringent and reliable way.

Table 5. Information management tasks and tools

Review stage	Review Step	Task	Tool
Design	Review topic	Planning/Writing	Microsoft Word; Notion
	Purpose of the review		
	Review question		
	Conceptual framework		
	Synthesis method		
	Information management		
Sample	Searching studies	Data search	ERIC database
	Storing search results	Reference management	Citavi
	Removing duplicates	Data analysis	Microsoft Excel
	Screening titles/abstracts		
	Retrieving full texts	Data search	Google Scholar; library
	Storing full texts	Data storage	Electronic folders (structured)
	Selecting studies	Data analysis	Microsoft Excel; Adobe Acrobat XI Pro; ERIC database
	Storing included studies	Data storage	Electronic folders (structured)
	Removing duplicates	Data analysis	Microsoft Excel
	PRISMA Flow Diagram	Data analysis	Microsoft Word
Analysis	Map	Data analysis	Microsoft Excel; Workflowy
	Quality appraisal		
	Synthesis		

The literature describes that information management procedures are integral to ensuring the quality of systematic reviews (Brunton & Thomas, 2012; Oliver et al., 2012; Pilkington & Hockenhull, 2014). As Brunton and Thomas (2012) argue, “good information management does not guarantee that a review will be successful, but it does lay the groundwork on which a successful review can build” (section 8, para. 1). Most systematic reviews deal with a considerable amount of information, which makes it highly important to the reviewer not to lose track of the material that includes this information. This aspect gains relevance during a review because most reviews are not entirely linear processes, but they contain iterative processes (Brunton et al., 2012). In fact, it is often necessary to return to information analyzed in prior steps later in the review process. As a result, reviewers can run into problems if information is not properly stored and categorized. In the publication at hand,

considerable effort was made to ensure high-quality information management. Each task in the review is connected to one or more tools to handle and process information, as illustrated in Table 5 and described in the paragraph below. To provide the reader with a better overview on how the information was used, the author includes multiple figures in each chapter, in particular, regarding the synthesis results in Chapter 6. Moreover, the appendix includes supplementary information for the mapping stage (see appendices 1 and 2), quality appraisal (see Appendix 4), and synthesis (see appendices 3 and 5).

Every step of this systematic review is connected to one or more tools of information management. Table 5 illustrates that there are five main tasks relevant to information management: planning/writing, data search, reference management, data analysis, and data storage. The prevalence of these tasks varies according to the review stages, as presented next:

- *Design:* At the design stage, planning and writing tasks are most dominant, and the author used Microsoft Word (2016, Version 16.0.4849.1000) and Notion (Notion Labs Inc., 2019) for information management. Notion is a lesser-known application, which combines elements of word processing, information storage, and project management. Its accessibility via the web browser is a feature of particular use for the author, because the information stored in Notion was easy to access at different computers.
- *Sample:* The sample stage included four different tasks. First, two steps of data search were accomplished. The main searching step, in which the author collected the initial literature sample, was carried out at the beginning of the stage in the online interface of the Education Information Resources Center (ERIC). This will be described in detail in Subchapter 3.2. The other task related to searching took place at the end of the screening stage, when the full texts of those studies determined to proceed to further review steps during screening were retrieved. The author utilized Google Scholar (<https://scholar.google.de>) and the library catalogue KARLA of the University of Kassel (<https://hds.hebis.de/ubks/index.php>) for this task. Second, Citavi (Version 6.0.0.2; Swiss Academic Software GmbH, 2019) was the reference management software chosen. This application offers many useful features for handling large quantities of references, for instance, DOI-search and the auto-formatting of entries for reference lists. Third, almost all data analysis tasks at the sampling stage were carried out in Microsoft Excel (2016, Version 16.0.4849.1000). This included the removal of duplicate studies after searching, the screening and selecting stages, and the removal of duplicates

after selecting was completed. In addition, Adobe Acrobat XI Pro (Version 11.0.23) and the controlled vocabulary in the ERIC database was used for selecting. The PRISMA Flow Diagram (PRISMA, n. d.), which summarizes the results of data analysis, was built in Microsoft Word. Data storage (full texts and included studies) was carried out with a structure of electronic folders in Microsoft Windows (Windows 10 Education, Version 1703).

- *Analysis:* Data analysis for the map, quality appraisal, and the synthesis of this publication was carried out in Microsoft Excel and WorkFlowy (WorkFlowy, Inc., 2019). WorkFlowy is a web-based application for storing text-based information. It combines the advantages of being accessible from everywhere via a web browser and the ability to tag texts conveniently. Tagging was highly advantageous for finding literature data relevant to data analysis. It was applied in all three steps of the analysis stage.

The results for the steps of searching (see Subchapter 3.2), screening/selecting (see Subchapter 3.3), the map (see Chapter 4), quality appraisal (see Chapter 5), and the synthesis (see Chapter 6) were stored in extensive Microsoft Excel sheets. Essential publication data used at these steps are provided in the main text of this thesis. In addition, five appendices offer additional information about data and analyses in this publication.

3.2 Search Strategy

A search strategy determines when, where, and how studies are searched in a systematic review. It has been defined in the literature as “drafting, testing and implementing a structured plan for searching” (Brunton et al., 2012, section 1, para. 1). Reviewers are encouraged to make clear decisions on the design of their search strategy. A comprehensive design “is derived from the review question and its conceptual framework” (Brunton et al., 2012, section 4, para. 1), which increases the chances of finding relevant studies in the literature, i.e. the studies needed to answer the review question. Moreover, a well-designed search strategy enables the reviewer to recognize and prevent various biases at the searching stage (Brunton et al., 2012) like publication bias, language bias, or location bias, which will be discussed in the next paragraph. Every search strategy in a systematic review should include at least three parts: a statement and description of the search terms used, a list of the sources the search was carried out in, and a discussion of limitations of the search strategy

(Brunton et al., 2012) The search terms and sources will be described in Section 3.2.2, as part of the description of the search parameters in this subchapter. A discussion of the limitations of the search strategy will be part of the section on the search characteristics (see Section 3.2.1).

It is important to be aware of various biases at the searching stage of a systematic review. Next, the author discusses the three most relevant biases for the searching stage of the publication at hand:

- *Publication bias* summarizes the phenomenon that studies showing positive results are published to a higher extent than studies which show inconclusive, statistically insignificant, or negative results (Brunton et al., 2012; Dundar & Fleeman, 2014). Every reviewer has to consider this bias, because it is likely that a review will include a large proportion of studies confirming their hypotheses, since these are the publications published most. Publication bias should be acknowledged all the more, because it relates to many other biases which can threaten the quality of a review's results, like time lag bias, language bias, or citation bias (Brunton et al., 2012). For the review at hand, publication bias is recognized, however, it is expected to be not very influential for the analysis. As described for this review's characteristics (see Section 3.2.1), the search strategy focuses on the collection of "sufficient concepts" (Brunton et al., 2012, section 1, para. 2). Publication bias, conversely, is most relevant to those reviews that search for "sufficient studies" (Brunton et al., 2012, section 1, para. 2), also referred to as "exhaustive" (Brunton et al., 2012, section 2, para. 2) searches.
- *Language bias* entails that most systematic reviews will include research published in one language only (Brunton et al., 2012; Dundar & Fleeman, 2014). This applies to the review at hand, because the query in the database of the Education Information Resources Center (ERIC) only yielded studies in English. In this review, the decision to work solely with studies published in English is part of reducing the scope of the search (see Section 3.2.1).
- *Location bias* is the third bias to be noted in relation to the search strategy of this review. It entails that search results might be biased in terms of the prevalence of particular countries the research literature applies to (Dundar & Fleeman, 2014). This bias is relevant to the publication at hand. Most of the search results collected in the ERIC database are published in the English-speaking world (see Chapter 4). As it is the case for language bias, location bias is acknowledged and accepted as a necessary means in

relation to the decision of reducing the scope of the search in this publication (see Section 3.2.1).

In summary, the discussion shows that biases are difficult to prevent in systematic reviews, but it is important to acknowledge them as well as to ensure transparency about expected biases. Publication bias is difficult to constrain, but it is expected to impact this review less than it would be the case for a review that carries out a full-scale search (Brunton et al., 2012, section 2, para. 2). Language bias and location bias, however, are a side product of reducing the scope of the search for this publication by searching in the ERIC database only. This will be discussed in more detail in the following section.

3.2.1 Search Characteristics

The methodological literature describes two main search approaches for systematic reviews: searching for “sufficient studies” (Brunton et al., 2012, section 1, para. 2) and searching for “sufficient concepts” (Brunton et al., 2012, section 1, para. 2). The two approaches address the question of how inclusive the search in a systematic review needs to be. Searching for sufficient studies describes a search that aims to collect as many publications as possible, “identifying as many (ideally all) studies which fit the inclusion criteria as is possible to locate, thus being as comprehensive as possible” (Brunton et al., 2012, section 2, para. 1). A search for sufficient concepts, conversely, is more focused. When searching this way, the reviewer focuses on acquiring enough studies that include the concepts needed to answer the review question. As Brunton and colleagues (2012) describe, “in attempting to identify a range of concepts, the review may therefore reject studies that, although on topic and method, do not contribute any new concepts to the synthesis” (section 3, para. 3). Due to the strong connection of this review to a specific theoretical background, the publication at hand applies the approach of searching for specific concepts. The author is looking for concepts that relate to the different elements of the conceptual framework of resilience. As a result, it is unnecessary to gather as many studies as possible, but more practical to search and find the most relevant studies for resilience at the education levels of high school and higher education.

The second aspect to consider when designing the search characteristics is to achieve a balance between the sensitivity and the specificity of the search (Brunton et al., 2012; Cherry et al., 2014). This duality describes the need to ensure that the search strategy results in enough relevant publications (sensitivity) and not too many irrelevant publications (specificity) (Dundar & Fleeman, 2014). As Brunton and colleagues (2012) state, sensitive

searches “identify as much relevant material as possible” (section 5, subsection 1, para. 11), while specific searches yield “fewer irrelevant documents compared to the number of relevant ones” (section 5, subsection 1, para. 11). In this publication, the aspect of specificity and sensitivity is not approached in a one-directional manner. The search strategy was designed to be as specific as possible in relation to the specific focus of the review question on the conceptual framework of resilience. However, the search also aimed to be highly inclusive concerning the literature available in the ERIC database. The database query was thus designed to be broad, using the search term ‘resilience’, so that a large amount of relevant studies could be gathered. The details of this approach will be described in the next section (3.2.2). All in all, the search strategy of this systematic review could be summarized as an exhaustive search for sufficient concepts in the ERIC database. Nonetheless, by focusing on one database only and reducing the scope in terms of education levels as well as language and locations of publications, the author aimed for a search strategy that can be considered “reasonable” (Brunton et al., 2012, section 2, subsection 2, para. 4) in terms of depth, breadth, rigor as well as time and other resources.

As described in the introduction of this subchapter, it is part of the search strategy to describe its limitations in a systematic review (Brunton et al., 2012). Three limitations are to be emphasized for the search strategy applied in this publication. First, the scale and scope of the search have been reduced. The scale was decreased by using one database only, and no further sources nor search methods were applied like hand searching (Dundar & Fleeman, 2014) or reference list checking² (Brunton et al., 2012). As a result of the database search, electronic publications were considered exclusively (Gough & Thomas, 2012) and, because of using the ERIC database, most of the studies found were published in English-speaking countries and in the English language. Regarding the scope of the search, the review was limited to the education levels of high school and higher education. As shown in Section 3.2.3, this reduces the number of search results remarkably. Both scale and scope reduction were necessary to keep the review manageable for the purpose of a doctoral thesis (see Subchapter 3.1). Nonetheless, many irrelevant studies were found at the searching stage, which – particularly concerning sensitivity – is considered the second limitation of the search strategy. The strategy has proven to be less “reasonable” (Brunton et al., 2012, section 2, subsection 2, para. 4) than expected, because there was a “high yield of irrelevant items to screen” (Brunton et al., 2012, section 5, subsection 1, para. 12) at the screening and selection

² The author used the technique of reference list checking at the screening and selecting stage, when examining whether the search results are relevant to the conceptual background of resilience (see Subchapter 3.3).

stage. This is not considered as a downside only, however, because many ‘irrelevant’ studies yielded interesting findings for the inclusion criteria at the selection stage, which will be illustrated in Subchapter 3.3. Third, working alone can be considered a major limitation at the searching stage, because the search strategy could not be tested by different reviewers as it is commonly done in systematic reviews (Brunton et al., 2012). This limitation applies to several of the review stages, particularly when data analysis steps are performed. It will be discussed as an overall limitation of the publication in Subchapter 7.3.

3.2.2 Search Parameters

Table 6 summarizes the main information about the search parameters of this systematic review. The search strategy comprises eight search parameters grouped into three categories: database, time, and search terms. This section describes the search parameters, starting with those relevant to the bibliographical database searched:

- *Database searched:* The database of the Education Information Resources Center (ERIC) was searched for the review at hand.
- *Database interface:* The search was carried out accessing the standard interface of the ERIC database available via <https://eric.ed.gov>.
- *Search settings:* The search setting ‘Peer reviewed only’ was selected in the database’s interface. While this setting can be useful in terms of quality control of the publications included in the search, the methodological literature advises that it cannot replace further measures of quality assurance in a systematic review. In fact, the peer review rating does not account for an applicable quality indicator of a publication. As Greenhalgh and Brown (2014) state, “it is often mistakenly assumed that if a study has been published in a peer-reviewed academic journal then it must be of good quality; this is not always true” (section 2, para. 3). Therefore, setting the search to ‘Peer reviewed only’ merely represents a reduction of the scope in this review, because a considerable number of publications is not included in the search when this option is checked. However, the author does not conceive peer review as a quality indicator usable for the review at hand. Instead, an elaborate quality assurance stage is carried out for the studies included in the synthesis (see Chapter 5).

The ERIC database is one of the most comprehensive bibliographical databases for research in education in the English-speaking world. As determined in a scoping search at the review

design stage (see Subchapter 3.1), it includes many studies relevant to the concept of resilience and thus enables the author to find sufficient concepts for answering the review question of this publication. Moreover, the database contains publications in a variety of subject areas other than education, which can be considered beneficial to the analysis conducted in this review (Brunton et al., 2012). Heterogeneity of subjects in the search results will likely improve the value of analysis, because the resilience concept is researched and applied in a variety of different disciplines (Masten & Obradović, 2006; O’Dougherty Wright et al., 2013). A further advantage of the ERIC database is that it includes features to facilitate and enrich the searching stage of a systematic review. The controlled vocabulary in the ‘ERIC Thesaurus’ can be emphasized in this respect. In addition, the database includes a variety of bibliographical metadata for each publication listed, for instance, keywords by which the major research themes of publications can be identified. Both controlled vocabulary and keywords have been used extensively during searching (see below regarding the search term parameters) and selecting (see Subchapter 3.3) in this review.

Table 6. Search parameters

(Table format adapted from Brunton et al., 2012 and Dundar & Fleeman, 2014)

Aspect	Parameter
Database searched:	ERIC
Database interface:	ERIC website (www.eric.ed.gov)
Search settings:	Peer-reviewed only
Date of search:	6 th of April 2016
Publication years:	Till 2015
Records obtained:	2.296 publications
Search term:	resilience
Controlled vocabulary:	Adult Basic Education; Adult Education; Early Childhood Education; Elementary Education; Elementary Secondary Education; Grade 1; Grade 2; Grade 3; Grade 4; Grade 5; Grade 6; Grade 7; Grade 8; Grade 9; Grade 10; Grade 11; Grade 12; High School Equivalency Programs; High Schools; Higher Education; Intermediate Grades; Junior High Schools; Kindergarten; Middle Schools; Postsecondary Education; Preschool Education; Primary Education; Secondary Education; Two Year Colleges

The second group of parameters relates to time. Three parameters were considered for the search strategy at hand: the end date of the search, the range of publication years included in the search, and the number of publication records obtained in the search timeframe. They are described next.

- *Date of search:* The search in the ERIC database was carried out on the 6th of April 2016. There were no iterations and further search dates, which is described as a linear search strategy in the literature (Brunton et al., 2012). The choice to have one end date for searching was due to practical considerations (Brunton et al., 2012). Next steps in the review process had to be completed with the data acquired at the searching stage, and these stages were too elaborate as that new search results could have been included while remaining in the bounds of manageable efforts, in particular, because the author works alone (see Subchapter 3.1). As a result, how it is the case for most empirical research endeavors, data collection had to stop at one point, so that the analysis steps could start. Nonetheless, the author acknowledges that having four years passed between data collection in 2016 and the publication of the results in 2020 is not optimal. It is recommended to carry out “‘catch-up’ search” (Brunton et al., 2012, section 4, para. 5) if the data of this publication is intended to be used for further analyses (see Subchapter 7.4).
- *Publication years:* Literature records published in 2015 and before were included in the search results. The data shows that – for those studies relevant to one or more education levels (N = 464) – the publication years range from 2003 to 2016.
- *Records obtained:* A total of 2.328 publications were obtained in the search. This number included 32 publications for the year 2016, which were excluded by the author. All in all, the number of records found at the searching stage was 2.296.

The data show a steep rise of publications relevant to resilience in the ERIC database over the years. For publications relevant to one or more education levels (N = 464), the number increased from 1 in 2003 to 85 in 2015. In fact, it is to be expected that the number for the year 2015 is even higher today, because publications are commonly added to the ERIC database for prior years. A quick scoping search on the 1st of April 2016 produced a lower number of studies than the extended and final search on the 6th of April 2016. At the end of the day, the growth in records obtained per year points towards a continuously increasing interest in the topic during the last two decades, which is considered beneficial for the review at hand. The usefulness of the resilience concept for investigating at-risk students in the education system seems to be acknowledged more and more in educational research. Nonetheless, as illustrated at the selection stage (see Subchapter 3.3), the records found in the search cannot be equalized with those publications relevant to the review question. Many

of the publications found in the search will not refer to the connection between resilience and academic success.

The search terms of this systematic reviews are summarized in two parameters: the term used in the search and the controlled vocabulary in the ERIC database. Both parameters are described next.

- *Search term:* The search term ‘resilience’ was entered in the free-text search field of the ERIC database. No additional search terms were used, nor were specific search techniques applied at this stage as truncation³ or Boolean operators⁴ (Brunton et al., 2012; Dundar & Fleeman, 2014). All publications relevant to the resilience concept should be acquired with the term ‘resilience’. When resilience is addressed in a publication, it is reasonable to assume that this term is included in the title and/or abstract, which are both queried when using the main search-field in ERIC.
- *Controlled vocabulary:* It was necessary to narrow the scope of the review in terms of the studies’ relevance to one or more education levels, because the review at hand addresses the specific education levels of high school and higher education. To do so, the controlled vocabulary attached to the publications in the ERIC database was used. The database offers 29 education level descriptors (see Section 3.2.3).

The author is confident to have included enough relevant publications through combining a broad search term with the controlled vocabulary for education levels provided in the ERIC database. Keeping the search as broad as this has various advantages (Brunton et al., 2012; Cherry et al., 2014). For instance, it is more likely to find so-called “‘fuzzy’ papers” (Cherry et al., 2014, section 5, subsection 2, para. 1) in the literature, which might not be included in the search results when applying more or more specific terms. Conversely, proceeding in this fashion lacks sensitivity (Brunton et al., 2012; Cherry et al., 2014; Dundar & Fleeman, 2014), resulting in many publications irrelevant to the review question at the end of the search that need to be addressed in later stages of the review. This is considered one of the main limitations of the search strategy at hand by the author (see Section 3.2.1). However,

³ Truncation is a method to search for term-variations used in publications. In the case of the resilience concept, for instance, it would be possible to use the truncated term ‘resilien*’ in a search, to include the word forms of both ‘resilience’ and ‘resilient’. The search settings of the ERIC database do not allow for such ‘wildcard’ searches (Dundar & Fleeman, 2014).

⁴ Boolean operators enable reviewers to specify their searches to a high degree by using specific terms in the search strings like ‘AND’ (including both terms in the results) or ‘OR’ (including either or both of the terms in the results). The ERIC database allows for Boolean operators.

regarding the aim to find sufficient concepts in the search, the author expects the use of a broader search term to be more effective than to narrow down the search at this point in the review process.

3.2.3 Search by Education Level

Figure 10 shows the 29 education levels available in the ERIC database and how publications in the search results relevant to one or more education levels are distributed over these education levels.

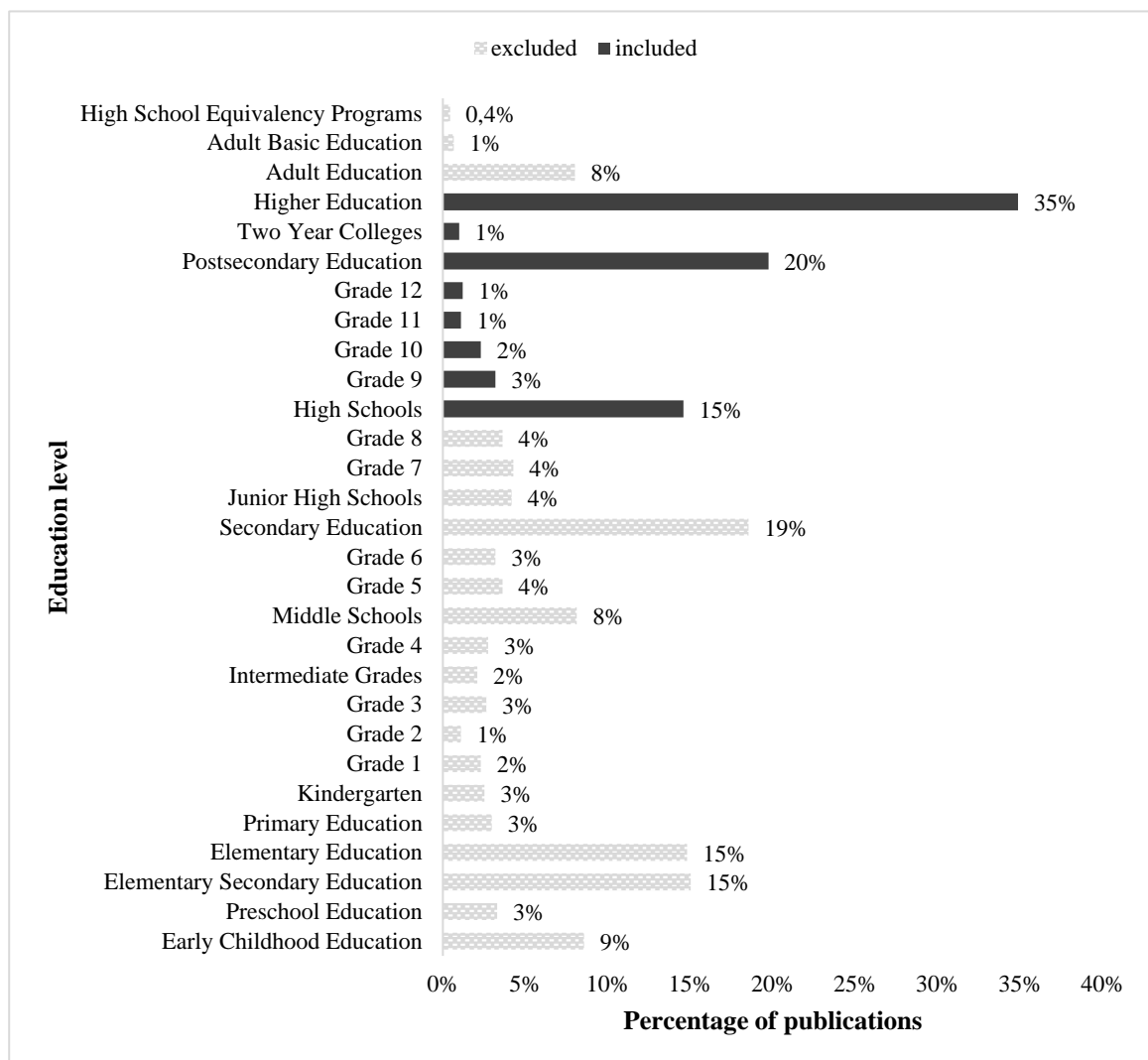


Figure 10. Distribution of the search results over the 29 education levels available in ERIC (N = 912 publications) (Multiple entries possible per publication)

The 29 education levels equal 29 controlled vocabulary terms in the ERIC database to describe the stages in the U.S. education system the publications apply to. Of the total

number of search results of 2.296 publications, 912 (40%) have been assigned to one or more of these terms. They are illustrated in Figure 10. The group of studies for which more than one education level applies is larger than the studies relevant exclusively to one education level in the ERIC database. 62% of the publications are linked to more than one education level. Eight education levels are eligible to be included in the search results and further analyses in this systematic review. They contain the studies applicable to either or both high school and higher education students: 'High Schools', 'Grade 9', 'Grade 10', 'Grade 11', 'Grade 12', 'Postsecondary Education', 'Two Year Colleges', and 'Higher Education'. This group of education level is highlighted in Figure 10. The data show that the majority of included publications are relevant to the level of 'Higher Education', followed by 'Postsecondary Education' and 'High Schools'. For the excluded publications, not relevant to high school and/or higher education, the highest publication numbers apply to 'Secondary Education', 'Elementary Education', and 'Elementary Secondary Education'.

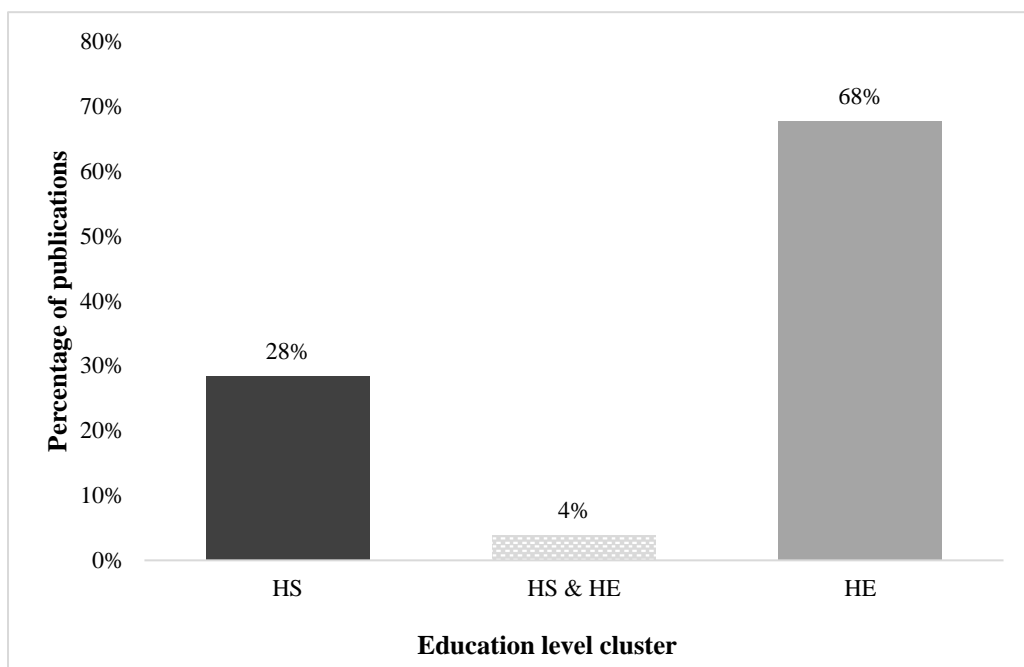


Figure 11. Distribution of the search results over the three education level clusters relevant to this systematic review (N = 464 publications)

Figure 11 illustrates that the eight education levels relevant to high school and higher education were grouped into three education level clusters to facilitate further analysis in this systematic review. The clusters were composed in the following way.

- *Cluster 1 'High School'*: This cluster comprises publications applicable to the education levels of 'High Schools', 'Grade 9', 'Grade 10', 'Grade 11', or 'Grade 12'.
- *Cluster 2 'Higher Education'*: In Cluster 2, those publications are grouped that are assigned to the education levels 'Postsecondary Education', 'Two Year Colleges', or 'Higher Education' in the ERIC database.
- *Cluster 3 'High School & Higher Education'*: Cluster 3 applies to the publications including one or more education levels of each Cluster 1 and Cluster 2.

The amount of publications in the three clusters differs substantially. Over two-thirds of the publications (68%) are relevant to the higher education level cluster. 28% apply to Cluster 1 'High School' and 4% could be grouped in Cluster 3, which includes the publications assigned to both high school and higher education.

In summary, the following results can be reported for the searching stage of this systematic review: 2.296 publications were found in the initial search. This number was reduced to 912 publications in a first step, when the publications that were not assigned to one or more education levels in the ERIC database were excluded. In a second step, 448 publications were excluded which were not linked to the education levels of high school and higher education, arriving at a final search result of 464 publications. Of these publications, 28% were relevant to high school, 68% to higher education, and 4% to both of these two education level clusters. In a next step, the search results will be used for further analyses in the review at hand, for instance, in the screening and selection stages described in the following subchapter. It should be emphasized at this point that the search results presented here solely represent a notion of how the research landscape on the connection of resilience and academic success is shaped. Most notably for the review question posed by the author, it has not been examined yet whether the publications found are suitable in terms of the theoretical background of the resilience concept. In addition, not all publications in the search results will be empirical studies, or relevant in terms of the other inclusion factors applied in this review, i.e. regarding a focus on students, the domain of education, and students' academic success.

3.3 Screening and Selecting

The aim of the screening and selecting stage is to collect a sample of research studies that enable the author to answer the review question in this publication. It contains six steps summarized in Figure 12 below. In a first step, the author stored the references of the search results in a designated database called “Screen Me” (Brunton & Thomas, 2012, section 5, para. 9) in a reference management software. The references were then moved to Microsoft Excel to carry out the next steps, starting with removing duplicates. Afterwards, the screening step was initiated. Screening is commonly defined as “the process of reading each title and abstract to ascertain its relevance” (Brunton et al., 2012, section 5, subsection 10, para. 1) in a systematic review. However, the author abstained from excluding publications at this point, which will be described in more detail below. Instead, he proceeded by retrieving a PDF version of each publication online or from the library (including interlibrary loans). The PDF versions were stored in a folder structure that allowed convenient access to all literature data throughout the review. Subsequently, five inclusion criteria were applied to collect the publications relevant to the review at hand (see sections 3.3.1 and 3.3.2). Last, after storing the included studies and looking for duplicates one more time, the results of the screening and selecting stage were summarized in a PRISMA Flow Diagram (PRISMA, n. d.), which is presented in Section 3.3.3.

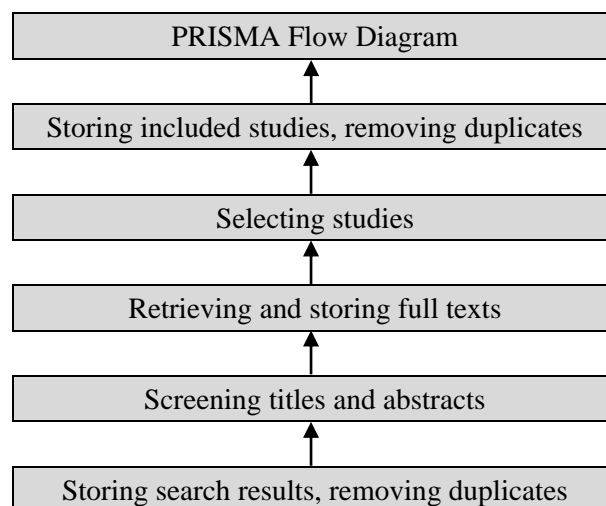


Figure 12. Steps of the screening and selecting stage
(Created by the author, adapted from Brunton & Thomas, 2012)

In this publication, the screening step was carried out differently compared to what is described in the methodological literature. No publications were excluded when screening.

In fact, the author transferred all search results to the selecting step. This decision was based on the fact that this review requires the author to determine whether the theoretical frameworks of the search results are relevant to the conceptual framework of resilience. When starting the screening step, it became apparent that, for many cases, it is not possible to discern this by merely screening the titles and abstracts of publications. Attempts to do so showed that while the term ‘resilience’ can be used in the abstract of a publication, for instance, this does not equate its relevance in terms of the conceptual framework of resilience as used in this publication (see Section 3.3.2, Criterion 1). When trying to link publications to the concept of resilience, the author discovered that it is not possible to rely on the controlled vocabulary of the ERIC database either. While there are several resilience-specific descriptors and identifiers in ERIC⁵, they are not used consistently enough in the database. All in all, efforts to use them for screening search results failed, because publications with a clear theory-related connection to the resilience concept were not tagged with one of the relevant descriptors or identifiers in ERIC. Nonetheless, although they could not be used at this step, ERIC descriptors play an important role at the selecting stage of this review, in particular, when determining whether a publication applies to the domain of education (see Section 3.3.2).

3.3.1 Inclusion Criteria

The author defined five inclusion criteria that guide the screening and selection process of this publication (see Table 7). Cherry and Dickson (2014) define inclusion criteria as “the specific attributes that a study must have if it is to be included” (section 4, para. 1) in a systematic review. They are used for selecting a sample of publications relevant to the review question and conceptual framework. In this review, selected studies must (1) have a theoretical framework relevant to the conceptual framework of resilience, (2) be empirical research studies, (3) concerned with students in high school and/or education, (4) in the domain of education, and (5) investigate the connection between resilience and academic success. In one statement, these five criteria can be summarized as follows:

⁵ The controlled vocabulary thesaurus of the ERIC database provides two descriptors to label publications relevant to the resilience concept: ‘Resilience (Psychology)’ and ‘Resilience (Personality)’. In addition, there are four identifiers in the database that can be used to label relevant publications: ‘Ego Resilience’, ‘Career Resilience’, ‘Resilience (Career)’, and ‘Resilience (Ego)’. For the years of 2004 to 2010, it has further been stated in the database that publications might be tagged with the descriptor ‘Personality Traits’ to indicate a connection to the resilience concept. Currently, the descriptor ‘Resilience (Psychology)’ is recommended by ERIC. The other descriptors and identifiers have been losing impact since 2010.

We are searching for empirical studies investigating the connection between the resilience concept and academic success of students in high schools and higher education institutions.

A study can only be included in this review's sample if it meets the inclusion criteria summarized in the above statement (Brunton et al., 2012). The design of the inclusion criteria was guided by a PICo table, meaning that a specific group of individuals (population), a concept (phenomenon of interest) as well as a particular environment (context) are chosen as the basic criteria of a review (Cherry et al., 2014). This resulted in defining criteria about the phenomenon of resilience (Criterion 1) and the population of students in the context of high school and higher education (Criterion 3). The criteria of study design (2), domain (4), and outcome (5) have been added in relation to the review's question and framework. The selection process for each inclusion criterion will be described in detail below (see Section 3.3.2).

Table 7. *Inclusion criteria of this systematic review*

Criterion 1: Theoretical framework of resilience
Criterion 2: Empirical research studies
Criterion 3: Students in high school and/or higher education
Criterion 4: Domain of education
Criterion 5: Academic success

The order of the inclusion criteria was not chosen at random. As recommended in the literature, the author chose a “hierarchical approach” (Brunton et al., 2012, section 5, subsection 10, para. 3) to order them, meaning that the criteria are organized from general to specific. This entails three aspects: For one, it was possible to exclude the largest set of studies at an early stage of selecting. As shown below in Section 3.3.2, many publications are not based on the theoretical framework of resilience and were thus excluded early at this stage. Consequently, the reviewer could apply the next inclusion criterion to a strongly reduced sample, which facilitated and enhanced the analysis. Second, selection using Criterion 1 created a fundament for further reviews to be carried out with this or a similar dataset. The dataset resulting from the first criterion is eligible for the conceptual framework of resilience. Therefore, we are able to say that further steps in the analysis revolve around publications using the resilience concept in a theory-related manner in the context of

education. Future review endeavors might build on this foundation. Last, the order of the inclusion criteria enables further review endeavors to use specific data portions excluded when progressing through the five criteria (Brunton et al., 2012). For instance, it would be possible to focus on the non-empirical studies excluded at Criterion 2 or on studies relevant to other populations like teachers or counselors revealed at Criterion 3. Criteria 4 and 5 offer possibilities to study resilience outside the domain of education and in terms of other positive outcomes than academic success.

3.3.2 Selecting

The next step at the screening and selecting stage was to select publications eligible for this systematic review. Selecting has been defined as the process in which “explicit criteria, based on the review’s scope and questions(s), are applied to each record in order to determine if it should be included in or excluded from the review” (Brunton et al., 2012, section 5, subsection 10, para. 1). It is much more detailed compared to screening, where the reviewer is merely concerned with the titles and abstracts of publications. Selecting, on the contrary, requires a thorough understanding of the search results. It aims to determine the relevance of publications in terms of pre-defined inclusion criteria and thus the review question and conceptual framework of the review. In other words, the purpose of the selection stage is to generate a sample of publications that enables us to answer the review question of this publication. Publications are included that possess a suitable theoretical framework (Criterion 1), use empirical research methods (Criterion 2), investigate students at the high school and/or higher education levels (Criterion 3), are centered on the outcome domain of education (Criterion 4) and investigate academic success in connection to resilience (Criterion 5). The selection process for each of these five criteria is described next.

C1: Theoretical Framework of Resilience

The beginning of the selecting stage was guided by the question whether publications are connected to the conceptual framework of resilience. The author aimed to determine which publications use the resilience term in a theory-related way. Three sub-criteria were established to do so:

- *C1.1: Does the text contain the term ‘resilience’?* In the first step, the author determined whether the resilience term was used in the publications. Using Adobe Acrobat XI Pro, the PDF versions of the publications were searched for occurrences of ‘resilien*’, so that both word forms of ‘resilience’ and ‘resilient’ could be detected. The results showed that

60 publications (N = 464) used neither of the two terms.⁶ They were excluded from the sample.

- *CI.2: Is resilience used in theory-related way?* Second, for the publications including one or more occurrences of the resilience term, it had to be determined whether resilience was used in a theory-related manner. It is important to distinguish the theory-related use of resilience from its use as a common word in the English language (Hartley, 2013). To do so, the author applied the method of reference list checking (Brunton et al., 2012) in the 404 publications still left in the sample. The reference lists of the publications were searched for literature relevant to the conceptual framework of resilience. In addition, it was examined how references were connected to the resilience term in the texts. This process was straightforward for many publications in which resilience was clearly used in a theory-related fashion. For other publications, however, it was a tedious endeavor. The search function in Adobe Acrobat XI Pro proved valuable again at this step. All in all, 127 publications (N = 404) were excluded on account of this sub-criterion.

- *CI.3: Is the resilience type relevant for this systematic review?* Last, it had to be examined whether the resilience concept used applied to individuals. The research literature on resilience criticizes that it seems often unclear for which entities the resilience concept is used, for instance, if it applies to individuals, institutions, or larger systems and societies (Kaplan, 2013). In this publication, solely publications investigating the resilience concept in relation to individuals were included. The analysis results of Sub-criterion 1.2 were useful in determining this characteristic. 17 publications (N = 277) were excluded at this point.

In summary, 204 of 464 publications were eliminated from the sample on account of Criterion 1, because these publications did not use the resilience concept in a theory-related way. The question emerges: How can this be the case? The author proposes two reasons: For one, publications use the term ‘resilience’ as a common English word which can be utilized, for example, as a synonym for words like ‘persistence’ or ‘resistance’. The term thus enables

⁶ Publications were part of the initial search using the term ‘resilience’ in the ERIC database without using the terms ‘resilience’ or ‘resilient’ in the text, because they were tagged with resilience-related descriptors and/or identifiers in the database (see introduction of this subchapter). The analysis thus shows that the controlled vocabulary attached to the publications in ERIC is not always precise. In many cases, it is necessary to carry out manual searches to test and expand on the information provided in the controlled vocabulary, in particular, when theoretical frameworks are addressed.

authors to express elegantly that students ‘stay on track’ in their educational pathways. Second, the resilience term becomes more and more popular in research today. It seems to be a key term included in many publications in education, even if the theoretical foundation to do so is lacking. In fact, the theoretical framework of resilience is often missing in publications using the term (Mansfield et al., 2012). As a result, it is often difficult to state at first glance whether resilience is used in a theory-related way – i.e. as a concept that aims to explain how at-risk individuals overcome adverse and/or threatening circumstances as researched in psychology and other fields – or if it is used as a common English word or even a fashionable ‘buzz word’ in publications.

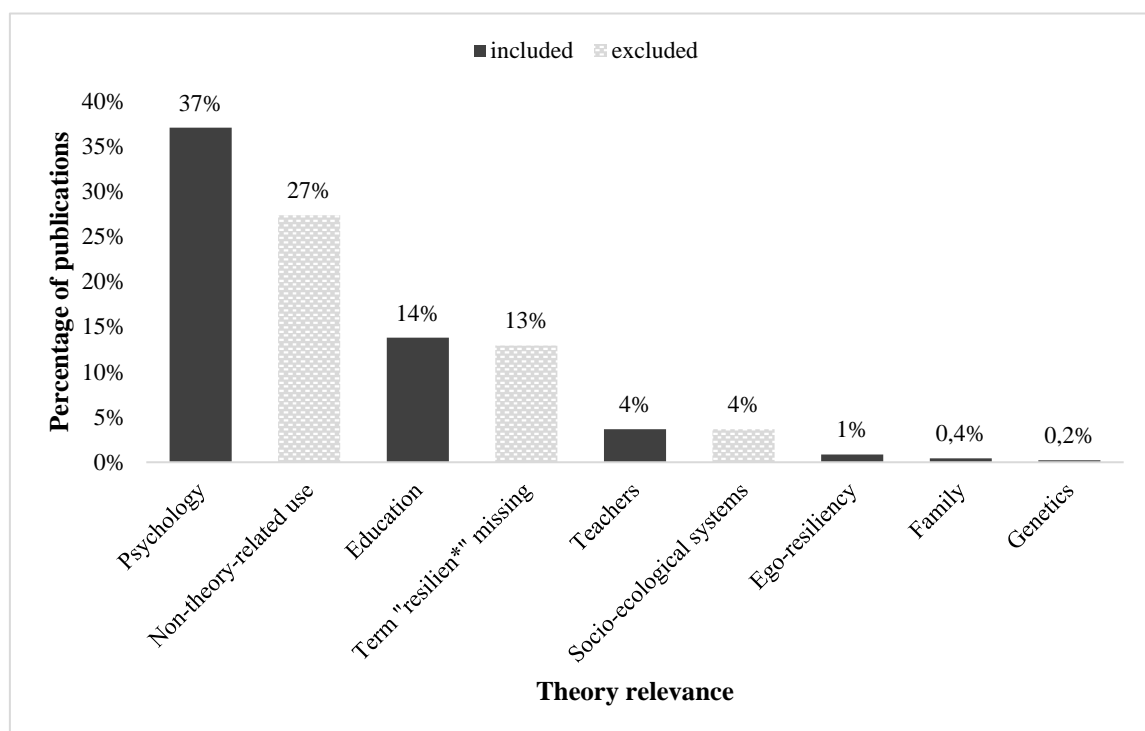


Figure 13. Inclusion criterion 1: Theoretical framework of resilience (N = 464 publications)

Figure 13 summarizes the results of examining the search results on account of their eligibility to the conceptual framework of resilience. Overall, close to half (44%) of the examined publications had to be excluded at this point (N = 464). 13% of these did not include the terms ‘resilience’ and/or ‘resilient’ (Sub-criterion 1.1), 27% used the resilience term in a non-theory-related way (Sub-criterion 1.2), and 4% used a resilience framework relevant to socio-ecological systems instead of individuals (Sub-criterion 1.3). Three groups of included publications can be reported: First, resilience frameworks in different subjects have been included. This is the case for psychological resilience in psychology (37%),

academic resilience in education (14%), and biological resilience as it is used in genetics (0,2%). For the latter, it is interesting to note that only one publication applies. Given current developments in the field, which are related to the interplay between psychological and biological factors (Cicchetti, 2010; Luthar, 2006; Masten & Obradović, 2006; O’Dougherty Wright et al., 2013), a larger number of relevant publications would have been expected here. Second, there is a group of resilience publications referring to specific individuals. This is the case in 4% for teacher resilience and in 0,4% for family resilience. Last, ego-resiliency is used in 1% of the studies.

C2: Empirical Research Studies

The second inclusion criterion asks whether a publication is an empirical research study.

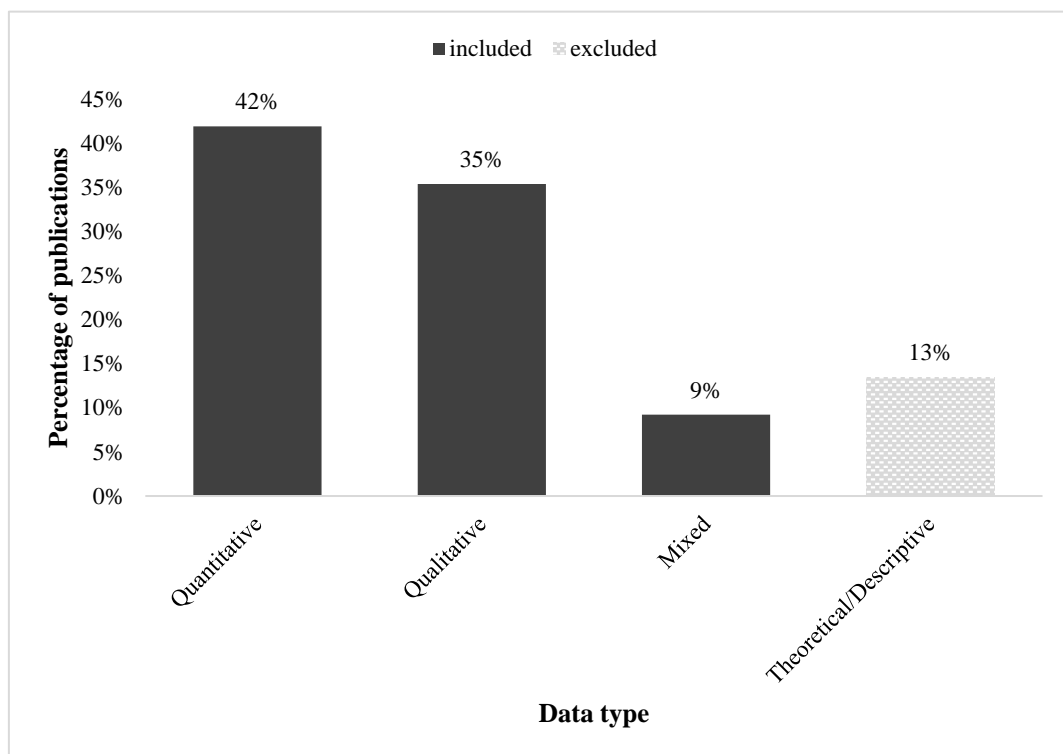


Figure 14. Inclusion criterion 2: Empirical research studies ($N = 260$ publications)

Only publications applying quantitative, qualitative, or mixed methods were included in the sample. Accordingly, the author defined four data type categories, which included quantitative data, qualitative data, mixed methods data, and no data. The latter was labeled as ‘Theoretical/Descriptive’ and publications relevant to this category were excluded from the sample. The search function in Adobe Acrobat XI Pro was used to facilitate the grouping of publications. Searching for keywords relating to empirical research, like ‘interview*’,

‘focus group*’, ‘narrative*’, ‘survey*’, and ‘questionnaire*’, assisted the progress of examining the publications and finding relevant passages in the texts referring to study data and method. It was necessary, nonetheless, to review many publications manually when the PDF search did not yield definite results. The author then turned to the method sections in the texts to determine which data type was used. In addition, the controlled vocabulary in the ERIC database proved useful most times. Various descriptors relating to the method of research are part of the controlled vocabulary thesaurus of the database, like ‘Focus Groups’, ‘Online Survey’, or ‘Statistical Analysis’.

Figure 14 illustrates the data types determined on account of the second inclusion criterion. All in all, the large majority (86%) of examined publications used either quantitative, qualitative, or mixed data (N = 260). 13% could not be categorized as empirical studies and were thus excluded from the sample. The data show that most of the included publications use quantitative data (42%), followed by qualitative data (35%) and both quantitative and qualitative data (9%).

C3: Students in High School and/or Higher Education

The third inclusion criterion defines the population of interest in this systematic review.

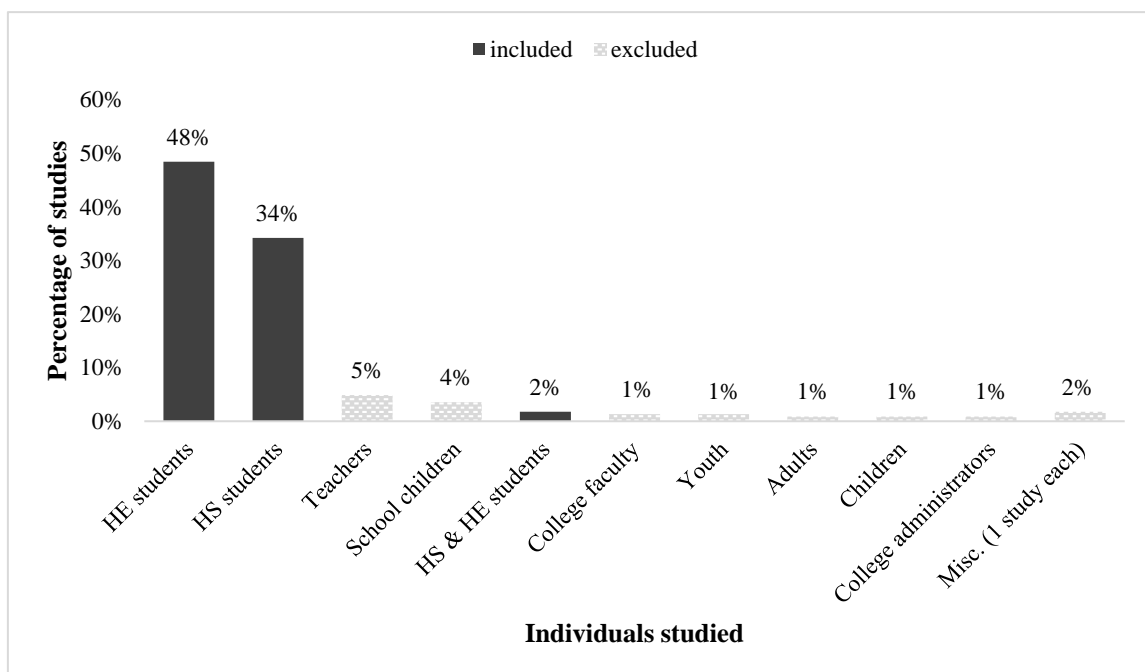


Figure 15. Inclusion criterion 3: Students in high school and/or higher education (N = 225 studies)

It determines that only publications are relevant that focus on high school and higher education students. Publications investigating other individuals like, for instance, faculty or staff are excluded from the sample. The criterion asks whom a study is about, not who provides the data. For example, a study is included in which teachers are the data source for investigating the academic resilience of high school students (Sosa, 2012). Adobe Acrobat XI Pro was once more used to search through PDF documents quickly and to define the individuals studied. The author searched for occurrences of student-related terms, focusing on the titles and abstracts of the publications, because the texts often included too many variations of the term ‘student*’ to allow for a sensible search. Besides the PDF search, controlled vocabulary in ERIC was often useful to determine the population of interest in a study. Descriptors like ‘Administrators’, ‘Faculty’, ‘High School Students’ or ‘Undergraduate Students’ facilitated the application of Criterion 3. Nonetheless, as it was the case for all criteria, a portion of publications had to be searched manually, because electronic means could not yield enough or precise enough information.

Figure 15 shows the results of applying Criterion 3. Overall, the data illustrate that most studies (84%) are concerned with students in high schools, higher education institutions, or both (N = 225). 48% focus on higher education students, 34% on high school students, and 2% on students in high school and higher education. The excluded studies can be grouped into four categories: The first category comprises school- and higher education personnel, i.e. studies focusing on teachers (5%), college faculty (1%), and college administrators (1%). Second, those publications were excluded that investigate school children (4%), who are studying at education levels below high school and higher education. The third group comprises individuals who are neither students nor faculty: youth (1%), adults (1%), and children (1%). Last, a miscellaneous category was established for publications that address groups of individuals not investigated in any other study in the sample, for instance, doctoral students or families.

C4: Domain of Education

Criterion 4 determines whether publications are concerned with the domain of education. In resilience research, domains are a vital part of understanding positive outcomes. It is claimed that positive outcomes are domain-specific because they relate to one specific area in the lives of individuals (Luthar, 1993). For instance, when determining whether the members of an at-risk group are successful in school, the definition of their success should be related to the domain of education. While students in high school and higher education are the

population of interest in the studies examined, this is not a guarantee for every study to be relevant in terms of the domain addressed.

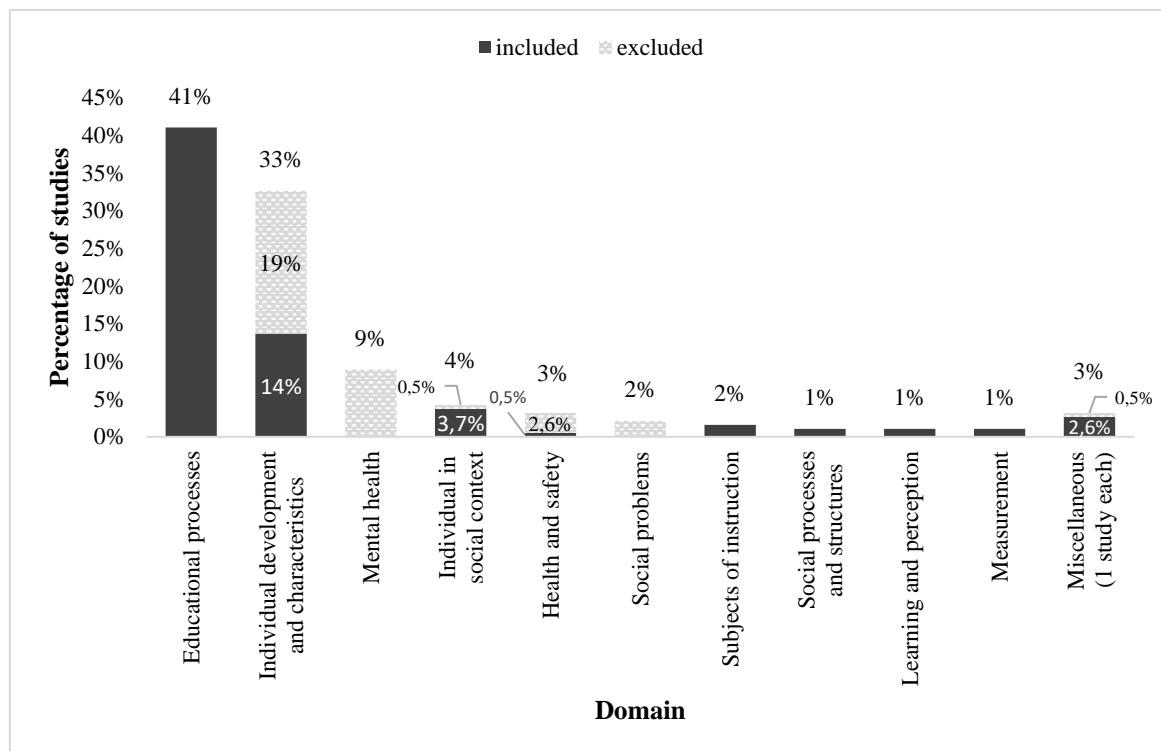


Figure 16. Inclusion criterion 4: Domain of education ($N = 190$ studies)

In fact, we only know so far that the studies are situated in the context of education. While this is the case, they can still not be relevant to the domain of education, but might, for example, investigate the students' health domain. In this publication, the author determined manually whether studies should be included on account of Criterion 4. The controlled vocabulary in the ERIC database was used to support this process. Specifically, the author used the 41 main descriptor categories in ERIC⁷, which group every descriptor attached to a

⁷ The main descriptor categories in the ERIC database are: Agriculture and Natural Resources; Arts; Bias and Equity; Business, Commerce, and Industry; Communications Media; Counseling; Curriculum Organization; Disabilities; Economics and Finance; Educational Levels, Degrees, and Organizations; Educational Process: Classroom Perspectives; Educational Process: School Perspectives; Educational Process: Societal Perspectives; Equipment; Facilities; Government and Politics; Health and Safety; Human Geography; Humanities; Individual Development and Characteristics; Individual in Social Context; Information/Communications Systems; Labor and Employment; Language and Speech; Languages; Learning and Perception; Mathematics; Measurement; Mental Health; Occupations; Peoples and Cultures; Physical Education and Recreation; Publication/Document Types; Reading; Research and Theory; Science and Technology; Social Problems; Social Processes and Structures; Students, Teachers, School Personnel; Subjects of Instruction; Tests and Scales.

publication in the database. The categories are applied, for one, to get a general idea about the domains relevant to the sample studies and, second, to group the studies by outcome domain (see Figure 16).

Figure 16 shows how the descriptor categories in the ERIC database were used to group studies into different domains. The figure illustrates that two-thirds (66%) of the studies were included at this point (N = 190). They are foremost relevant to the domain of 'educational processes' (41%), which is divided into 'classroom perspective', 'school perspective', and 'societal perspective' in the ERIC database. Second, 14% of the studies were included in the domain of 'individual development and characteristics'. Third, a smaller portion of included publications relate to the domains of 'individual in social context' (3,7%), 'health and safety' (0,5%), 'subjects of instruction' (2%), 'social processes and structures' (1%), 'learning and perception' (1%), and 'measurement' (1%). In addition, a miscellaneous category was constructed for domains relevant to one study each. In this category, the five domains of 'students, teachers, school personnel', 'research and theory', 'reading', 'communications media', and 'tests and scales' add up to a total of 2,6% of included studies. Furthermore, the data demonstrate that some domains comprise both included and excluded studies. Most excluded studies (19%) can be found in the domain of 'individual development and characteristics'. In many cases, these are studies that measure the resilience of students but do not apply the results to the domain of education. Minor portions of excluded studies have been assigned to the split domains of 'individual in social context' (0,5%) and 'health and safety' (2,6%), as well as the domain of 'government and politics' (0,5%) in the miscellaneous category. Domains that solely contain excluded studies are 'mental health' (9%) and social problems (2%).

C5: Academic Success

While the studies included on account of Criterion 4 contain various positive outcomes in the domain of education, Criterion 5 specifies the positive outcome to academic success. Academic success applies when students have demonstrated a positive academic outcome. There must be proof for academic success, for instance, illustrated by high academic achievement (grades, GPA) or successful graduating from high school or higher education. Outcomes like adjustment, engagement, or attendance, on the contrary, are excluded, for example, because they can be considered precursors of academic success only, and success has not been demonstrated at this point. Electronic searches with Adobe Acrobat XI Pro for terms like 'success', 'attainment', or 'achievement' have been useful for selecting as well as

the matching of studies with relevant descriptors of the ERIC database like ‘academic achievement’ and ‘academic persistence’. Nonetheless, the selection process was largely carried out manually. It was considered essential to iterate through the studies in depth, in particular, for the last inclusion criteria, to ensure that only relevant studies are carried over to the next steps of the systematic review.

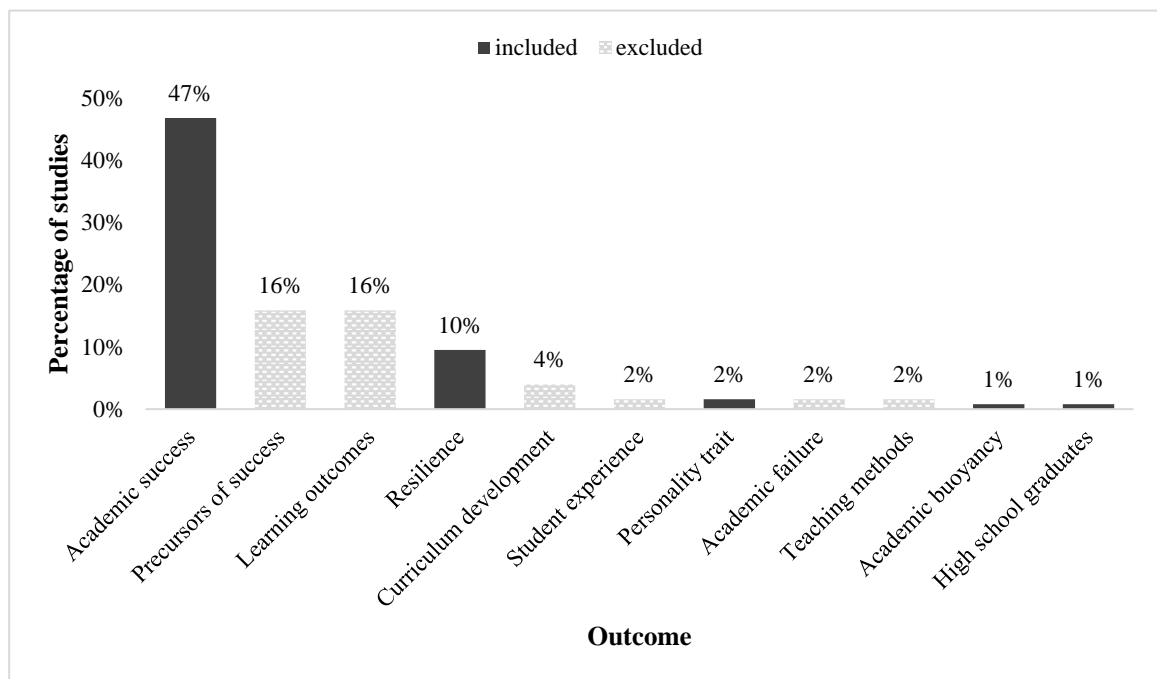


Figure 17. Inclusion criterion 5: Academic success ($N = 126$ studies)

Figure 17 shows the outcomes for Criterion 5. All in all, 61% of the studies were included at this point ($N = 126$). Almost half of these studies (47%) have been grouped in the outcome category of ‘academic success’. They investigate ‘academic achievement’, ‘academic persistence’, and ‘educational attainment’, for instance. 10% of the included studies applied to academic and educational resilience, or student resiliency. A low number of studies related to resilience as a ‘personality trait’ (2%) and ‘high school graduates’ (1%). In addition, the concept of ‘academic buoyancy’ was introduced as its own category that reflects academic success. This concept is considered here, because it is of interest in relation to the theoretical framework of resilience. It will be described in more detail in the synthesis of this publication (see Chapter 6). The two most prevalent outcome categories for excluded studies were defined as ‘precursors of success’ (16%) and ‘learning outcomes’ (16%). For one, the author aimed to group outcomes that might indicate later academic success. Such precursors of success include, for instance, ‘student adjustment’, ‘student empowerment’,

and ‘learner engagement’. Second, learning outcomes were linked to ‘skill development’ and ‘problem solving’ in excluded studies, for example. Moreover, the author excluded studies if they were part of the outcome categories ‘curriculum development’ (4%), ‘student experience’ (2%), ‘academic failure’ (2%), and ‘teaching methods’ (2%).

3.3.3 PRISMA Flow Diagram

Figure 18 shows the PRISMA Flow Diagram (PRISMA, n. d.) of this publication. A PRISMA Flow Diagram is used to summarize the results of the sampling stage in systematic reviews (Brunton & Thomas, 2012; Moher et al., 2009). The outcomes of searching, screening, and selecting are presented comprehensively to the reader in one figure. As Brunton and Thomas (2012) state, “these diagrams are an important part of the process of reporting reviews as they enable readers to see how the review authors accounted for all the references retrieved in their review” (section 2, para. 2). The PRISMA Flow Diagram of this review shows that the final sample to use for answering the review question was heavily reduced in the course of the selecting stage. There is a considerable difference between the number of records obtained in the search results and the number of studies included at the end of this stage. In fact, 2,296 records obtained in the database search were decreased to 75 relevant studies in the screening and selecting steps of this review. While systematic reviews are often criticized for ‘losing’ a large amount of data in that way, it should be emphasized here that data reduction is an integral part of the method (Gough et al., 2012a). A thorough selecting stage allows the reviewer to define a sample of publications that fulfills all criteria necessary to answer the review question.

The PRISMA Flow Diagram (PRISMA, n. d.) in Figure 18 illustrates the results of searching, screening, and selecting in the systematic review at hand. It shows that a total of 2,296 records were found in the ERIC database at the searching stage. 1,832 of them were excluded because they were not assigned to the education levels of high school and/or higher education (448) or to any education level (1,384) in the ERIC database. 464 records were moved to the screening stage. The author removed no records at this point, because it was not possible to determine precisely whether publications were using a suitable theoretical framework by merely screening titles and abstracts. Instead, PDF versions of all 464 references were obtained and employed in the next step. The author examined 464 full texts at the selection steps, using five inclusion criteria. 389 publications were excluded on account of their theoretical framework (204), research method (35), population of interest (35), outcome domain (64), and educational outcome (51).

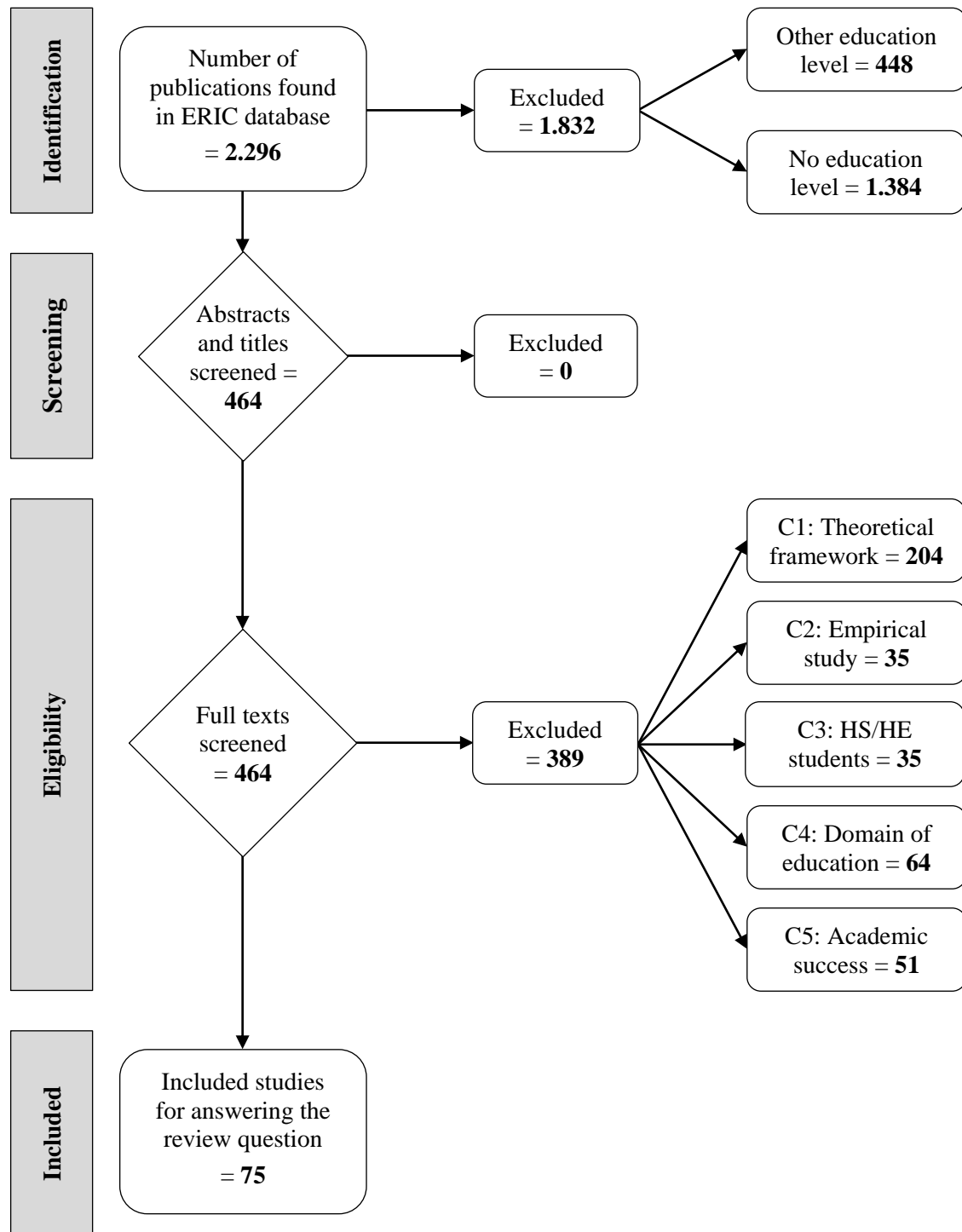


Figure 18. PRISMA Flow Diagram
 (Created by the author, adapted from Brunton & Thomas, 2012,
 Moher et al., 2009, and PRISMA, n. d.)

All in all, selecting resulted in 75 sample studies that could be used to answer the review question of this publication. There were no duplicate studies. The sample was examined at the mapping stage, which will be presented in the next chapter.

4. Map of the Research Landscape

This chapter presents a map of the research literature on resilience and academic success. In systematic reviews, the term ‘map’ is used to describe the method of organizing literature on a specific matter in a structured way to provide an overview of the literature for a specific topic of interest. Mapping has been defined as “describing the nature of a field of research” (Oliver & Sutcliffe, 2012, section 3, subsection 2, Box 7.1). One of the main characteristics of maps is that they are usually tailored to the needs of particular systematic reviews, and that the maps of different systematic reviews are thus quite different from each other. Maps can have various function and purposes, and it is commonly a decision of the review authors which content from the analyzed publications to include at the mapping stage (Brunton & Thomas, 2012; Gough & Thomas, 2012). Gough and Thomas (2012) state that “the aspects of the studies that are described in a map will depend on what is of most interest to those undertaking the review” (section 5, subsection 1, para. 2). One factor, however, which is the same for the large majority of reviews is that most maps do not consider the findings of publications (Oliver & Sutcliffe, 2012). Findings are commonly analyzed at the synthesis stage, for instance, as part of a statistical meta-analysis, a meta-ethnography, or, as it is the case in this publication, in a framework synthesis (Thomas et al., 2012).

It is a recurring theme of the systematic review method to relate every major step to the review question to be answered in the research process (Gough & Thomas, 2012). Consequently, the mapping process of this review is closely linked to what is demanded for answering the review question. To learn about the use of the resilience concept to improve the academic success of at-risk students in high schools and/or higher education institutions, it is deemed foremost necessary to know about the research activities surrounding this topic. It is crucial to establish “a ‘map’ of research activity” (section 5, para. 13) for the topic of interest, as Brunton and Thomas (2012) put it. For the review at hand, this means, for one, to provide general study characteristics (see Subchapter 4.1) in accordance to what is recommended in the literature, for instance, information about research methods and research participants (Oliver & Sutcliffe, 2012). Second, the author strives to construct a typology of the research studies on resilience and academic success (see Subchapter 4.2). In summary, to contribute to answering the review question, the map of this review aims to provide an overview of the research landscape concerning the connection between resilience and academic success. It intends to answer the following question:

How do empirical research studies examine the connection between resilience and academic success in high school and higher education?

Maps can have various purposes in systematic reviews. Besides answering the above-stated question about research on the connection between resilience and academic success, two purposes are crucial to this review: to be a preparation for the synthesis and information for future research endeavors (see Figure 19). First, the map aims to prepare the synthesis process of this systematic review. It is frequently described in the literature that maps can contribute to syntheses (Gough & Thomas, 2012; Oliver & Sutcliffe, 2012). An important function of maps in this respect is to determine which studies should best be used to answer the review question/s of interest. As Gough and Thomas (2012) explain, “the review authors may decide that the studies in the map are not all relevant, are too homogenous (in the case of configuring) or too heterogeneous (in the case of aggregating) to be synthesised together, or simply too numerous to be synthesised with the current resources for the review” (section 5, subsection 1, para. 6). For the review at hand, two of these points are of relevance in particular: It is important to reduce the number of studies included in the synthesis to make the analysis manageable in scope and depth for a doctoral thesis (see Subchapter 3.1). Moreover, a homogeneous group of study was determined to be more suitable for the synthesis, because the study data are aggregated to a greater extent than they are configured in the synthesis process (see Chapter 6).

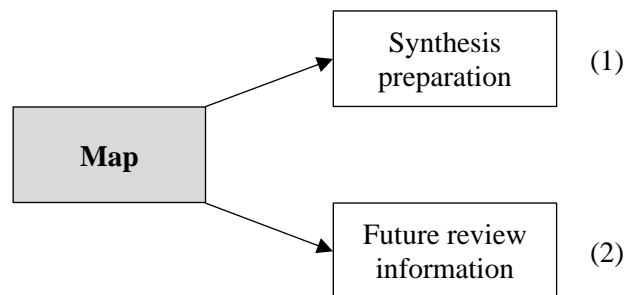


Figure 19. Purposes of the map of this systematic review
(Created by the author, adapted from Gough and Thomas, 2012)

The second main purpose of the map is to provide study data for future research endeavors. Future research activities are primarily considered at this stage in a systematic review. Oliver & Sutcliffe (2012) state that “a detailed map of a large body of research may be the precursor to a series of systematic syntheses addressing related issues” (section 5,

subsection 1, para. 4). For the mapping process of this review, it was an important objective to group the studies into literature sets (Oliver & Sutcliffe, 2012). By grouping studies in three research types (see Subchapter 4.2), the author constructed research-sets which might be usable for later research projects on the connection between resilience and academic success (Oliver & Sutcliffe, 2012). For instance, it might be possible to use the quantitative studies in Type 1 (see Section 4.2.1) to carry out a meta-analysis in the future. Furthermore, the studies collected in the three types can a starting point for an extension of the empirical research studies relevant to the research interest.

Chapter 4 describes the mapping process of this systematic review in three subchapters. Following the brief overview of the method of mapping in this introductory section, the first part of the map is provided in a description of the main characteristics of the included studies in Subchapter 4.1. Publication dates, publication countries, the journal fields of the studies as well as the education levels they refer to and the utilized data collection and measurement tools are presented. Thereafter, Subchapter 4.2 establishes a typology of the studies of interest. Three distinct types of researching the connection between resilience and academic success are identified. Last, in Subchapter 4.3, the main results of the mapping stage are summarized. Moreover, the author shows which publications are selected for the synthesis stage from the map (see Chapter 6).

4.1 Study Characteristics

This subchapter describes the main characteristics of a sample of 75 studies relevant to the connection between resilience and academic success in high schools and higher education institutions.

4.1.1 Publication Dates, Countries, and Fields

Figure 20 shows the publication dates of the sample studies in the timeframe between 2004 and 2015. The timeframe spans these years because of two reasons: First, the starting year of 2004 is determined by the data source in ERIC (ERIC, n. d.). The date of publication is a mandatory study descriptor in the database, and it is provided for every study. The year 2004 is the earliest mention in ERIC of a study relevant to the connection between resilience and academic success in high school and/or higher education. Second, the endpoint of 2015 was set by the author for the analysis. As described in Chapter 3, it is recommended for systematic reviews to set a clear timeframe (Brunton et al., 2012; Pilkington & Hockenfull,

2014). Publication numbers rise steeply over the years, starting at two publications in 2004 and reaching a peak in the year 2015, with a total of 12 publications. Over three quarters of the sample studies (77%) were published in the timeframe between 2010 and 2015. After a small decline down to seven publications in the year 2014, the number of publications climbs significantly again in the year 2015.

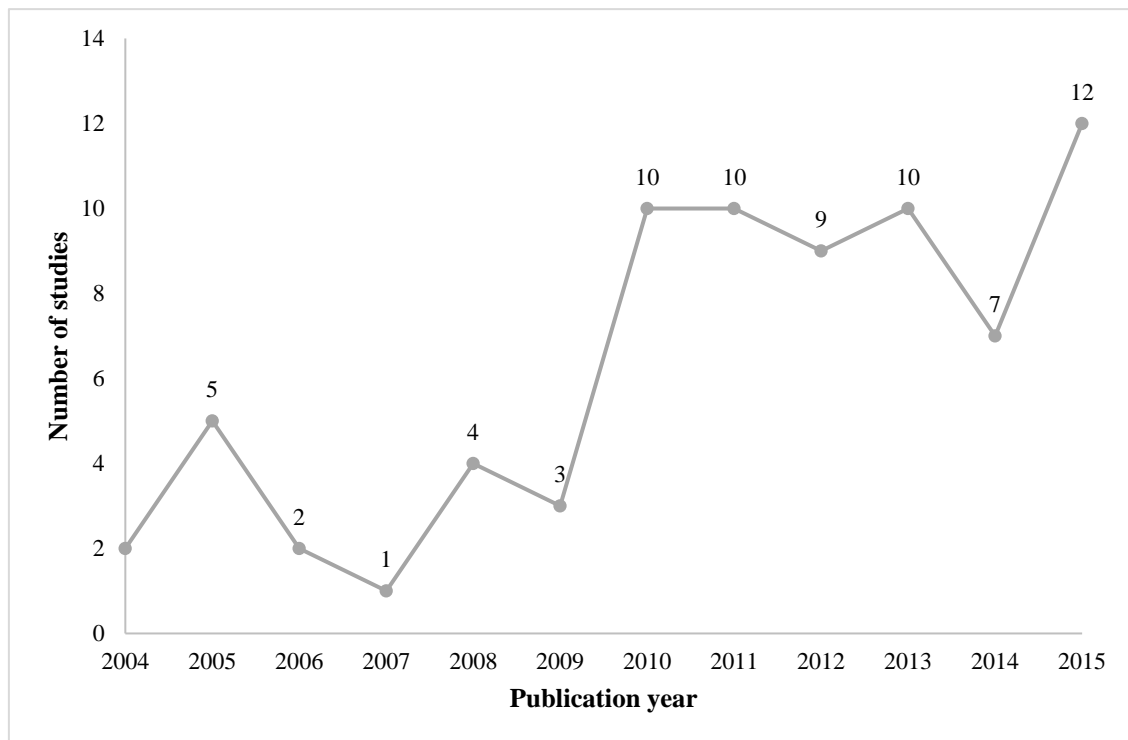


Figure 20. Publication years of the studies at the mapping stage ($N = 75$ studies)

The publication countries of the sample studies are shown in Figure 21. They were partly provided as Identifiers in the ERIC database (ERIC, n. d.). For most of the studies, however, it was necessary to define the publication countries by extracting the relevant data from the texts. The most effective way to do so was by using the countries of the study authors' affiliated education institutions. Another method was to use the journal information provided in the SCImago database (SCImago, n. d.). The study data show that the large majority of the publications refer to the education system of the United States. This is the case for almost 70% of the studies. The second largest group with a total of 21% are the sum of publications from Australia (6 studies), Canada (6 studies) and the United Kingdom (4 studies). In addition, the data show a third category which consists of a collection of seven countries for each of which one study only is part of the sample. This makes up roughly 10% of the sample

studies. The countries are Israel, Jamaica, Mexico, New Zealand, Pakistan, South Africa, and Turkey.

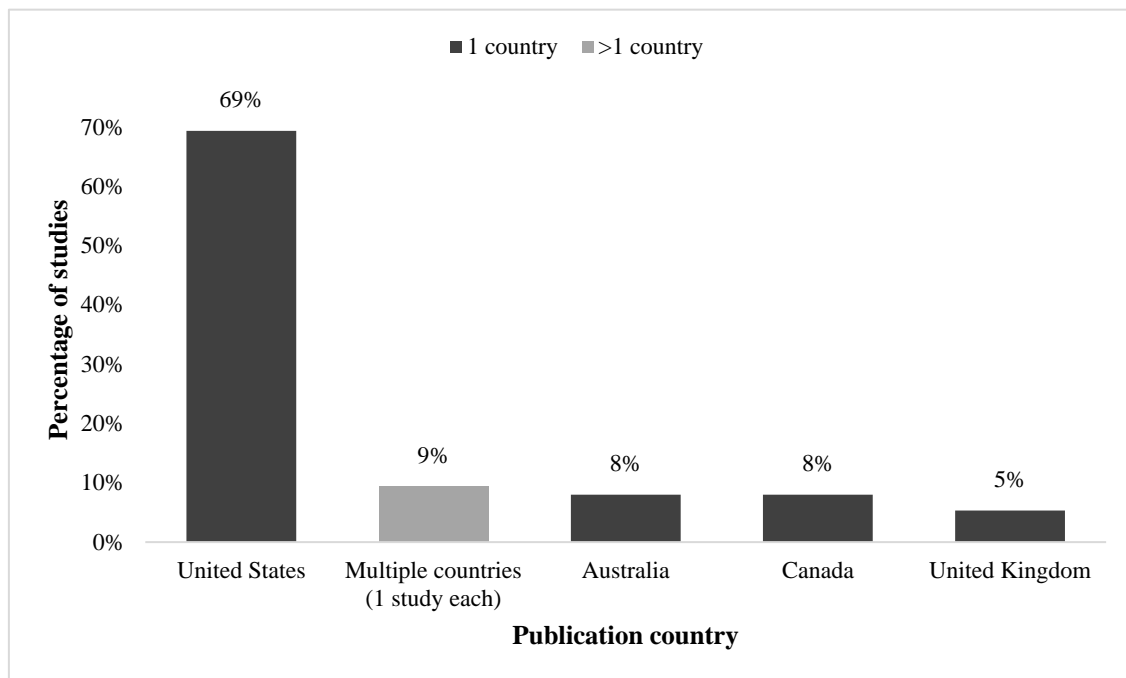


Figure 21. Publication countries of the studies at the mapping stage (N = 75 studies)

The journal fields of the sample studies were defined using the SCImago Journal & Country Rank online resource (SCImago, n. d.). This database contains information about more than 34.100 journals from over 5.000 publishers. Journals are assigned to one or more of 27 subject areas, for instance, psychology and social sciences, and 313 subject categories, like developmental and educational psychology and education (SCImago, n. d.). The 75 sample studies are published in a total of 61 journals. Most of these journals (50) are relevant to one study only. There are nine journals each relevant to two, one journal relevant to three, and one journal relevant to four studies. Of the 61 journals, the large majority of 48 (79%) are listed in the SCImago database (SCImago, n. d.). A list of all journals is provided in Appendix 1. More than half (58%) of the sample studies were published in journals in the field of education (see Figure 22). The journal analysis in SCImago further shows that most of them (31%) are published in journals which relate to education as well as one or more other fields, and 27% are published in journals relevant to the field of education only (SCImago, n. d.). Moreover, the study data illustrate that a quarter of the publications (25%) are published in journals which are not assigned to the field of education. The largest number of these are published in journals relevant to more than one field (11%), followed by studies

in the Social Sciences (8%), in Psychology (3%), and Medicine/Health (3%). In addition, almost 20% of the studies could not be assigned to a field, because the journals in which these studies have been published are not listed in the SCImago database (13 of 61 journals).

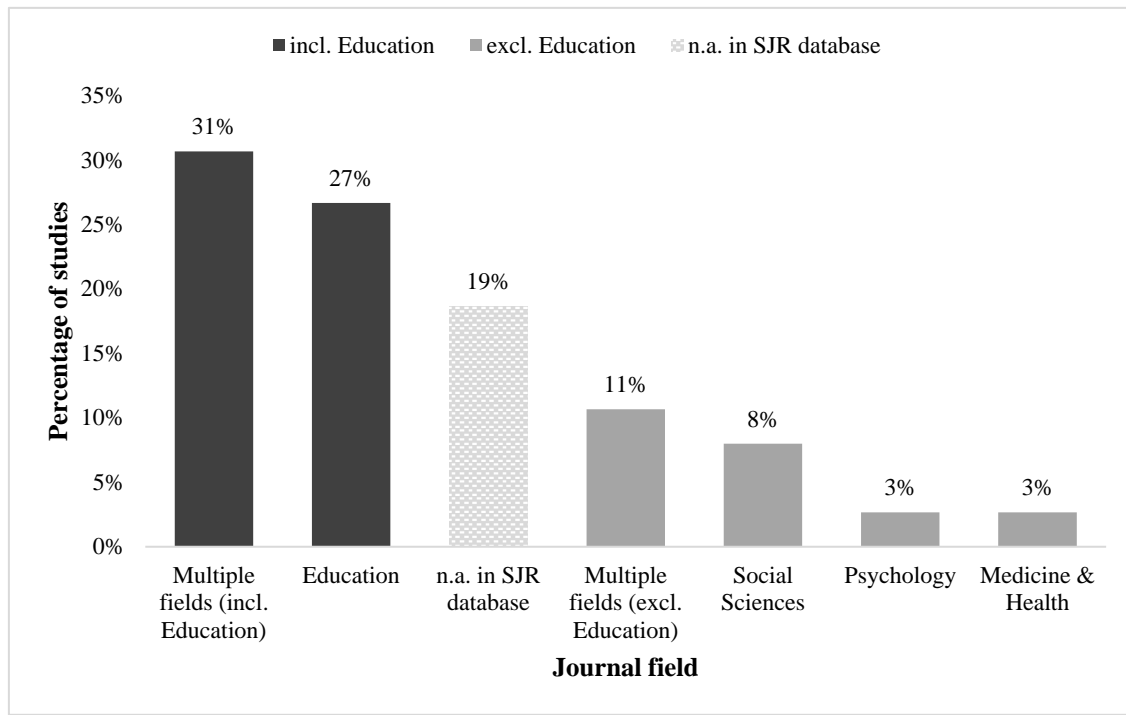


Figure 22. Journal fields of the studies at the mapping stage ($N = 75$ studies)

The following conclusions can be drawn from the study characteristics of dates, countries, and fields: First, the steady rise in publication numbers indicates a rising interest in the connection between resilience and academic success at advanced education levels. This can be considered favorable for the research endeavor of this publication. Nonetheless, it should be taken into account that with 75 studies in the sample, the amount of data to analyze is quite low. Second, concerning the publication countries, the data show that with the United States (69%), Australia (8%), Canada (8%), and the United Kingdom (5%), English-speaking countries are dominating the sample. Since the ERIC database is one of the most well-known literature databases in the field of education in the English-speaking world, this result is not surprising. Moreover, it should be considered that education research is focused on national education systems to a large extent around the world. Consequently, if a similar systematic review were to be planned for Germany, it would be recommendable to collect study data from German education databases, like the “Fachportal Pädagogik” (DIPF, 2019). Third, the analysis of the relevant research fields provides the expected result that most of the studies (58%) relate to the field of education. However, it is interesting to

observe as well that at least a quarter of the studies does not relate to this field. The traditional link of the resilience concept to other subjects, in particular to psychology and medicine, appears to shine through here. While 14 studies could not be assigned to a research field, because 13 of the journals were not listed in SCImago, the author is confident that the current analysis is based on a large enough number of journals so that a good overview of the fields of resilience research on the connection between resilience and academic success can be provided.

4.1.2 Education Levels

Figure 23 shows the distribution of studies per education level. Almost half (49%) of the studies carry out research on students in higher education. This is closely followed by studies at the high school level with 43%. 8% of the studies are relevant both to the high school and the higher education level. The analysis further shows that in most cases, the education levels of the publications do not equal the education levels the study subjects (students) are in. This is particularly true for high school students, because in various studies at the high school level, higher education students report retrospectively about their experiences in high school (Williams & Bryan, 2013; Williams & Portman, 2014).

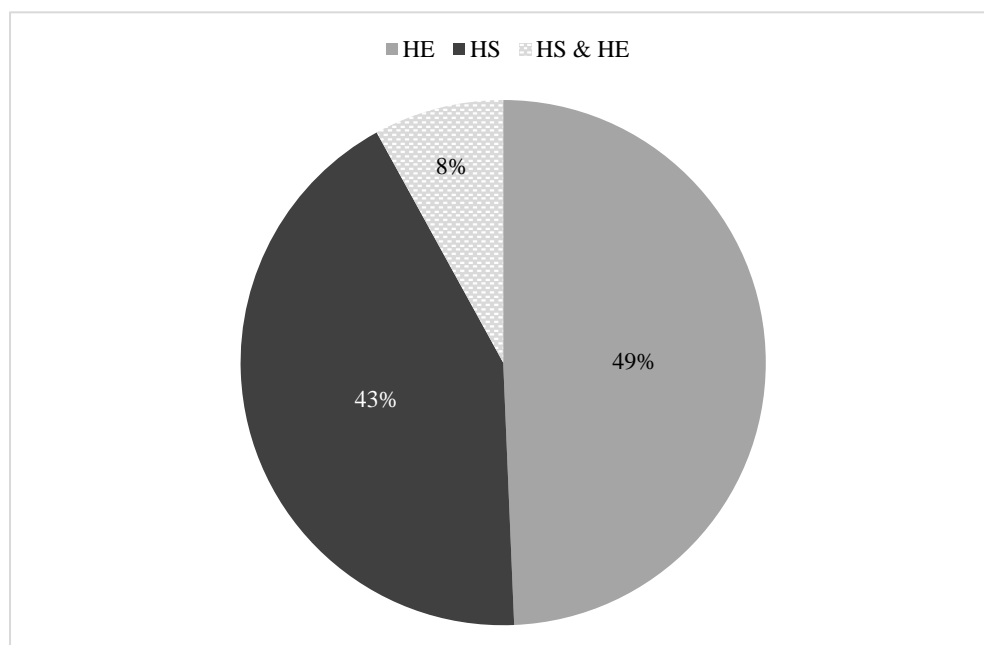


Figure 23. Education levels of the studies at the mapping stage ($N = 75$ studies)

Consequently, the education levels of the studies relate to the levels the students refer to in the studies. This also includes the reports of dropout students, looking back on their

educational experiences in retrospect (Bethea & Robsinson, 2007). A special case of such retrospective reports are studies that take a life-course perspective. These studies report on long stretches along the education pathways of students, often including childhood experiences, the transition to high school as well as the transition to higher education (Cabrera & Padilla, 2004; Campa, 2013; Casanova, 2012). Life-course studies will be discussed in more detail in the synthesis (see Subchapter 6.5).

For some publications, the education levels as they were defined in the ERIC database had to be changed. The studies for which education level changes were necessary are listed in Table 8. All in all, three types of changes were carried out: First, two studies had to be changed from higher education to high school (Borrero et al., 2013; Marsh et al., 2012). Second, for six studies, it was necessary to change the education level from higher education to both high school and higher education (Cabrera & Padilla, 2004; Campa, 2013; Casanova, 2012; Dole, 2014; Hernandez-Martinez & Williams, 2013; Rana et al., 2011). In these studies, more than the university/college experiences of students is covered. They usually take a life-course perspective, as described above. For instance, the study by Cabrera and Padilla (2004) describes the experience of young high achieving immigrant students from “border crossing” (p. 156), to their “high school experiences” (p. 161), and their “life in Stanford” (p. 165). Last, in one case, the education level had to be switched from high school and higher education to high school only (Llamas et al., 2014).

Table 8. Education level changes at the mapping stage

Study ID	Author/s and year	ERIC education level	Changed to
0037	Hernandez-Martinez & Williams, 2013	HE	HS & HE
0093	Borrero et al., 2013	HE	HS
0121	Cabrera & Padilla, 2004	HE	HS & HE
0145	Rana et al., 2011	HE	HS & HE
0199	Llamas et al., 2014	HS & HE	HS
0230	Campa, 2013	HE	HS & HE
0369	Casanova, 2012	HE	HS & HE
0370	Marsh et al., 2012	HE	HS
0397	Dole, 2014	HE	HS & HE

To summarize, the sample data include studies relevant to the education levels of high school and higher education as well as to both education levels. While the study numbers relevant to the higher education level (49%) and the high school level (43%) are of similar size in the sample, which can be considered beneficial to the analysis, it is interesting to note

that most attention is given to university/college students. This occurrence has already been shown in the searching phase of the review (see Subchapter 3.2). The search results illustrated that among the publications relevant to an education level, higher education and/or postsecondary education studies, with 55%, are by far the largest publication group concerned with resilience research in the ERIC database, followed by secondary education (19%) and, with an equal share of 15% each, elementary secondary education, elementary education, and high school. A possible way to explain the interest in higher education students might be that resilience can be considered most in demand in situations in which individuals have a choice in education, and that this choice is more pronounced in later education stages than it is the case at earlier stages. Regarding necessary changes of education levels differing from specifications in the ERIC database, it can be concluded that the cases requiring changes were rare. Education level switches were appropriate for nine studies only. Most changes had to be undertaken for studies that were categorized as higher education studies in ERIC. In one case, a switch from a relevance to both high school and higher education to high school only had to be performed (Llamas et al., 2014). The main reason as to why the ERIC education level descriptors for the studies do not fit in the above described cases is that they are assigned to some studies to signal their relevance to a certain education level rather than showing which education level the students are in. This is, for instance, the case for studies which are primarily deemed to be relevant to teacher education in higher education and are thus categorized as higher education studies despite the fact that the participants in the studies are high school students (Borrero et al., 2013; Marsh et al., 2012). A further example is provided with the study by Llamas and colleagues (2014). The study reflects on the higher education aspirations of students in a specific preparatory program, but the students do not provide first-hand accounts from higher education.

4.1.3 Data Collection and Measurement of Resilience

Figure 24 shows the data types in the sample studies. A large majority of the studies (58%) are carried out using qualitative data. 34% of these studies use one method of data collection. In 24% of them, different qualitative methods are triangulated, for instance, by using interview transcripts as well as observation protocols. For one study (1%), it could not be determined from the methodology section whether a single method or a triangulation of methods was applied. The data further show that 34% of the sample studies are quantitative studies. Almost all of them rely on a single method of data collection, which marks a significant difference compared to the qualitative portion. Only two quantitative studies

(3%) use more than one method for data collection. Last, 8% of the studies can be considered mixed methods studies in that they use quantitative as well as qualitative data for researching the connection between resilience and academic success.

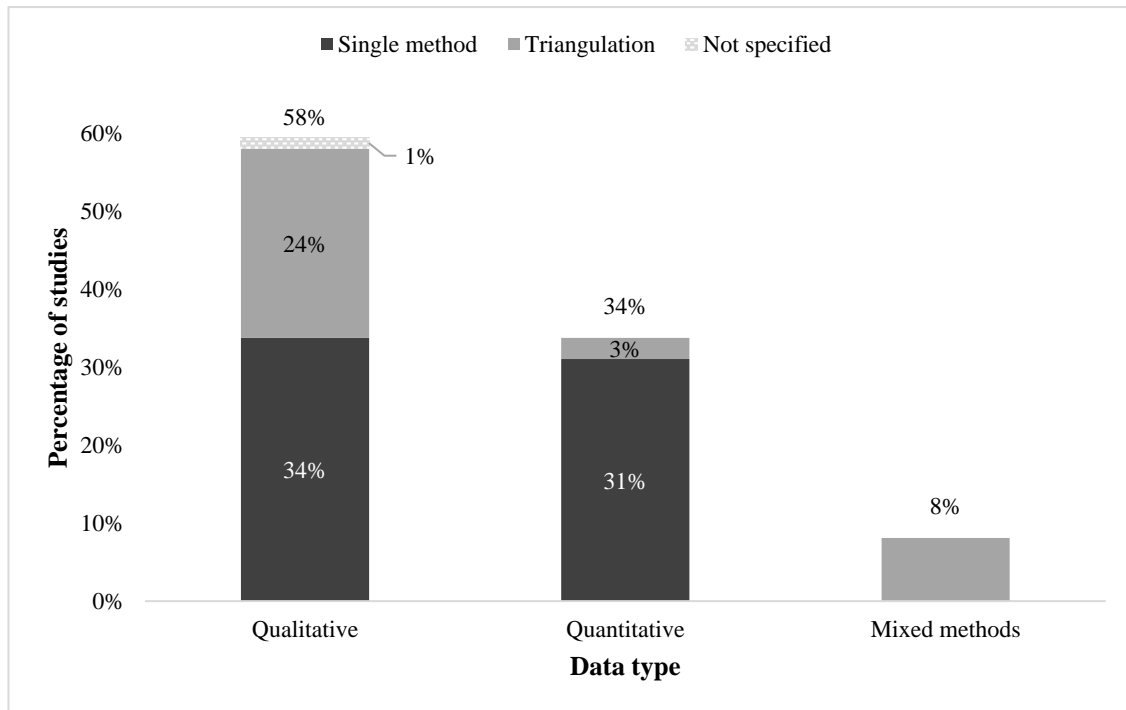


Figure 24. Data types in the studies at the mapping stage ($N = 75$ studies)

The data collection methods employed in the sample studies are illustrated in Figure 25. There are two leading methods of data collection in the sample studies: interviews, which are used in more than half of the studies (55%) as a data collection method, and questionnaires, which are the method of choice in 41% of the publications. In addition, the analysis of the sample studies shows that there are six more data collection methods in the sample studies, which were used to a lesser extent than interviews and questionnaires. The most used one of these are observations (16%) and focus groups (15%). The other four methods are secondary data analysis (8%), document reviews (7%), the use of school district data (3%), and video analysis (1%). Grouping by type of study data yields expected results. The vast majority of the interview studies are qualitative studies (93%). Other data collection methods used mostly in qualitative studies are observations (100% qualitative), focus groups (82% qualitative), document reviews (100% qualitative), and video analysis (100% qualitative). Questionnaires, on the contrary, are employed in quantitative studies (71%) to a large extent. Last, the data illustrate that mixed methods studies use a total of five different

methods, mostly questionnaires (7%), followed by interviews (3%), focus groups (3%), secondary data analysis (1%), and school district data analysis (1%).

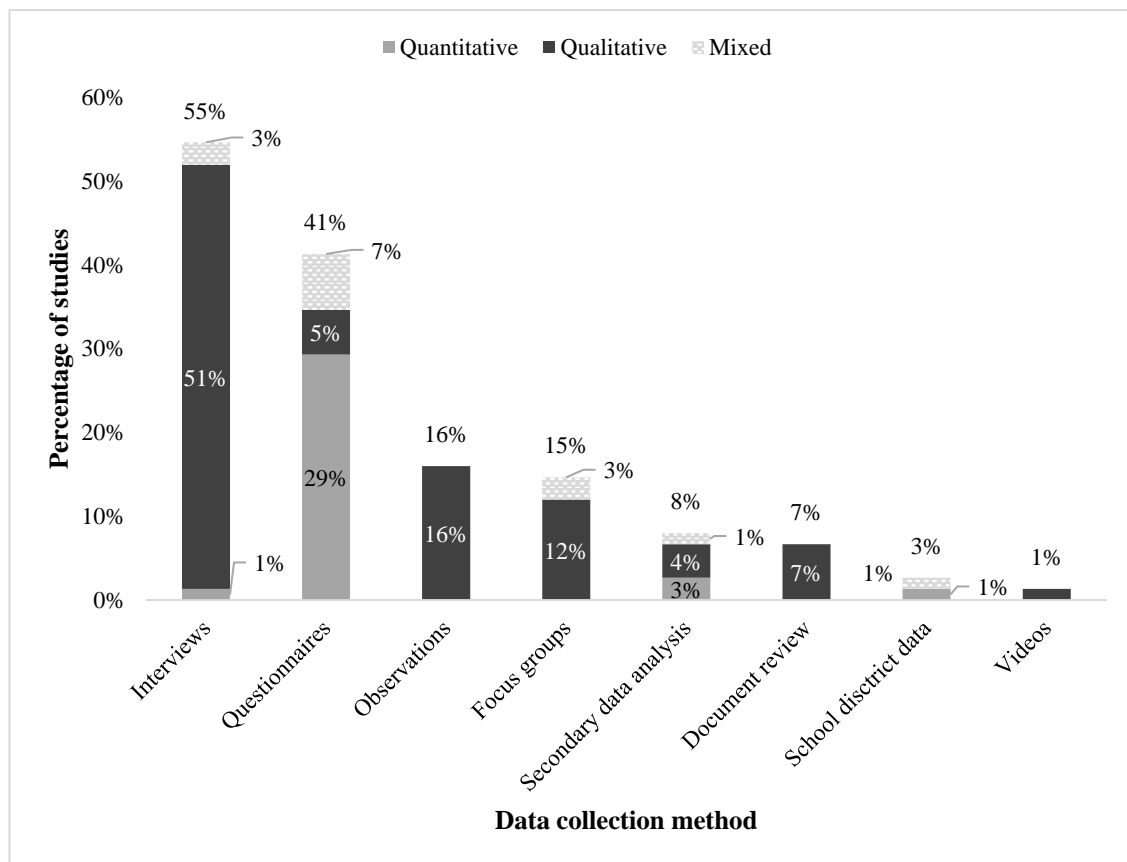


Figure 25. Data collection methods in the studies at the mapping stage ($N = 75$ studies) (Multiple entries possible per study)

The final study characteristic discussed in this subchapter is how resilience is measured in the sample studies. The measurement scales used in the sample are shown in Figure 26. Three quarters (75%) of the sample studies do not use a measurement scale of resilience. When resilience is measured, the scale employed most often to do so is the Connor-Davidson Resilience Scale (CD-RISC) (Connor & Davidson, 2003). 8% of the studies use the CD-RISC, which is one of the most used measuring instruments in resilience research today. Further resilience scales applied in the studies are the Resilience Scale for Adults (RSA) in four studies (Rawana et al., 2015; Sarwar et al., 2010; Stack-Cutler et al., 2015; Yokus, 2015) as well as for two studies each the Academic Buoyancy Scale (Collie et al., 2015; Martin et al., 2010) and two scales self-developed by the study authors (Martin & Marsh, 2006, 2008). In 7% of the studies, a measurement scale for resilience is employed which is not used in any other of the studies. These five measurement tools are the Academic Risk and Resilience

Scale (ARRS) (Martin, 2013), the College Resilience Questionnaire (CRQ) (Reynolds & Weigand, 2010), the Resilience Scale (Wendt et al., 2015), the Resilience Youth Development Module (Llamas et al., 2014), and the Resiliency Belief System (Thornton et al., 2006).

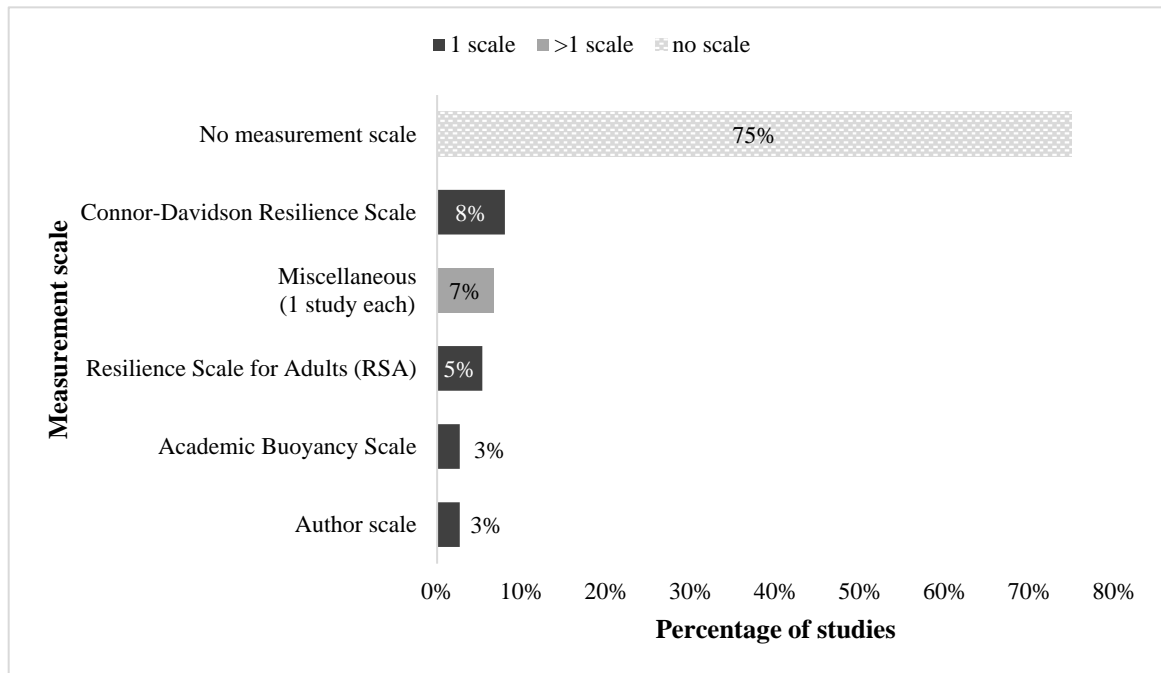


Figure 26. Measurement of resilience in the studies at the mapping stage ($N = 75$ studies)

In conclusion, three aspects should be stressed here about data types, data collection methods, and the measurement of resilience in the sample studies. Regarding the data types, a clear dominance of qualitative studies can be observed. Almost 60% of all sample studies use qualitative data to research the connection between resilience and academic success. The amount of quantitative studies is considerably lower with about 35%. Moreover, there are few mixed methods studies that use both qualitative and quantitative data. This dynamic is reflected in the data collection tools employed. Interviews, which are mostly used in qualitative studies, represent the most frequently used data collection method, followed by questionnaires, which are the tool of choice for the large majority of quantitative studies. In terms of the measurement of resilience, the main result is that most sample studies (75%) do not measure resilience with a scale. This lack of quantitative measurement can be seen linked to a diminished importance of the trait perspective of resilience as described in the literature in many instances (Leipold & Greve, 2009; O'Dougherty Wright et al., 2013; Schoon, 2006). Instead of an understanding of resilience as an innate personality characteristic that can be

measured via a questionnaire, resilience seems to be conceived more and more as a dynamic process that leads to academic success in education research. A further interesting aspect shown by the analysis of the resilience measurements is that there is one measurement only that refers to academic resilience (Martin & Marsh, 2006). All other studies measure psychological resilience, which indicates a strong connection to the concept's beginnings in psychology which is still of major importance in education research today.

4.2 Typology of the Studies

The map of this systematic review categorizes the sample studies into three types. These types describe the three empirical research designs found for studies investigating the connection between resilience and academic success at the high school and/or higher education levels. The typology is not primarily related to the data in the studies, i.e. whether they use quantitative, qualitative or mixed data. Instead, it is based on where resilience is situated in the research designs of the studies. The distinctive factor for defining its position is if the resilience concept is considered an independent or a dependent variable. This will be covered by Type 1 and Type 2. Moreover, the special case of intervention research is included, which is of particular importance for resilience research (see Chapter 2). Intervention studies are described in Type 3. The typology will be explained in detail in the subsequent three subchapters.

4.2.1 Type 1: Resilience as an Independent Variable

In Type 1 studies, the resilience concept represents the independent variable of the research design. As the independent variable, resilience – either in connection with other variables or as the sole variable – influences a dependent variable which in the case of this systematic review, is defined to be the academic success of students in high schools and/or higher education institutions. The sample studies include 13 Type 1 studies. Almost all the studies of this type use quantitative data only to measure the trait of resilience in students and evaluate its effect on their academic success. One exception is a mixed methods study by Johnson and others (2015) in which quantitative as well as qualitative data are collected. Five studies are relevant to the high school level and eight to the higher education level. None of the publications span both education levels. A list of the studies is provided in Appendix 2. Regarding the research design, different approaches can be observed for Type 1 studies. The designs vary, for instance, in that studies either aim to observe a direct or an

indirect influence of the students' resilience on academic success. For the latter case, some authors structure their research so that the influence of resilience on other factors is tested in a first step, before an additional measurement of the influence of resilience and the other factors individually as well as in combination is carried out. In other studies, this model is reversed, so that the influence on certain factors on resilience is examined first. All in all, the author discovered three research designs of Type 1 studies for the sample studies. They are discussed next.

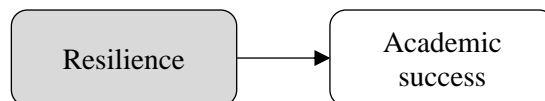


Figure 27. *Type 1.1 studies: Univariate*
(Created by the author)

The first research design is labeled 'Type 1.1: Univariate Model' in this publication. In this design, resilience represents the only independent variable (see Figure 27). Its influence as a personality characteristic of students on academic success is measured in these studies. The design applies to five studies in the sample, two of them at the high school level and three at the higher education level. An analysis of the publications shows that two describe a positive correlation between resilience and academic success (Allan et al., 2014; Yokus, 2015). No correlation is discovered for three studies (Elizondo-Omaña et al., 2010; Sarwar et al., 2010; Thornton et al., 2006). In the following, some examples are presented that show studies relevant to both outcomes.

- *Positive correlation:* A positive correlation between the trait of resilience and academic success has, for instance, been shown in the study by Allan and colleagues (2014). In several research stages, the authors measured the resilience scores of 1.534 entry-level university students in the United Kingdom and the relation between these scores and the students' academic achievement at the end of the first year of their studies.
- *No correlation:* In the study by Thornton and colleagues (2006), no correlation between resilience and academic success was shown. They investigated this connection for a sample of American students at a high school in the United States. An additional example for a lacking correlation between resilience scores and achievement, this time

at the higher education level, is provided by Elizondo-Omaña and colleagues (2010) for a group of medical students.

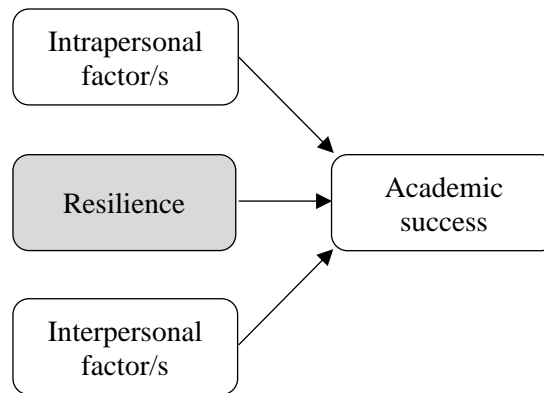


Figure 28. Type 1.2 studies: Multivariate (Unordered)
(Created by the author)

The second subtype of Type 1 are Type 1.2 studies that follow an unordered multivariate model (see Figure 28). In this research design, the correlation of resilience and academic success is tested as one connection among others. The other variables for which a correlation to academic success is tested in these studies can either be personality traits (intrapersonal factors) or environmental factors (interpersonal factors). All in all, five studies of this subtype were found in the sample, one at the high school level and four at the higher education level. One study tests the influence of another intrapersonal factor (Martin, 2013) and four studies investigate both intra- and interpersonal factors (Hartley, 2011, 2013; Reynolds & Weigand, 2010; Stack-Cutler et al., 2015). None of the publications assess interpersonal factors only. Next, examples are provided for each the addition of an intrapersonal variable and of both intra- and interpersonal variables:

- *Intrapersonal factors:* In the study by Martin (2013), the author investigates the influence of academic resilience and academic buoyancy⁸ on the academic success of Australian high school students. Using quantitative methods, he first examines if the two concepts can be used in distinction from each other. In further steps, the author demonstrates how the concepts relate to the grades of severity of different adversities,

⁸ The meaning and significance of the concept of academic buoyancy will be discussed in Subchapter 6.1.

and the order in which students might use academic resilience and academic buoyancy to achieve academically.

- *Intra- and interpersonal factors:* An example in which both intra- and interpersonal factors play a role is provided by Hartley (2011). In this quantitative study, the author carried out a survey with 605 university students, to find out about the roles the personality trait of resilience and factors of social support play in terms of the students' academic achievement as measured by their grade point average (GPA). A further dependent variable used in the study was the students' sense of belonging. In addition, the students' academic aptitude, their previous achievement in high school, the amount of time they spend at work, and the hours spent on extracurricular activities were introduced as control variables in the research design of this study.

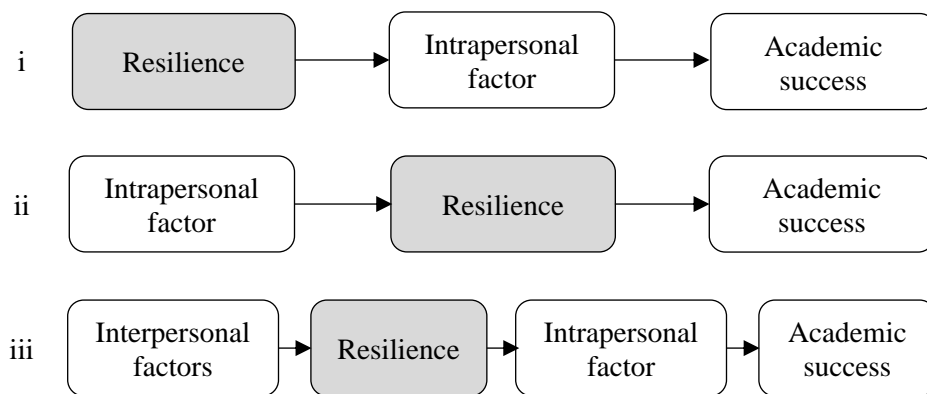


Figure 29. Type 1.3 studies: Multivariate (Ordered)
(Created by the author)

The last subtype of Type 1 are Type 1.3 studies that use an ordered multivariate model (see Figure 29). In these studies, resilience takes a pre-defined position among other independent variables in the research design. This can be as the influencing factor of another personality trait (i), as the variable between a trait and academic success (ii), as well as between environmental factors and personality traits (iii). The ordered multivariate model applies to a total of three studies, two at the high school level and one at the higher education level. The three study examples are provided in the following:

- *Study i:* Collie and others (2015) use quantitative data from 2.971 Australian high school students to investigate the connection between academic buoyancy and academic

success as well as the influence of the factor ‘sense of control’ as a link between the students’ academic buoyancy and their achievement in high school.

- *Study ii:* The study by Martin and Marsh (2006) is based on quantitative data from Australian high school students as well, but it has a stronger methodological focus compared to the study example provided above. A large part of the authors’ analysis focuses on testing their own measurement tool for academic resilience. In a second step, they examine the relationship between academic resilience and factors of students’ motivation as well as academic engagement. In a final step, the connection between academic resilience and positive academic outcomes is investigated.
- *Study iii:* Last, in the third study example, Johnson and others (2015) use a complex model to investigate the influence of resilience as well as both intra- and interpersonal factors on academic success. With a sample of 116 U.S. university students, they examine the relation of resilience models, resilience messengers, psychological resilience, and regulatory strategies on positive academic outcomes. The constructs of models and messengers are related to the roles important people in the students’ lives take in terms of being either resilience messengers or resilience role-models. Regulatory strategies are defined as “time management, effort regulation and self-regulation” (Johnson et al., 2015, p. 873).

In conclusion, Type 1 studies aim to show correlations between students’ personality trait of resilience and their academic success. They attempt to answer the question, if resilience influences the academic success of students in high school and higher education. The basic premise for these studies is the measurement of the personality characteristic of resilience in individuals, i.e. to find out if a person is resilient or not. Such personality-driven research designs have frequently been criticized by scholars (Leipold & Greve, 2009; O’Dougherty Wright et al., 2013; Schoon, 2006). A research design of this kind is often deemed too simplistic for the complex mechanisms relevant to the resilience concept. Nonetheless, Type 1 studies have merits in terms of their explanatory power. Besides answering the question whether resilience has a positive influence on the academic success of students, they can illustrate, if this influence is determined as well by other personality traits or environmental factors, at least regarding the latter two subtypes discussed above. The results of such studies can either stand for themselves or they can be an important starting point for further research endeavors, as it is shown, for instance, in the study by Johnson and colleagues (2015). What Type 1 studies are not capable of, however, is to

describe the mechanisms and/or processes behind correlations, i.e. how the connection between resilience and academic success functions. Given the importance of the process view in resilience research (Egeland et al., 1993; Luthar, 2006; Masten, 2001; Rutter, 2000), this can be considered a severe limitation of this study type.

4.2.2 Type 2: Resilience as a Dependent Variable

Type 2 studies position the resilience concept as the dependent variable in their research designs. This entails two aspects: for one, academic resilience represents the phenomenon of interest in these studies. That is a major difference compared to Type 1 studies in which resilience represents an independent variable in the research model. Second, since resilience serves as the dependent variable in the research designs of Type 2 studies, academic success is often equated with academic resilience. This means that academic success is conceived as academic resilience or at least as an indicator for the presence of academic resilience in many publications. In the literature, the fact that positive outcomes and resilience are sometimes difficult to separate conceptually has been criticized (Kaplan, 2013). Nonetheless, from a methodological perspective, Type 2 studies are well understood. They represent the variable-focused approach of resilience research (Luthar et al., 2000; Martin & Marsh, 2009; Masten, 2001; O'Dougherty Wright et al., 2013). The connection between one or more intrapersonal and/or interpersonal resilience factors and academic success is addressed in these studies. They can be grouped into two subtypes, which are outlined in the next two subchapters.

Type 2.1: Hypothesis-Driven

The first subtype is Type 2.1, which is labeled 'Hypothesis-Driven' in this publication (see Figure 30). Studies of this subtype investigate the impact of pre-defined factors on the positive academic outcomes of students. The authors work with factors for which they assume to have an impact on academic resilience and success. They thus already have one or more hypotheses as to why students are successful. A total of 28 of the sample studies can be considered Type 2.1 studies.⁹ Both quantitative and qualitative data are used in this study type. There are 13 quantitative studies, eight at the high school level, three at the higher education level, and two studies relevant to both education levels. Qualitative data are used in 15 publications, four at the high school level, nine at the higher education level, and two

⁹ One of the studies (Garza et al., 2014) is relevant both to the quantitative portion of the Type 2.1 studies as well as to the qualitative Type 2.2 studies.

in studies relevant to both levels. A list of the Type 2.1 studies is provided in Appendix 2, grouped by their quantitative and qualitative portions.

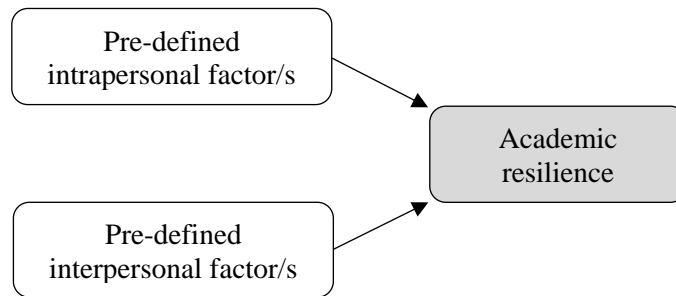


Figure 30. *Type 2.1 studies: Hypothesis-Driven*
(Created by the author)

Of the 28 Type 2.1 studies, five investigate the influence of one or more personality traits (intrapersonal factors) on academic success. Ten focus on environmental factors (interpersonal factors), and 13 studies include both intra- and interpersonal factors in their research designs. In the following, examples are provided for each factor constellation:

- *Intrapersonal factors:* An example for the investigation of the impact of intrapersonal factors on resilience is the qualitative study by Campa (2010). The author tests the influence of “cultivating a larger purpose” (p. 430) on the academic resilience of Mexican American community college students in the United States. In particular, she examines two supportive behaviors which the students adapt: “‘playing the game’ and showing *respeto* (respect)” (p. 431). A further example is provided by Martin and others (2010), who use quantitative data to analyze the influence of motivation on the academic buoyancy of Australian high school students.
- *Interpersonal factors:* In the study by Strayhorn (2011), the impact of an extracurricular activity on academic resilience is discussed for a group of African American university students in a Predominantly White Institution (PWI). The author examines the relation between the students’ participation in the institution’s gospel choir and their academic success. Another example is the qualitative study by Sosa and Gomez (2012), who – among other characteristics – investigate the influence of “teachers’ self-efficacy beliefs around promoting resilience” (p. 884) on the academic resilience of Latin-American high school students. In a further qualitative study, Hernandez-Martinez and Williams

(2013) focus on the role of social capital and cultural capital for the transition of mathematics students from high school to higher education.

- *Intra- and interpersonal factors:* Cavazos and others (2010) use five factors developed by McMillan and Reed (1994) to examine the academic success of Latin-American higher education students. The five factors include both personality characteristics and environmental influences: “high educational goals, support and encouragement from parents, intrinsic motivation, internal locus of control, and high self-efficacy” (p. 185). A further example is the quantitative study by Merdinger and colleagues (2005), who examine the impact of several intra- and interpersonal factors on the academic resilience of high school students with a foster care background. In addition, a study relevant to the transition from high school to higher education is one by Perez and others (2009). They use quantitative data to investigate the academic resilience of undocumented immigrant students in the United States.

To conclude, Type 2.1 studies offer interesting perspectives on the influences of various intra- as well as interpersonal factors on the academic resilience and success of students in high school and/or higher education. Most of the studies use factor combinations (15 of 28). As a result, the studies often illustrate that it is the interplay of different protective and/or promotive factors which enables students to overcome risk and adversities, and which supports their academic achievement. Cumulative effects of this kind have frequently been discussed in the literature on resilience (O’Dougherty Wright et al., 2013; Schoon, 2006; Toland & Carrigan, 2011). However, while it is interesting to observe the impact of various independent variables on the academic resilience of students, caution is advised for drawing conclusions from this. A main limitation of this research design is that the relevance of the pre-defined influence factors can be questioned in some cases. It might be difficult to know for some studies, for instance, if all relevant factors have been considered for a particular research question or, conversely, if too many and/or irrelevant factors are tainting the analysis. Moreover, in some instances, it might not be clear if the impact of the chosen variables has been empirically tested before being used in the study. Despite such limitations, the explanatory power of Type 2.1 studies seems to surpass that of Type 1 studies because resilience processes are considered to a higher extent. While Type 1 studies can show if there is a connection between resilience and academic success, Type 2.1 studies can provide insights about why and how the resilience concept can enhance our understanding about the students’ academic resilience and success. We can learn which factors enable the students

to be successful from the quantitative portion of the studies, and which processes enhance the students' chances for success from the qualitative portion.

Type 2.2: Explorative

Type 2.2 studies are labeled 'explorative' in this publication (see Figure 31). In contrast to Type 2.1 studies, they do not test the influence of pre-defined factors on academic success. Instead, they identify which factors might be relevant to academic resilience and success and, in many cases, explore the mechanisms and processes behind the influence of these factors. In the sample, a total of 28 studies represent Type 2.2.¹⁰ Almost all of them use qualitative data, with the exceptions of two mixed methods studies (Garza et al., 2014; Peterson et al., 2009). Ten publications are relevant to the high school level, 13 to the higher education level, and five to both. A list of the Type 2.2 studies is provided in Appendix 2.

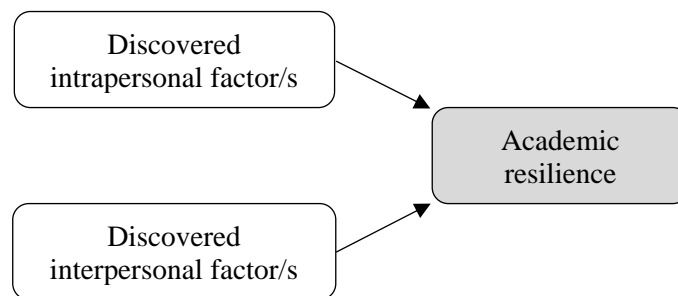


Figure 31. *Type 2.2 studies: Explorative*
(Created by the author)

The large majority of Type 2.2 studies (18 of 28) are concerned with both intra- and interpersonal factors. Ten studies investigate the impact of environmental factors only, while none of them is solely concerned with intrapersonal factors. Conversely, environmental influences are involved in all the studies. The importance of the social environment for processes of academic resilience is stressed in Type 2.2 studies. This aspect will be demonstrated in more detail in Subchapter 6.3. In the following, some study examples are provided to show how Type 2.2 research is carried out:

- *Interpersonal factors:* The study by Williams and Portman (2014) discusses the influences of parents, teachers, school counselors, sports coaches at school, and the

¹⁰ One of the studies (Garza et al., 2014) is relevant both to the quantitative portion of the Type 2.1 studies as well as to the qualitative Type 2.2 studies.

community on the academic resilience of African American high school students. The authors use focus group data to develop recommendations for the support of this student group. They ask: “What are urban African American students’ perceptions of what they need to succeed academically despite their exposure to adversity” (p. 16)? Further examples which focus on the influence of the social environment on the academic success of students are, for higher education, the study by Orr and Goodman (2010), which investigates the academic resilience of college students with learning disabilities, and the article by Campa (2013), in which the author examines the education experiences of Mexican-American students in a community college in the United States.

- *Intra- and interpersonal factors:* Both the intra- and interpersonal dimensions play a role in the study by Morales (2010). The author examines various protective factors and their impact on the academic success of minority students with a low socio-economic status at a U.S. higher education institution. In particular, he addresses the cumulative effects of some of these factors. Among the tested intrapersonal factors are the belief in one’s own abilities, self-esteem, and work ethic. In terms of the students’ social environment, the influence of parents, teachers, and the community were examined. Another example for the use of intra- as well as interpersonal factors is the narrative study by Casanova (2012), which discusses the educational pathway of a successful female Mexican immigrant students in the United States. It covers a large time stretch of the student’s academic experiences, and it applies to both high school and higher education. At the high school level, Reis and colleagues (2004) investigate the personal and environmental resilience factors which support the academic achievement of a group of high-achieving students in an urban setting. In this study, a successful student group is compared to an unsuccessful one. The factors which hinder the achievement of the unsuccessful students are discussed in relation to the supportive factors relevant to the successful student group.

In conclusion, Type 2.2 provides an interesting overview of which intra- and interpersonal factors students consider most instrumental in their academic resilience and success. Studies of this type strongly rely on self-reports by students. Of the three types presented in this subchapter, Type 2.2 studies are thus the publications in which the students’ perspectives about their educational experiences and pathways are shown most explicitly. The focus on the students’ perspective, e.g. in interview- or narrative studies, is seen positively by many researchers in the field, and is one of the main reasons as to why the

Type 2.2 studies are most suitable to be used for the framework synthesis of this publication (see Subchapter 4.3 below). Nonetheless, self-reported student data are also mentioned to be a limitation or at least a critical point researchers and readers should be aware of by various authors (Collie et al., 2015; Martin, 2013; Martin & Marsh, 2006).¹¹ It is claimed, for instance, that relying solely on the students' viewpoints leaves too much room for bias. Consequently, triangulation of data collection methods is often recommended, to solve the problem of having one data source only (Bethea & Robinsinon, 2007; Sosa & Gomez, 2012; Strayhorn, 2011). This will be discussed in more detail as part of the quality appraisal of the studies for the synthesis below (see Chapter 5). All in all, it is the opinion of the author that the advantages of Type 2.2 studies outweigh their disadvantages. Their explanatory power, similar to what was discussed for Type 2.1 studies, surpasses the measurement of correlations between various intra- and interpersonal factors and academic resilience. Type 2.2 studies allow us to learn more about the resilience processes that lead to academic success, i.e. how different factors are promotive and/or protective for students on their education pathways. In addition, the studies take into account the students' viewpoints to a great extent, which the author considers highly beneficial in terms of the question how at-risk students can achieve academically in high schools and/or higher education institutions.

4.2.3 Type 3: Intervention Studies

Type 3 studies examine the impact of resilience interventions on the academic success of students (see Figure 32). In these studies, the impact of different forms of institutional support on the academic resilience and success of students is investigated. Considering the division between Type 1 and Type 2 studies, Type 3 studies are representative for the variable-focused approach in which academic resilience serves as a dependent variable, like it is the case for the studies of Type 2 discussed above. The studies are categorized as a separate type, nonetheless, because of the importance of intervention studies in resilience research (Luthar, 2006; Masten, 2001; O'Dougherty Wright et al., 2013; Rutter, 2000) as well as the fact that Type 3 studies are the only studies in the sample which offer a detailed discussion of institutional involvement in the academic resilience of students. Altogether, seven Type 3 studies are available in the sample, five at the high school level, one at the

¹¹ It should also be mentioned that self-reporting is not considered to be problematic in qualitative studies only. Instead, the authors of studies using quantitative data are reporting possible self-reporting biases as well. For instance, it is described in two Type 1 studies that academic achievement data were collected via student self-reports of their GPA scores (Johnson et al., 2015; Stack-Cutler et al., 2015). The authors stress that this is not best practice.

higher education level, and one relevant to both high schools and higher education institutions. Three of the seven studies use qualitative data. In addition, there are three mixed methods studies and one quantitative study in Type 3. A list of the Type 3 studies is provided in Appendix 2.

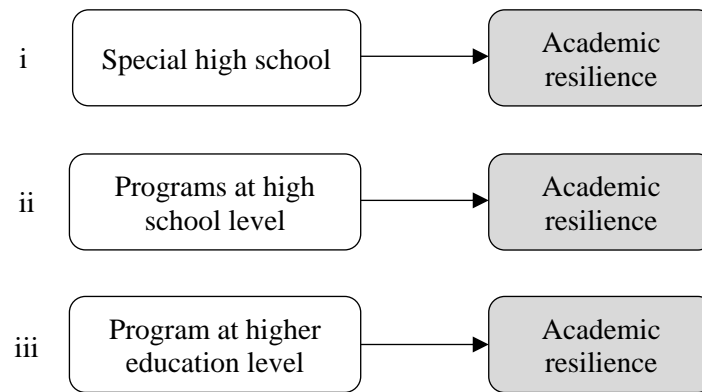


Figure 32. *Type 3 studies: Interventions*
(Created by the author)

Three kinds of institutional influence are discussed in the Type 3 studies of this sample. First, the influence of a special high school on the academic success of students is investigated (Borrero et al., 2013). Second, supportive education programs are discussed, in four cases for programs in high schools (Knaggs et al., 2015; Llamas et al., 2014; Shepard et al., 2012; Wendt et al., 2015) and, in one instance, for a program for high school dropouts offered by an external institution (Betha & Robinsinon, 2007). The third category of institutional support is described in a study about a particular education program at a university (Rawana et al., 2015). All three will be illustrated with examples next:

- *(i) Special high school:* Borrero and others (2013) describe supportive measures provided at Bay Academy, a high school in the United States, focusing on at-risk students. In particular, the authors describe the impact of “school culture” (p. 100) which centers – among other factors – on involving the families of students.
- *(ii) Programs at high school level:* An example for a supportive program in high school is provided by Knaggs and others (2015). In their mixed methods study, the authors discuss the effects of taking part in a so-called GEAR UP program which high school students in the United States can attend to prepare for higher education. One question the authors attempt to answer is: “Do traditionally underrepresented groups of students

(racial minority and low-SES) who participated in GEAR UP have significantly greater college enrollment and persistence compared to those who did not participate in GEAR UP” (p. 11)? In terms of programs offered for high school level students by other education institutions, Bethea and Robinsinon (2007) describe the merits and limitations of Project ReConnect. This program is designed to support students who dropped out of high school for various reasons. The article investigates “if and how Project ReConnect contributed to the resiliency of its at-risk study participants” (p. 5).

- (iii) *Program at higher education level:* Rawana and colleagues (2015) discuss the establishment and impact of the Aboriginal Leadership and Mentoring (ALM) Program. The program aims to support Aboriginal university students. In their study, the authors examine “if participating in the ALM Program improved students’ resilience and ethnic identity awareness” (p. 10).

In conclusion, Type 3 studies investigate the effectiveness of institutional measures to support students in high school and/or higher education. They offer insights on how the academic resilience of students can be advanced by institutions. In doing so, the publications stand in the long tradition of resilience intervention studies. The number of publications on prevention and intervention measures has been on the rise in the last couple of decades in resilience research (O’Dougherty Wright et al., 2013). Knowledge about resilience traits, outcomes, and processes is frequently used in practical settings in this research, to support individuals to overcome adverse situations at different stages in their lives. In education, researchers often aim to improve the chances of students to advance, in particular regarding at-risk students who often face a variety of hardships during their school and/or higher education experiences (Bethea & Robinsinon, 2007; Borrero et al., 2013; Llamas et al., 2014). Regarding the intervention studies in the sample, it can be criticized that most of them do not use an experimental design which is recommended as the “gold standard” (O’Dougherty Wright et al., 2013, p. 27) for this study type. In one study only, by Knaggs and others (2015), “a quasi-experimental mixed methods design was used to study the impact of the GEAR UP school reform on college enrollment and persistence” (p. 13). Nonetheless, while this lack of experimental research designs can be considered a limitation of Type 3, the studies are highly beneficial for our understanding of the processes of academic resilience and success as they relate to the abilities of institutions to support students. The studies thus have a high practical relevance. They show how academic success of students can be fostered by institutions inside as well as outside the high school and higher education system.

4.3 Synthesis Selection

The map of this systematic review is an essential preparatory step of the publication at hand because it determines the studies which are used subsequently for the quality appraisal (see Chapter 5) and the framework synthesis (see Chapter 6). Figure 33 presents a flow diagram of the selection process in this step. A total of 75 studies were included at the mapping stage. The analysis of the research designs of these sample studies showed that they can be grouped into three types which are based on the dual distinction whether academic resilience represents an independent (Type 1 studies) or a dependent variable (Type 2 and Type 3 studies) in their research designs. Type 3 comprises the intervention studies in the sample. In these studies, academic resilience is the phenomenon of interest, i.e. it marks the dependent variable in their research designs, but they are emphasized in a separate category, because of the high relevance and usefulness of intervention designs in education. Regarding the number of studies in each type, the analysis shows 13 Type 1 studies, 55 Type 2 studies (28 of Type 2.1 and 28 of Type 2.2), and seven Type 3 studies. One study (Garza et al., 2014) is relevant both to Type 2.1 and to Type 2.2.

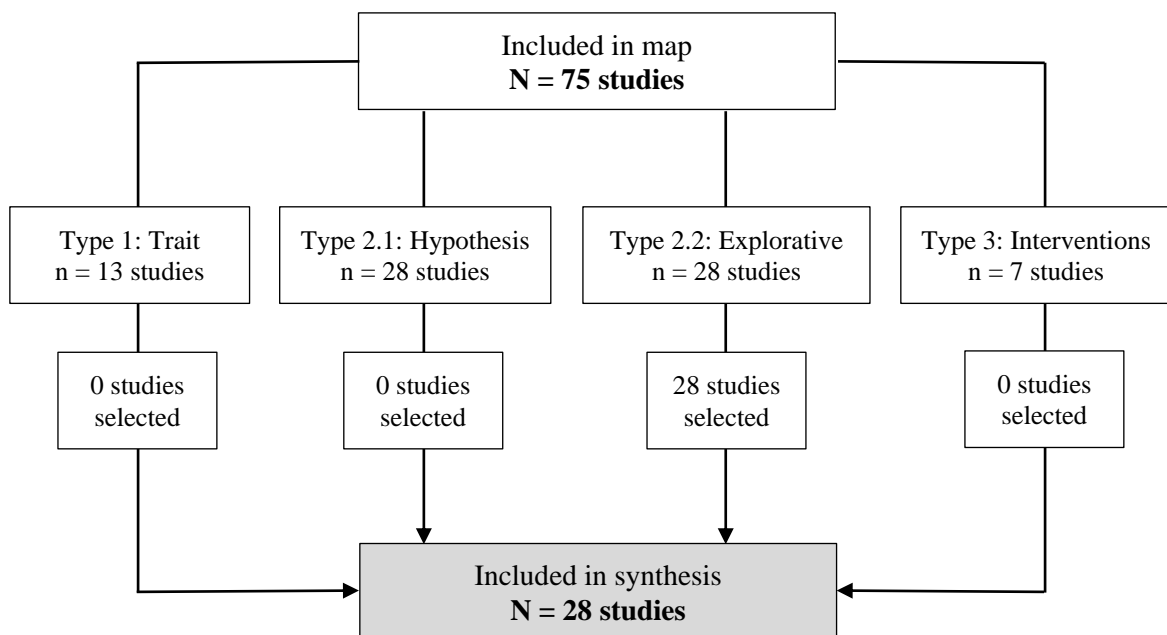


Figure 33. Studies selected for synthesis ($N = 75$ studies)
(Created by the author)

In this publication, all 28 Type 2.2 studies are selected for the synthesis (see Figure 33). This choice is based on three reasons. First, it is advised to have a homogenous entity of studies for an aggregative synthesis (Gough & Thomas, 2012; Thomas et al., 2012). In the

case of the selected Type 2.2 studies, they are homogenous in terms of the data types used – all of them use qualitative data – and in terms of the position of resilience as the dependent variable in their research designs. Because of these similarities, the sample supports a mainly aggregative synthesis process and is thus suitable for the publication at hand which largely builds on the ability to cumulate and compare qualitative data at the synthesis stage (see Chapter 6). Second, the focus on Type 2.2 studies can be defended in terms of the scope recommendable for a doctoral thesis. From the beginning of the systematic review process, considerations about a manageable review approach were included in the review design (see Subchapter 3.1). Reducing the number of studies from 75 to 28 seems appropriate both in relation to the work feasible and a sufficient number for the synthesis of qualitative studies (Brunton et al., 2006; Thomas et al., 2003).

A last reason for choosing Type 2.2 addresses the informative value of the data used in the synthesis. The data in Type 2.2 studies are mainly based on students' reports about how they achieved academic resilience and success. A guiding question for their research designs would be: How do students in high school and higher education institutions experience and explain their academic resilience and success? Many researchers in the field of resilience in education have asserted that self-reports by students on their academic resilience offer various advantages. It is stated, for instance, that we can learn the most from the insights of high achievers about what is important for their academic success, i.e. through which factors in their lives their academic resilience is influenced (Sosa, 2012; Waterman & Lindley, 2013). As Williams and Portman (2014) state, "students possess unique knowledge and insight into the individual, relational, cultural, and contextual factors that affect their academic performance" (p. 13). Despite a variety of critical points concerning the pitfalls of self-reporting (Orr & Goodman, 2010; Rana et al., 2011), the author agrees with this assessment. As a result, Type 2.2 studies seem to be the best choice for finding out about the aspects that make up resilience processes, like the interplay between the students' personality characteristics with their social environments as well as their reflections about particular situations in their academic and personal lives. It seems that this is needed the most for the synthesis of the publication at hand, particularly due to the aim of formulating recommendations for students in high schools and higher education institutions which should relate as closely as possible to the students' own experiences (see Subchapter 7.5). Appendix 3 in this publication provides an overview of the objectives, methodologies, sample characteristics, and quality scores of the 28 synthesized studies.

5. Quality Appraisal

The quality appraisal of the studies used for addressing the review question is a paramount step in the review process. Quality appraisal has been defined as “the process of carefully and systematically examining research to judge its trustworthiness, and its value and relevance in a particular context” (Harden & Gough, 2012, section 2, para. 2). The definition shows that it is the reviewer’s task to determine the quality of studies used in a systematic review, meaning foremost the studies’ methodological reliability as well as relevance in terms of what one wants to find out with a review (Greenhalgh & Brown, 2014). This assessment is a solid building block of every review. While a certain amount of variation can be observed about the planning and execution of other steps in the review process, for instance, concerning the mapping stage, as described in Chapter 4, quality appraisal is generally considered as being an area of no compromise (Gough & Thomas, 2012). The reason for the centrality of quality considerations in systematic reviews is their potential impact on the review’s results (Greenhalgh & Brown, 2014). In fact, as Harden and Gough (2012) state, the quality appraisal of studies used in a systematic review “(...) contributes to the quality and credibility of a review itself” (section 1, para. 1). The trustworthiness of the quality appraisal chapter of a systematic review will likely have a large influence on how the whole review is conceived by experts in research and practice (Harden & Gough, 2012).

This chapter aims to provide a thorough discussion of aspects concerning the quality of the studies used for the systematic review at hand. It is the author’s intention to “(...) ensure that only the most appropriate, trustworthy and relevant studies are used to develop the conclusion of the review” (Harden & Gough, 2012, section 1, para. 1). The quality appraisal of this publication aims to offer a detailed overview of the study quality in the review. By doing so, the reader should be provided with a foundation for judging the merits and limitations of the included articles and, thereby, the quality of the results described in the synthesis (see Chapter 6). The question to answer in the current chapter is:

What do we need to consider in terms of study quality for the synthesis?

All in all, the aim is to convince the reader of the reliability and trustworthiness of the publication results. It became clear early in the research process that, to do so, it would not be enough to rely on the peer-review status of studies or on high impact factors associated with authors and/or journals for that matter (Greenhalgh & Brown, 2014). While important

for a general overview, they are not reliable indicators for study quality, in particular, as quality relates to specific review questions (Harden & Gough, 2012). Conversely, it is essential to evaluate the quality of each individual study included in a review via clear and reliable criteria and to conduct the whole process as systematic as possible.

At the planning stage of a systematic review, two main decisions need to be made about quality appraisal. The first decision is about when to carry out the quality assessment, i.e. the position of the quality appraisal in the review process. Various scholars discuss this aspect in the methodological literature (Gough & Thomas, 2012; Greenhalgh & Brown, 2014; Harden & Gough, 2012). They mostly focus on the relation between the timing of quality appraisal and the different uses of their results (Cherry et al., 2014; Fleeman & Dundar, 2014). In which way the results of the quality appraisal should be used represents the second decision to make in the planning phase of a review. Harden and Gough (2012, section 3 para. 10) provide four use cases for quality appraisal results. The authors state one approach is to exclude studies which do not reach a certain quality value level as defined by the author (“‘threshold’-approach”). Second, they describe the “‘weighting’-approach” in which the impact of studies in a review’s synthesis is defined by their quality level, and the “‘descriptive’-approach” in which the reader is offered detailed descriptions about the quality of the included studies, so that they can assess the impact of quality differences themselves. Last, Harden and Gough (2012) present the option of a “‘sensitivity analysis” (section 3 para. 10) in which the impact of the inclusion of studies with different quality values is shown via different scenarios in the synthesis. In the publication at hand, the author decided to position the quality appraisal between the mapping stage and the synthesis. For the map, it was not deemed useful to assess the quality of the whole sample (75 studies), since it was a major goal of mapping to define the final sample for synthesis (28 studies). The quality appraisal of this publication is thus a preparation for the synthesis stage. It will follow the “‘descriptive’-approach” (Harden & Gough, 2012, section 3, para. 10). No studies will be excluded at this stage (see Subchapter 5.3).

Chapter 5 comprises three subchapters. Subchapter 5.1 addresses quality issues of systematic reviews as a whole as well as in terms of the tool and data used for the quality appraisal in this publication. The first section (5.1.1) provides an overview of general measures of quality for the systematic review process, focusing particularly on the relevance appraisal of studies at the selection stage. Section 5.1.3 focuses on the specific tool used for quality appraisal in this publication, and questions about the significance of which data are examined for quality appraisal are addressed in Section 5.1.2. Next, Subchapter 5.2 covers

the quality criteria used for quality appraisal in this publication. This includes discussions about the sample studies' samples (sampling frame, sampling), participants (number, age, sex), data collection methods (appropriateness, validity, and reliability of methods), and data analysis (method, quality). Last, the results of quality appraisal are presented in Subchapter 5.3. The distributions of quality criteria and quality values in the sample studies are presented. Moreover, the author discusses the use of the quality appraisal results at the end of this subchapter.

5.1 Measures, Data, and Tool

This subchapter covers general and specific quality considerations for the systematic review process of this publication.

5.1.1 Quality Measures in a Systematic Review

The systematic review method distinguishes between external and internal measures of quality. External measures mainly relate to different forms of external consultation regarding the process and results of the review, for instance, from external advisors or experts in the field. Moreover, providing review material for external use, for instance, by making the review protocol and/or parts of the data analysis for synthesis available to the public via an online platform, is discussed as a further method to enhance the ability of external quality assessments (Oliver et al., 2012). In terms of internal measures, the two factors of good teamwork and research management are stressed in the literature (Fleeman & Dundar, 2014; Greenhalgh & Brown, 2014; Harden & Gough, 2012; Oliver et al., 2012). For one, it is recommended to carry out systematic reviews in teams. Benefits in working together are particularly seen for piloting and testing different data extraction tools, for instance, for the steps of mapping, quality appraisal, and the synthesis, as well as for coding when analyzing studies for the synthesis. Second, the necessity of proper research management is underlined in the literature (Oliver et al., 2012). This includes aspects of information management, product management, and project management. As Oliver et al. (2012) describes, vital aspects are “filing systems for paper and electronic documents, excellent record-keeping for all decisions, reporting templates that match PRISMA standards for reporting reviews, good writing skills, plagiarism rules and citation systems” (section 7, Box 4.7).

For the publication at hand, the author had to find appropriate solutions for both external and internal quality measures of systematic reviewing. The internal measure of teamwork,

as it was described above, could not be applied, since this would conflict with standards of good scientific practices of doctoral theses in many cases. Therefore, the author decided against carrying out steps of data collection and analysis with colleagues, but to acknowledge the lack of teamwork as a main limitation of the systematic review. The limitation of working alone will thus be thoroughly addressed in the conclusion of this publication (see Subchapter 7.3), as it is recommended, for instance, by Greenhalgh and Brown (2014). In terms of the second internal quality measure of research management, the author is confident to increase the trustworthiness of the review process. Information management, in particular, plays an important role in the review design, and is discussed in detail at the planning stage for this publication (see Subchapter 3.1). As Oliver and others (2012) advice, it is good practice “(...) to maximise the transparency of the work by making it public every step of the way” (section 7, para. 4). The author attempts to do so by providing as much information as possible about the review processes and results in the text, including tables and figures as well as additional information in the appendix. Last, concerning the external measures, it can first be said that external consultation and assessment of the review process are provided as part of creating and submitting the doctoral thesis at hand. Furthermore, in regard to the availability of the data for the public, all data for the five major parts of this review – search, selection, map, quality appraisal, and synthesis – are stored and analyzed in one data file (Microsoft Excel) each. The author is thus prepared to provide the datasets on which the judgments for each review step are based on, either online, when the thesis is published, or via E-Mail, when the author is approached to share the data in the scientific community.

Besides external and internal measures, the quality of this systematic review is considered in terms of the “Weight of Evidence Framework” (Harden & Gough, 2012). This framework consists of three parts which relate to both quality and relevance aspects of reviews. They serve as a general orientation in this publication. The first dimension of the framework is the “quality of execution” (Harden & Gough, 2012, section 3, para. 4) of the studies used in the review. It refers to the examination of the quality indicators of studies as they relate to a specific publication type, for instance, concerning publications using quantitative or qualitative data, which is commonly referred to as quality appraisal. The second dimension of the framework is concerned with the question if the studies are appropriate for addressing the question the review sets out to answer. And third, in close relation to the aspect of appropriateness, the framework includes the dimension of the general suitability of the studies for a review, i.e. “how well matched the study is to the focus of the review in terms of its topic and its operationalisation, its sample and population,

context, and/or any measures used or its usefulness in other ways” (Harden & Gough, 2012, section 3, para. 4).

The Weight of Evidence Framework is applied to the quality considerations of this publication to ensure that both relevance and quality aspects are examined for the sample studies. It is recommended in the literature to use the framework as a general guideline for doing so (Harden & Gough, 2012). In this publication, the first dimension of the framework is addressed in detail with the examination of the quality criteria of the sample studies (see Subchapter 5.2). The “quality of execution” (Harden & Gough, 2012, section 3, para. 4) is determined for each of the articles. Dimensions two and three of the framework are approached at the searching and selecting stages of this thesis (see subchapters 3.2 and 3.3). The author used specific searching and inclusion criteria to make sure that only those studies are selected for further processing which are the most appropriate to answer the review question as well as considering their overall suitability for the review at hand.

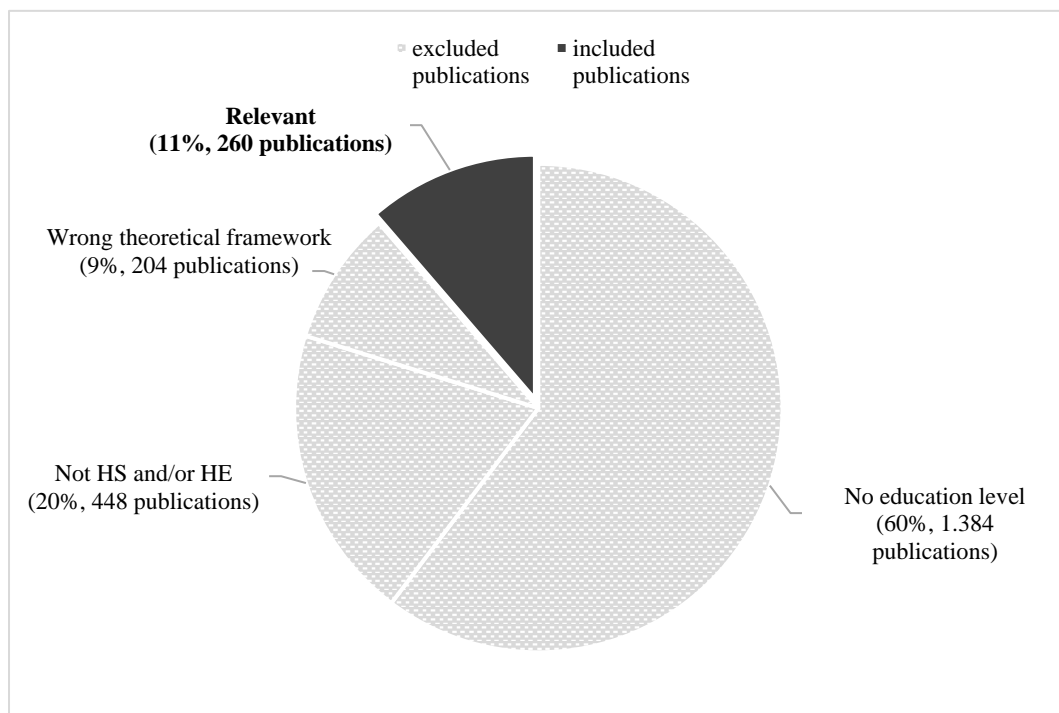


Figure 34. Relevance appraisal of the publications in this systematic review
($N = 2.296$ publications)

Therefore, relevance appraisal took place at an early stage in the review process. The possibility to do so is described in the literature. Harden & Gough (2012) state, for instance, that the three steps of the Weight of Evidence Framework “may be dealt with by some other part of the review process, such as screening out particular research designs or outcome

measures at the inclusion/exclusion criteria stage of a review” (section 3, para. 4). The next paragraph of this subchapter discusses the results of the relevance appraisal of this publication (see Figure 34). The rest of Chapter 5 is devoted to the first dimension of the Weight of Evidence Framework, i.e. the quality appraisal of the sample studies.

Figure 34 shows the results of the relevance appraisal of this publication. The relevance of studies for the review was evaluated with great scrutiny through thorough searching and selection processes (see subchapters 3.2 and 3.3). The results show that only 11% of all studies retrieved from the ERIC database (ERIC, n. d.) are relevant to the review at hand. In the first step, at the searching stage (see Subchapter 3.2), 60% of the search results were excluded because they were not assigned to a particular education level, and 20% were not taken into further consideration due to them being relevant to other education levels than high school and/or higher education. In a second step of relevance appraisal, at the selection stage (see Subchapter 3.3), a further 9% of studies with the wrong theoretical background were sifted out. Only studies which used the term resilience in a theory-related way, and which used a resilience form relevant to the field of education were included for further processing. In summary, the majority of the publications discovered via the search in the ERIC database had to be excluded. In terms of the Weight of Evidence Framework, these studies were neither appropriate for answering the review question nor did they match other criteria for being relevant to further steps of the review like the map or the synthesis (Harden & Gough, 2012).

5.1.2 Data for Quality Appraisal

In terms of the data used for quality appraisal, two aspects are crucial. The first aspect is the data type in the sample studies. In this publication, we are exclusively concerned with the appraisal of qualitative data. Two mixed methods studies (Garza et al., 2014; Peterson et al., 2009) are part of the sample of 28 studies, but for them, only the qualitative portion is relevant to analysis. The second central aspect is the question which parts of the studies constitute data for quality appraisal. In the case of this publication, the author solely considers what is described in the methodological sections of the studies. For instance, when a study has more than one author, it is a rule of analysis not to conclude routinely that this has a positive effect on quality. Instead, to be of note, the study authors would need to refer to a positive effect in the text, for example, regarding the advantages of carrying out data analysis in a team. At large, the decision to do so, bears consequences, as illustrated with the three studies in the sample by Morales (2008a; 2010; 2014). All three of these studies are

based on the same data set. However, the methodology section for one study (Morales, 2014) is not as detailed as for the other two studies. Consequently, this study is assigned 0.5 fewer points than the other two on account of a lacking description of the sampling frame (see below). Fortunately, in this publication, this is the only study for which this is the case.

5.1.3 Quality Appraisal Tool

A systematic quality appraisal process requires the use of a quality appraisal tool. Quality appraisal tools enable researchers to apply the same method of quality assessment to each of the included studies and, thereby, to capture the decision process for each study (Harden & Gough, 2012). As Harden & Gough (2012) state, these “tools provide a structured approach for assessing quality and relevance” (section 5, para. 1), and they increase the transparency of the process for the reader. There are various tools available. A crucial aspect to consider when choosing a tool is its fit in terms of the characteristics of the systematic review at hand. In this regard, one of the leading aspects is the data type used in the sample studies (Greenhalgh & Brown, 2014; Harden & Gough, 2012). Since this publication uses qualitative data only, a quality appraisal tool will have to be chosen that is best suited for qualitative studies. When working with qualitative studies, the literature advises for a certain degree of flexibility in the quality appraisal approach, because “the included studies will almost certainly be based on different qualitative research approaches” (Cherry et al., 2014). In this publication, flexibility is, for instance, expressed in the necessity to modify the chosen quality appraisal tool (see below). Moreover, in regard to the different approaches of data collection and analysis, Subchapter 5.2 will provide a detailed overview.

The quality appraisal tool used here is based on the well-established work of Brunton and others (2006). These authors developed a tool for the quality appraisal of qualitative studies, which applies to the methodological standards and processes of reviews carried out by the EPPI-Centre (2019), one of the institutes most experienced in the method of systematic reviewing. The tool consists of ten quality criteria to be answered for each sample study in four areas. The first quality area is about the sampling methods. It includes the quality criteria of thorough descriptions of both the sampling frame and the selection process of potential study participants from the sampling frame. Four quality criteria in the second quality area are concerned with the characteristics of the chosen sample. This includes questions about the number, age, sex, and socio-economic statuses of the study participants, to evaluate, if the studies provide the reader with sufficient demographic information about the study participants. Quality area three relates to the data collection process. It addresses

both the reliability and the validity of the data collection tools used. Last, the fourth quality area addresses the appropriateness of the methods in the included studies. Brunton and colleagues (2006) describe that two quality criteria are used here “for ensuring that findings were rooted in people’s own perspectives and to the usefulness of the study for the purposes of the review” (p. 17).

Table 9. Quality appraisal criteria

(The table depicts the first ten rows of the Excel sheet employed for quality appraisal.)

A	B	C	D	E	F	G	H	I	J	K	L	M
ID	First author, Date	Sampling frame	Selection from sampling frame	Number of participants	Age of participants	Sex of participants	Appropriate data collection method	Validity of data collection tool	Reliability of data collection tool	Data analysis description	Data analysis quality	Sum
0006	Peterson, J., 2009	1	1	1	0	1	1	0	1	1	1	8
0023	Freeman, J. G., 2004	0.5	0	1	1	1	1	0	1	1	0.5	7
0028	Ben-Tsur, D., 2009	0.5	1	1	1	1	1	0	0	0	0	5.5
0030	Mallon, J., 2005	0.5	1	1	1	1	1	1	0.5	1	0	8
0040	Lessard, A., 2014	0.5	1	1	1	1	0	0.5	0.5	1	0.5	7
0052	Carter Andrews, D. J., 2012	1	1	1	1	1	1	1	0.5	1	0	8.5
0121	Cabrera, N. L., 2004	0.5	1	1	1	1	0	1	0.5	0	0	6
0129	Morales, E. E., 2008a	1	1	1	0	1	1	1	1	1	1	9
0145	Rana, M., 2011	1	1	1	1	1	0	0.5	1	1	1	8.5
0179	Hersi, A. A., 2011	0.5	1	1	1	1	0	1	0.5	1	0.5	7.5

In this publication, the author adapted the tool by Brunton and colleagues (2006) to the demands of the systematic review at hand. He implemented two modifications. For one, the criterion of socio-economic status is not used for the description of the sample in the second quality area. The reason for doing so, is that an inclusion of this criterion would likely distort the quality values for the sample studies. An analysis of the studies included here has shown that the socio-economic status of the students can often not be clearly separated from other risk factors, mainly the students’ ethnicity and/or cultural background. As a consequence, the assessment of socio-economic status is deemed to be too imprecise in the case of this

sample. Second, the criterion that assesses whether a study “would contribute towards answering the review question” (p. 17) in the original tool by Brunton and others (2006) was not applied here. This question is already covered in detail through relevance appraisal (see above), so it can be stated that all the studies in the sample are relevant to the review question of this publication. Both criteria were replaced by criteria relating to the data analysis process in the sample studies: one about the description of the data analysis process (Criterion 9) and one about quality assurance measures of data analysis (Criterion 10). In the end, the modification of the tool by Brunton and others (2006) led to a quality appraisal tool with the following four quality areas: sampling, participants, data collection, and data analysis. Table 9 shows these areas and the ten relating quality criteria used for quality appraisal. The results for each criterion are described in Subchapter 5.2 below.

In addition to the modification of the quality criteria used in the tool by Brunton and others (2006), the author chose to adapt the values for the assessment of these quality criteria. The original tool assigns values of 0, 0.5, or 1 to every criterion. As Brunton and colleagues (2006) state, “each study scored 0, 0.5 or 1 point on each criterion” (p. 17) in their study. In the adapted version here, the three values are not relevant to all criteria. Instead, in the case of certain criteria, a duality of 1 and 0 is considered a sufficient assessment, for instance, when we address the question whether the number of participants is provided in a study or not. Conversely, if there are multiple aspects relevant to a quality criterion, as it would be the case for the validity and reliability of data collection (Criteria 7 and 8), for instance, the extended quality assessment using 1, 0.5, and 0 is considered appropriate. This is also the case for the criteria of the sampling frame (Criterion 1) and the data analysis quality (Criterion 10). For the rest of the criteria, i.e. the selection from the sampling frame (Criterion 2), the number of the participants (Criterion 3), the age of the participants (Criterion 4), the sex of the participants (Criterion 5), the appropriateness of the data collection tool (Criterion 6) as well as the data analysis description (Criterion 9), the duality of 1 and 0 is deemed sufficient.

5.2 Quality Criteria

This subchapter presents the results of applying a quality appraisal tool to the 28 sample studies used at this point in this publication. It is divided into four sections, discussing ten quality criteria in the quality areas of sampling, participants, data collection, and data analysis.

5.2.1 Study Samples

Sampling Frame

Quality criterion one is concerned with the sampling frame. The sampling frame represents all individuals eligible to be included in the sample of a study. Its assessment is divided into two steps here, the description and the identification of the sampling frames in the studies:

- *Description of the sampling frame:* This first step evaluates if the studies provide a general overview about the individuals in the sampling frame. Doing so, can enhance a study's quality, since more context about the potential study participants is offered to the reader. In general, the analysis shows that a large majority of the sample studies (89%) describe the sampling frame. This is often done in reference to specific high schools (Carter Andrews, 2012; Gayles, 2005; Hersi, 2011) or higher education institutions (Ben-Tsur, 2009; Campa, 2013). Moreover, a further practice discovered in the studies is to relate the sampling frame description to a specific at-risk precondition of students. For instance, in a study discussing the academic resilience of immigrant students with a foster care background, Rana and colleagues (2011) describe their sampling frame as "89 minors resettled by Lutheran Social Services of Michigan in Lansing and neighboring communities" (p. 2087).
- *Identification of the sampling frame:* The second step relates to descriptions of how the sampling frames were established. As Brunton and others (2006) state, this step considers if "there was an adequate description of the methods used to identify people to sample from" (p. 16). Almost two thirds (61%) of the sample studies provide this information. However, compared to the general description of the sampling frame, the number of studies doing so, is considerably lower. A closer analysis of this quality criterion illustrates that the sampling frame was frequently generated by special access to a particular student group, for instance, established contacts with key stakeholders in education institutions (Garza et al., 2014; Morales et al., 2011; Williams & Portman, 2014) or when researchers themselves possess favorable positions which grant them better access to students because of their occupations as school principals (Peterson et al., 2009) and teachers (Graff et al., 2013). Further ways to determine the sampling frames found in the studies were advertisements in newspapers or via posters (Mallon, 2005; Séror et al., 2005), the use of data from prior studies (Carter Andrews, 2012; Lessard et al., 2014) and personal referrals (Rana et al., 2011; Reis et al., 2004).

All in all, almost all sample studies (96%) provide information about the sampling frame. More than half of them (54%) do so for both steps described above. In the quality appraisal process, they were assigned a value of 1 (e.g., Carter Andrews, 2012; Garza et al., 2014; Graff et al., 2013). Studies which describe one of the two steps only were assigned a value of 0.5 (e.g., Dole, 2014; Freeman et al., 2004; Morales, 2014). This is relevant to less than half of the sample studies (43%).

Sampling

The second quality criterion covers the sampling methods of the included studies, i.e. if “there was an adequate description of the methods used to select the sample from the sampling frame” (Brunton et al., 2006, p. 16). For a large majority (86%) of the sample studies, the analysis shows that they provide data relevant to this criterion. They are given a quality value of 1. Concerning the methods which are used for sampling, the data show that purposeful sampling is applied most often. Of 24 studies describing their sampling method, 18 refer to purposeful sampling (e.g., Morales, 2008a; Reis et al., 2004; Williams & Bryan, 2013). In addition, two studies each identify the methods of student self-selection (Lessard et al., 2014; Morales et al., 2011) and using a complete sampling frame of students as their samples (Dole, 2014; Peterson et al., 2009). Two additional samples were compiled with the method of personal referrals of eligible study participants (Ben-Tsur, 2009; Rana et al., 2011). In conclusion, it is interesting to note that Brunton and others (2006) report in their systematic review, which constitutes the methodological basis for the quality appraisal here, that many of their studies did not provide descriptions of participant selection. This is in strong contrast to the publication at hand. In fact, in this publication, only four sample studies do not provide information about sampling (Casanova, 2012; Freeman et al., 2004; Richardson et al., 2015; Sosa, 2012).

5.2.2 Participants

Number of Participants

In the quality area of participants, the first quality criterion is if the studies provide the number of participants. The analysis of the study data shows that the participant numbers are stated in all the 28 sample studies. Therefore, all studies were given a value of 1 in the process of quality appraisal. However, the analysis also illustrates that the numbers vary strongly between the studies. For some, the participant number is surprisingly high, considering that we are referring to qualitative studies only. The highest number is reported

in the study by Richardson and colleagues (2015) who describe a sample of 291 higher education students. Further examples are the studies by Lessard and colleagues (2014) (140 participants), three studies by Morales (2008a, 2010, 2014) with 50 participants each, and the study by Peterson and colleagues (2009) with 48 participants. Such high numbers seem best achievable when researchers use survey questionnaires with open-ended questions, as a closer analysis illustrates, for instance, for the publications by Richardson and others (2015) and Peterson and others (2009).

By contrast, other studies have rather few participants. Many of the interview studies, for instance, have small sample sizes. The studies by Hersi (2011) (6 participants), Williams and Portman (2014) (5 participants), and Gayles (2005) (3 participants) represent examples for such small-scale studies. In addition, there are examples with even fewer participant numbers, like the article by Cabrera and Padilla (2004) with a sample of two individuals and the publication by Casanova (2012), who follows the educational pathways of one student only. Despite few students participating, however, the methodological soundness of these studies should not be questioned in terms of this factor. In most cases, it is not considered a methodological shortcoming to have few interview participants, because the methodology is based on deep narratives provided by the students, often collected over long time periods. The number of participants is then often less important than the thoroughness of the interviews carried out (Cross & Atinde, 2015; Gayles, 2005).

Age of Participants

The age of the participants is the second quality criterion regarding the study participants. It was provided in a little more than half of the studies only (54%). These studies were assigned a value of 1 during quality appraisal. An explanation as to why the number of studies providing the ages of participants is low could be concerns by the authors about the anonymity of their study subjects. This could be of particular relevance for qualitative studies in which the number of participants is low, as discussed above. For it was shown in the data analysis that studies with low participant numbers, like in the cases of Casanova (2012) (1 participant) and Gayles (2005) (3 participants), are less likely to provide the ages of their participants than studies with higher numbers. Moreover, some studies resort to providing mean ages (Richardson et al., 2015) or approximate ages (Dole, 2014; Graff et al., 2013), for instance, describing their participants as being in their 20s or 30s. All in all, the ages of the participants range from 15 to 69. Furthermore, the analysis of the sample studies indicates that if the ages are not provided in the methodology sections, it is difficult to infer

them from the education levels the students are in. This results from the fact that many of the studies follow a retrospective approach, in particular, if they are concerned with the academic resilience of high school students (see Subchapter 6.5).

Sex of Participants

The third quality criterion is if the studies state the sex of the participants. This is the case for most of the sample studies (82%) and those were assigned a quality value of 1 in the quality appraisal process. In sum, more female participants (308) than male participants (228) were part of the studies' samples. Moreover, it became apparent during the analysis that, in some cases, the participants' sex is not described in the text of the methodology sections, but is shown in a table providing demographic information about the study participants in these sections or at the beginning of the results sections (Hersi, 2011; Mallon, 2005; Orr & Goodman, 2010). This is seen to be an adequate way to extract the necessary information from the sample, despite it not being part of descriptions in the texts. Contrary to this, the analysis has also shown that inferring from names whether participants are female or male cannot be considered a precise enough method in most cases. For instance, names of participants – frequently pseudonyms, to protect their anonymity – are provided in the findings sections of the studies by Sosa (2012) and Cross and Atinde (2015). In both cases, it was not possible to determine for every name if it belongs to a female or a male study participant. Consequently, this approach was abandoned, and the two studies had to be assigned a value of 0 for this quality criterion.

5.2.3 Data Collection

Appropriateness of Data Collection Method

The appropriateness of the data collection method/s is the first of three quality criteria for the area of data collection. For the definition of what is deemed appropriate, the author refers to Brunton and others (2006), who ask in their study if “appropriate data-collection methods for helping people to express their views” (p. 17) were employed. The analysis shows that the studies by Reis and colleagues (2004), Gayles (2005), and Mallon (2005) can be cited as examples for descriptions which directly relate to the definition by Brunton and colleagues (2006): Reis and others (2004) state that “interviews were conducted in order to gain an understanding of the views of the participants themselves, providing a clear picture of the experiences of high-achieving students in an urban high school” (p. 112). Gayles (2005) argues that “open-ended interview questions encouraged the participants to offer

interpretations and explanations of their realities” (p. 252) and Mallon (2005) describes that “it was the participants’ perception of their life worlds (Lebenswelt), their reality, which was sought” (p. 88). Moreover, in reference to the resilience concept, Morales (2008a) refers to Liddle (1994) who states that resilience “can and should be comprehended through understanding of the individual’s narrative” (p. 201). All in all, the analysis of the sample studies indicates that the majority of them (79%) provide information on why the data collection method they used can be deemed appropriate for the given research project. These studies were assigned a value of 1 in the quality appraisal process.

Validity of Data Collection

The second criterion in relation to data collection is the validity of the data collection instrument/s. Validity is a critical quality factor for data collection. It questions if the collection instrument used measures the right phenomenon. For the sample studies, the analysis shows that three quarters (75%) of them describe aspects of validity. Studies in which the use of more than one validity measure is described in the text, were assigned a value of 1 in the quality appraisal process. This is the case for 54% of the studies (e.g., Cabrera & Padilla, 2004; Campa, 2013; Carter Andrews, 2012). 21% of the studies provide one measure only and were thus awarded a value of 0.5 (e.g., Graff et al., 2013; Lessard et al., 2014; Sosa, 2012). Figure 35 illustrates the distribution of the validity measures in the sample studies.

For qualitative studies, there are several ways to increase the validity of data collection. In the sample studies, 12 of such measures were found. They are described next:

- *Follow-ups:* The measure of follow-ups is used the most often in the studies. It is described in 39% of them and can assume two forms. One is to carry out follow-up interviews to enrich the information provided during the first interviews and – when necessary – to clarify specific aspects. This has been done in seven studies (e.g., Cabrera & Padilla, 2004; Casanova, 2012; Morales et al., 2011). The second form found in the analysis are member checks of interview and/or focus group protocols, in which participants assess the fit of the data collection instrument/s. Member checks are relevant to seven studies as well (e.g., Hersi, 2011; Morales, 2008a; Séror et al., 2005).
- *Multiple interviews:* In 36% of the sample studies, multiple interviews were carried out with participants (e.g., Carter Andrews, 2012; Graff et al., 2013; Orr & Goodman, 2010). This measure is delineated from follow-up interviews, because it can be seen as a

separate methodological step in a study's design. For instance, in contrast to follow-ups, in which the same set of questions is usually used again, multiple interviews can be conducted with different sets of questions for different topic areas. Nonetheless, multiple contacts with the same interviewees still offer the advantage to increase trust and – similar to follow-up interviews – to come back to prior topics for clarifications.

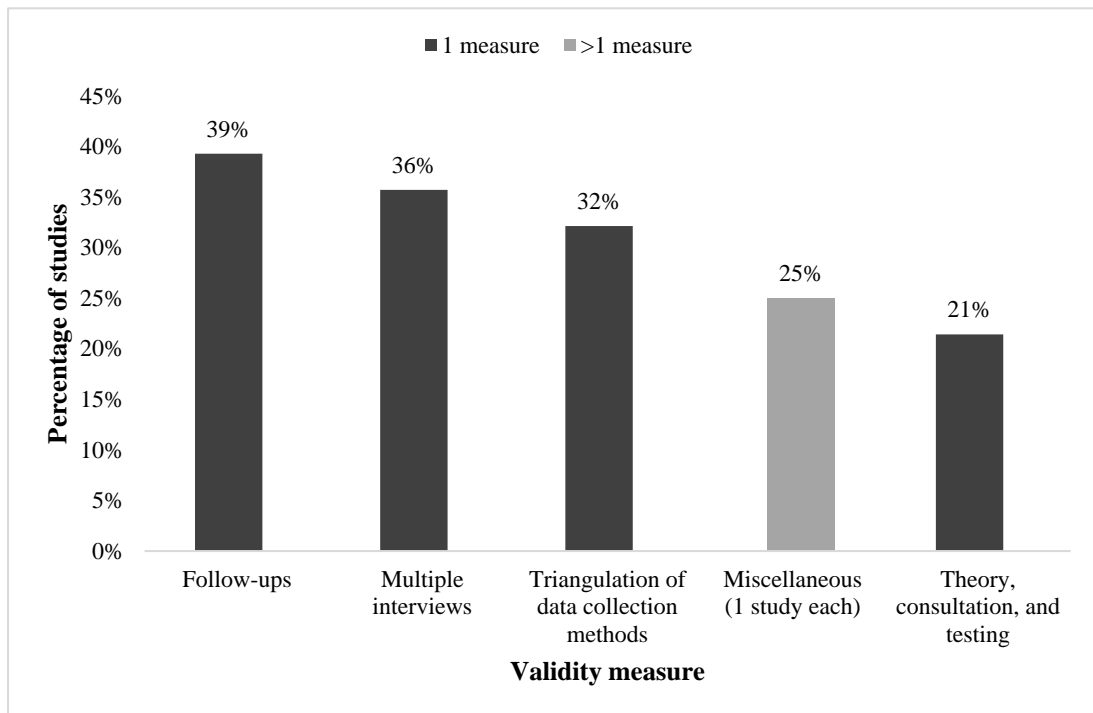


Figure 35. Validity measures for data collection in the synthesized studies ($N = 28$ studies) (Multiple entries possible per study)

- Triangulation of data collection methods:** The use of more than one data source is a common way to increase the validity of data collection. It has been applied in 32% of the sample studies (e.g., Campa, 2013; Gilford & Reynolds, 2011; Reis et al., 2004). Despite its benefits, the quality appraisal process has shown that this criterion can prove problematic in the research process, namely, in terms of unwanted effects for the reliability of data collection. The more data collection methods are employed in a study, the more effort is necessary to ensure the reliability of the data collection process.
- Miscellaneous measures:** In 25% of the sample studies, measures have been used which were not relevant to any of the other studies. A total of eight measures which have only been applied in one publication each have been discovered during data analysis. These are (i) the consideration of a possible impact of early on later interviews (Gayles, 2005),

(ii) informal clarifications with participants after the initial data collection process (Cabrera & Padilla, 2004), (iii) member checks of focus group summaries (Williams & Portman, 2014), (iv) member checks of interview questions (Williams & Bryan, 2013), (v) a clear procedure for observations (Reis et al., 2004), (vi) the connection of quantitative results with the qualitative research at hand (Lessard et al., 2014), (vii) the triangulation of interview groups (e.g., teachers, students, and administrative staff) (Reis et al., 2004), and (viii) two interviewers carrying out the interviews together (Séror et al., 2005).

- *Theory, consultation, and testing:* 21% of the sample studies aim to improve the validity of their data collection instruments via external inputs. The analysis reveals three main ways to do so. First, some authors refer to a well-established theoretical background developed by other scholars when they describe their data collection tool. For example, they describe that the development of their interview protocols was motivated and/or led by research literature on the phenomenon of interest (Gayles, 2005; Sosa, 2012; Williams & Portman, 2014). Second, authors refer to expert consultation to improve the validity of their instruments. Rana and colleagues (2011), for instance, used a “cultural consultant” (p. 2088) to make sure that their collection tool represents cultural aspects of the participants in the study to a satisfactory degree. Last, the piloting of data collection tools is a further form of increasing validity through external assessment. The data include two publications in which data collection was tested via pilot studies (Séror et al., 2005; Williams & Bryan, 2013).

Reliability of Data Collection

Third, the reliability of the data collection instrument/s marks the final criterion for the quality area of data collection. The reliability of a study refers to an estimation of how feasible it would be for other researchers to repeat it and achieve the same or similar results. It thus counts as good practice in research to provide enough information and/or material so that others can retrace and reproduce the steps taken. The analysis of the sample studies illustrates that almost all of them (96%) describe aspects of reliability for their data collection instrument/s. Concerning the values provided to the studies during quality appraisal, the operative question is if the measures are visible in the text. In other words, for the 43% of the studies with a value of 1, at least one measure for enhancing reliability is shown in the methodology section. For instance, some studies provide examples for interview questions in the main text (Freeman et al., 2004; Gilford & Reynolds, 2011; Sosa, 2012) or attached

to the studies in an appendix (Morales, 2010; Peterson et al., 2009; Séror et al., 2005). However, if reliability measures are mentioned but not presented in the text, studies were assigned a value of 0.5. This is the case for 54% of them (e.g., Gayles, 2005; Mallon, 2005; Orr & Goodman, 2010). Figure 36 shows the distribution of the reliability measures in the sample studies.

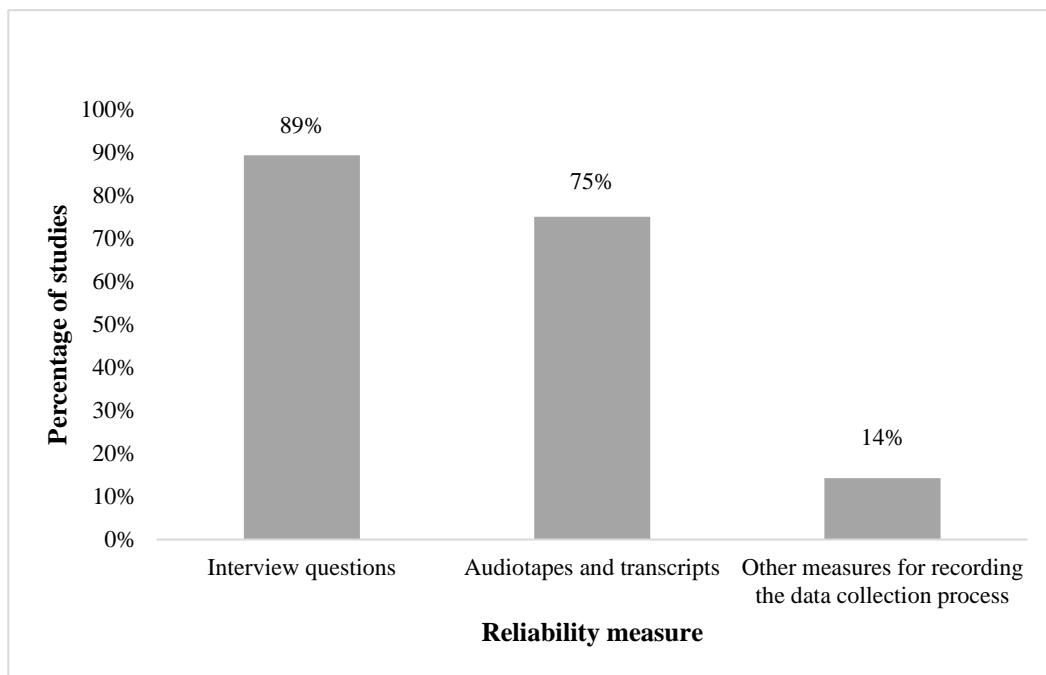


Figure 36. Reliability measures for data collection in the synthesized studies ($N = 28$ studies) (Multiple entries possible per study)

There are various ways to enhance the reliability of data collection instruments in qualitative studies. Three measures can be found in the sample studies:

- *Interview questions:* 89% of the studies provide information about their interview protocols. Three main ways to do so have been discovered during data analysis. First, almost half of the studies (13 of 28) provide descriptions of the interview and/or focus group topics (e.g., Dole, 2014; Garza et al., 2014; Hersi, 2011). Second, eight of 28 publications present example questions in the text (e.g., Gilford & Reynolds, 2011; Rana et al., 2011; Reis et al., 2004). And, last, seven of the 28 sample studies provide all or a representative selection of their protocols in appendices (e.g., Freeman et al., 2004; Morales, 2008a; Séror et al., 2005).

- *Audiotapes and transcripts:* Three quarters of the studies (75%) describe audio taping and/or the transcription of audiotapes as reliability measures carried out after interviews and/or focus groups (e.g., Graff et al., 2013; Lessard et al., 2014; Morales, 2014). It has been stressed in the literature that this can be highly beneficial for the reliability value of a publication, because “tapes and transcripts are open to further inspection by both researchers and readers” (Silverman, 2013, para. 2). In fact, through material provided by audio recordings and transcripts, it would be possible to re-construct large parts of the data collection process, including characteristics of interviews beyond the content of questions and answers, like certain speech patterns or significant pauses, which might contribute further to data analysis and interpretation in some cases.
- *Further measures for recording the data collection process:* In 14% of the sample studies, three further reliability measures are provided: Field notes (Cabrera & Padilla, 2004; Morales, 2014; Reis et al., 2004), photographs (Reis et al., 2004), and videotaping (Graff et al., 2013).

5.2.4 Data Analysis

Data Analysis Method

In the quality area of data analysis, the first criterion is whether the data analysis process is described in the study. The analysis of the sample studies indicates that many of the sample studies provide information about the coding procedures for the included qualitative data (e.g., Cross & Atinde, 2015; Sosa, 2012). Some studies present this step in great detail, for instance, referring to a comparative approach (Graff et al., 2013; Hersi, 2011; Morales, 2010), the addition of quantitative elements in the analysis (Dole, 2014; Morales, 2008a; Peterson et al., 2009), or narrative analysis techniques (Gayles, 2005; Lessard et al., 2014). In addition, one study provides data analysis examples in the text (Williams & Portman, 2014) and another uses the appendix to include further information about the analysis process (Rana et al., 2011). In sum, 82% of the sample studies provide descriptions of data analysis. They were assigned a value of 1 in the quality appraisal process.

Data Analysis Quality

The second quality criterion in this area is about the data analysis quality. It asks if measures for securing the quality of data analysis are described in the sample studies. Compared to the general description of data analysis, fewer studies can be found that match this criterion. In

fact, the analysis of the sample studies illustrates that only 64% include relevant descriptions. Similar to the quality criterion of the validity of data collection described above, a value of 1 could only be assigned during quality appraisal if more than one measure to enhance data analysis quality is described in a study. This is the case for 32% of them (e.g., Morales, 2008a; Reis et al., 2004; Williams & Portman, 2014). A value of 0.5 was assigned to 32% of the studies also, for which only one of the below described measures is applicable (e.g., Lessard et al., 2014; Morales et al., 2011; Richardson et al., 2015). Figure 37 shows the distribution of data analysis quality measures in the sample studies.

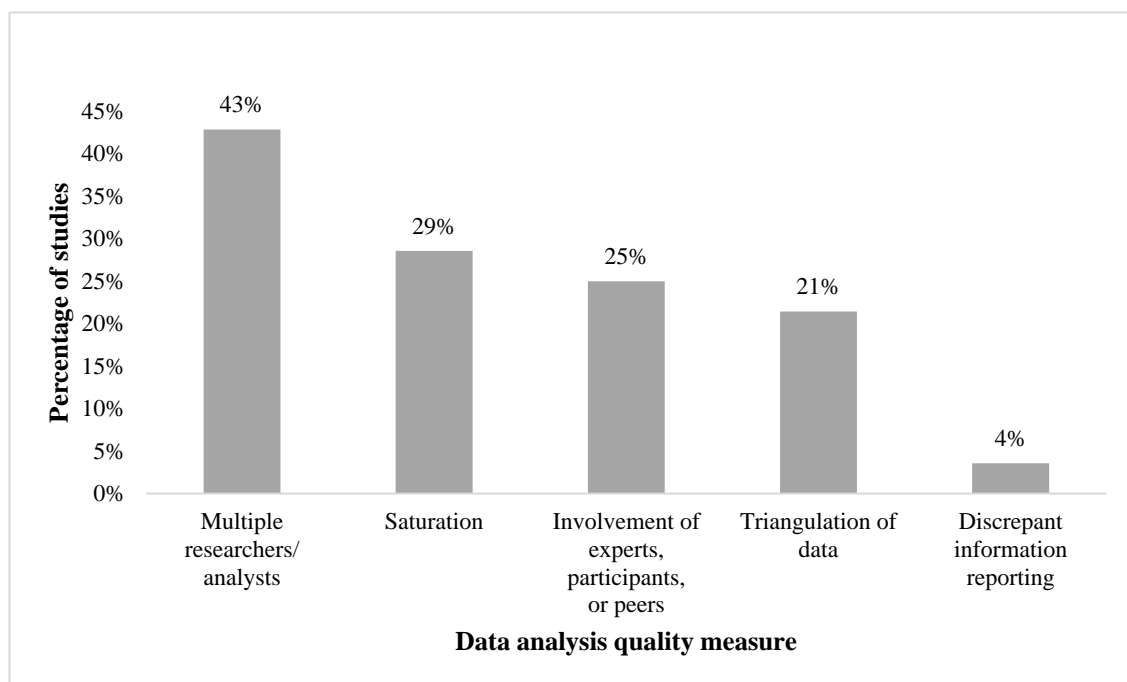


Figure 37. *Quality measures for data analysis in the synthesized studies (N = 28 studies) (Multiple entries possible per study)*

All in all, five measures to enhance data analysis quality are provided in the sample studies:

- *Multiple researchers:* The most common measure in the sample studies is to have more than one researcher carry out the data analysis. This is the case for 43% of the studies (e.g., Freeman et al., 2004; Gilford & Reynolds, 2011; Richardson et al., 2015).
- *Saturation:* 29% of the sample studies state saturation as a method to ensure data analysis quality (e.g., Morales, 2010; Reis et al., 2004; Williams & Bryan, 2013). Saturation entails that having more data does not lead to more insights regarding a

certain phenomenon of interest. Williams and Bryan (2013) state that in their study, “saturation occurred naturally during the progress of the study once incremental learning became minimal” (p. 293). And Reis and others (2004) describe for their coding process that “the relationships among categories were examined to determine the saturation of categories in the identification of the core category” (p. 113).

- *Involvement of experts, participants, or peers:* The enhancement of the data analysis quality by including individuals independent from the research team is described in a quarter (25%) of the sample studies (e.g., Dole, 2014; Morales, 2010; Rana et al., 2011). In one study, by Rana and others (2011), the use of an external expert as a “cultural consultant” (p. 2088), as described for the data collection phase above, is also relevant to the data analysis quality. The consultant provided cultural expertise regarding the study’s findings. A second instance for the involvement of other stakeholders are member checks of study results by participants (Orr & Goodman, 2010; Rana et al., 2011; Williams & Bryan, 2013). Last, peer debriefings after the data analysis process were discovered as a third measure (Morales, 2014; Williams & Bryan, 2013; Williams & Portman, 2014).
- *Triangulation of data:* The use of data from more than one data source in the analysis phase has been found to be relevant to 21% of the sample studies (e.g., Hersi, 2011; Morales, 2008a; Morales et al., 2011). This measure relates to the above-described triangulation of data collection methods in that triangulation at the data collection stage enhances the possibility to use different data, from different sources for analysis. In general, the triangulation of data is seen to have a positive influence on data analysis quality. However, it is also worthwhile to consider that the use of more, often heterogeneous data can make the data analysis process more difficult. This might constitute an additional obstacle in some research projects, for instance, when merging data from different sources for coding.
- *Discrepant information reporting:* One study mentions the reporting of discrepant information as a quality measure of data analysis (Orr & Goodman, 2010). Doing so, the authors aim to prevent confirmation bias. They state that they “utilized presentation of discrepant information (...) by reporting and exploring the circumstances of the one participant whose experiences did not conform to an emerging theme” (p. 217) in their data analysis process.

5.3 Results of Quality Appraisal

The quality appraisal shows that while there are differences in how well the ten quality criteria are covered in the sample studies, overall, a good coverage can be asserted for the studies (see Figure 38). Three of the ten quality criteria are part of a high-prevalence group: sampling frame (96%), the number of participants (100%), and the reliability of data collection (96%). Almost all or all (in the case of the participant numbers) of the sample studies provide information about them. Second, five criteria are in a middle-prevalence group: sampling (86%), sex of the participants (82%), appropriateness of the data collection method (79%), validity of data collection (75%), and the description of data analysis (82%). For these criteria, a large majority of studies includes relevant descriptions. Conversely, there are only two quality criteria in a low-prevalence group: age of the participants (54%) and data analysis quality (64%).

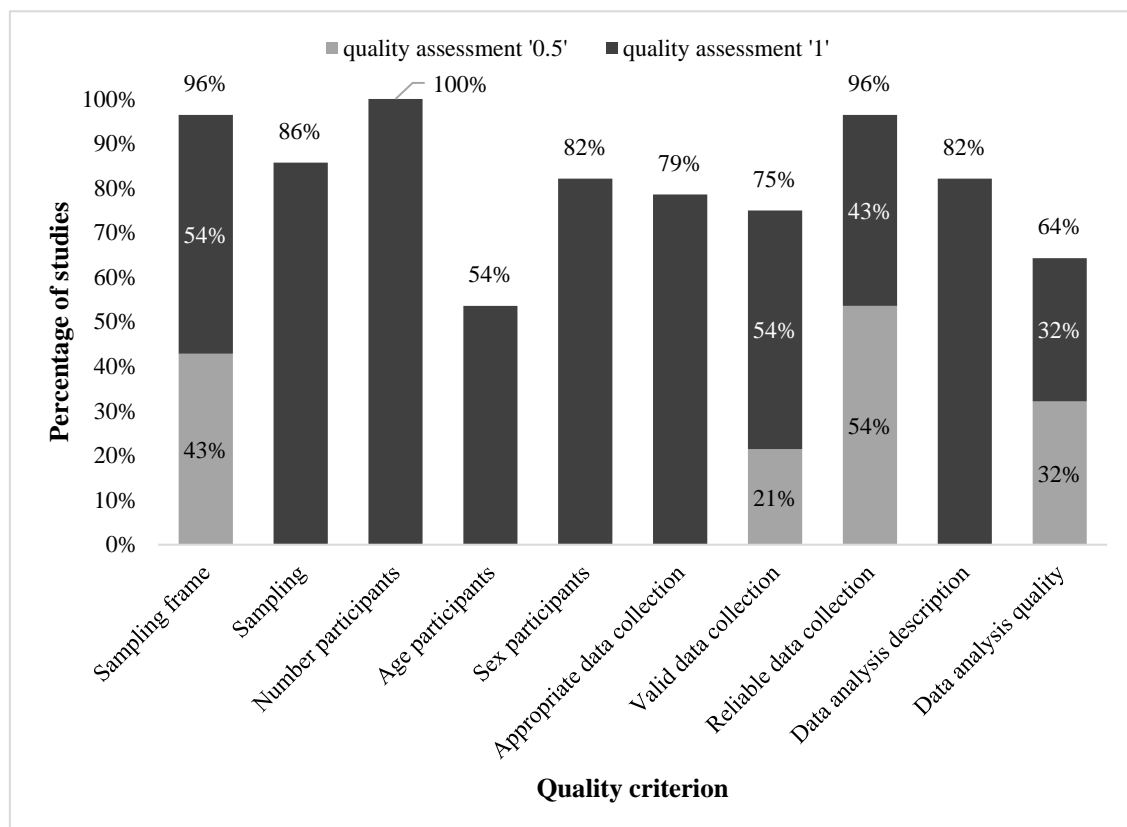


Figure 38. Percentage of synthesized studies reporting each quality criterion ($N = 28$ studies) (Adapted from Brunton et al., 2006)

While still more than half of the analyzed publications report them, they are on the lower end compared to the criteria in the middle- and high-prevalence groups. In the case of the

participants' age, as mentioned above, one reason could be that the authors of the studies aim to protect the anonymity of students, which seems to be highly relevant to the research field of resilience, in which personal circumstances like at-risk preconditions and/or various adversities are discussed. Concerning the description of data analysis quality, it is difficult to provide an explanation for the low value. However, it should be stated that 82% of the sample studies deliver a description of their data analysis processes. This enhances the trustworthiness of the quality area.

As part of the quality appraisal, each of the sample studies was assigned a quality value which consists of the sum of individual assessments for the ten quality criteria. Figure 39 illustrates the results of this process. All in all, a certain variety in the quality of the sample studies is apparent: For one, there are studies with excellent quality values. The two studies by Williams and Bryan (2013) and Williams and Portman (2014) can be highlighted here, which both achieved a full score of 10 in the appraisal process. Moreover, in the high-quality group, there are three studies each with a value of 9 (Gilford & Reynolds, 2011; Morales, 2008a, 2010) and a value of 8.5 (Carter Andrews, 2012; Morales et al., 2011; Rana et al., 2011). Altogether, 8 of the 28 studies (29%) are shown to be of excellent quality, which can be considered a good result. Furthermore, adding to an overall positive result, it can be noted that a large portion of the sample studies is also situated in a middle-quality group with the values of 8 (Mallon, 2005; Orr & Goodman, 2010; Reis et al., 2004), 7.5 (Graff et al., 2013; Hersi, 2011; Séror et al., 2005), and 7 (Campa, 2013; Freeman et al., 2004; Gayles, 2005). This is relevant to 13 of the 28 studies (46%), so that – together with the studies in the high-quality group – the quality appraisal indicates excellent and good quality values for three quarters (75%) of the sample. However, last, there are some cases for which rather low-quality values from 6 down to 4.5 have to be asserted. 7 of the 28 studies (25%) in the sample do not meet high quality standards. Fortunately, this can still be considered a rather small number of publications. Nonetheless, it is important to be aware of this situation. It will thus be addressed next, how studies with low quality values are handled in this publication.

There are four main ways of how to handle low quality studies in systematic reviews. They have been described, for instance, by Harden and Gough (2012, section 3 para. 10) as “‘threshold’-approach”, “‘weighting’-approach”, “‘descriptive’-approach”, and as “‘sensitivity analysis’” (see Subchapter 5.1 above). In this publication, the author decided not to exclude studies on account of a certain quality threshold, nor to weight the impact of certain studies in terms of their quality values, or to provide different analyses according to different quality values. Instead, the author chose to work with the descriptive approach

which entails to “describe the quality and relevance of each study for the reader of the review to make their own conclusions” (Harden & Gough, 2012, section 3, para. 10). In fact, a description of the quality scores of the sample studies is provided in this subchapter for most studies and is additionally shown for each study in Appendix 4.

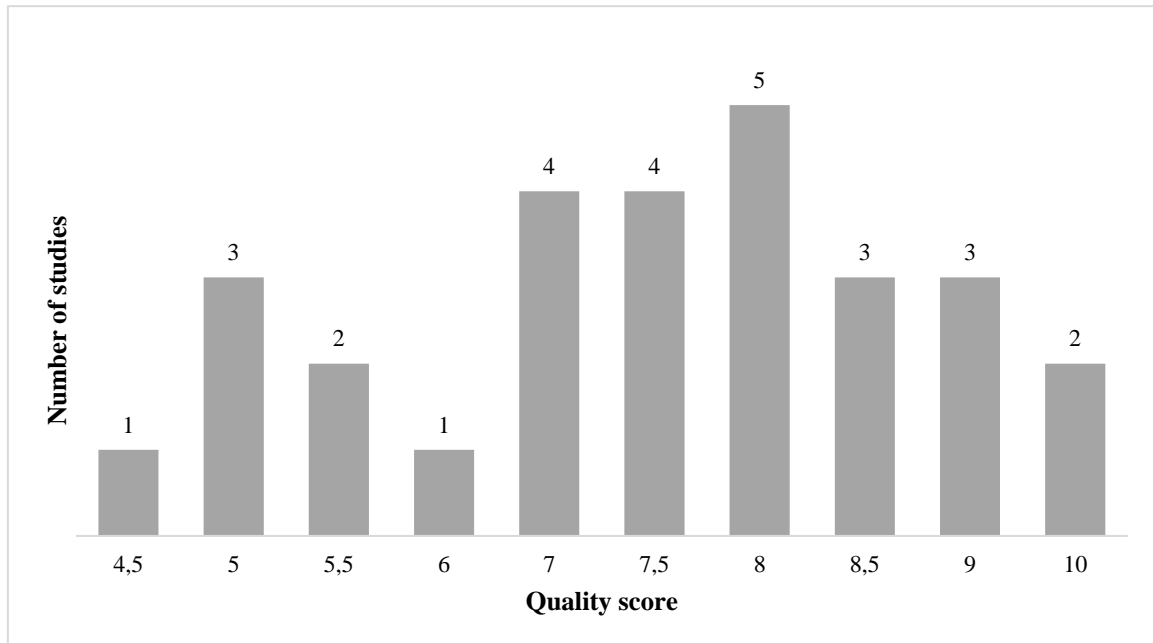


Figure 39. Number of synthesized studies for the quality scores between 4.5 and 10 ($N = 28$ studies)

All in all, the decision to not exclude low quality studies constitutes a difference compared to the work of Brunton and others (2006) on which the quality appraisal of this publication is built. In their article, the authors decided to exclude studies under a quality value of 7 from further processing. They state that “the cut-off point of 7.0 was suggested as the most natural based on the distribution of the ratings” (Brunton et al., 2006, p. 36). The main reason for not doing so in the systematic review at hand is the fact that the author is working alone. It was decided to not exclude studies because this might prevent a situation in which information would possibly be withheld from the reader by leaving out studies for which the exclusion decision has been carried out by the author alone. Instead, following a descriptive approach, this publication aims to provide as much quality information about the sample studies here and in the appendix as possible. Moreover, the limitation of working alone is thoroughly discussed in the conclusion chapter (Subchapter 7.3).

6. Synthesis of the Resilience Framework

“In a systematic synthesis, the work of reviewers goes beyond simply describing research. A systematic synthesis attempts to advance understanding to bring together evidence to support the decision-making of individuals, policy-makers and practitioners. It is therefore important that the evidence is well suited to answering the review question by being both trustworthy and relevant” (Oliver & Sutcliffe, 2012, section 6, subsection 1, para. 1).

The quote above includes three defining aspects of systematic reviews. First, the authors stress that syntheses are meant to result in more than just descriptions of study findings. Such a description is carried out at the mapping stage in this publication (see Chapter 4). The synthesis, however, goes beyond that. It should be able to contribute insights to the research problem, which surpasses the descriptive findings provided earlier in the map. The way such additional insights can commonly be measured for syntheses is in their relevance for practice, which is a second aspect emphasized by the quote. We can assume that the outcomes of syntheses are produced and provided for external stakeholders in many cases, who can find a use for the syntheses results in their day-to-day practice. For the syntheses at hand, the fields of application are high schools and higher education institutions. It is a major aim of this synthesis and this publication to provide recommendations for practice for this context (see Chapter 7). Last, a third characteristic of syntheses considered in the quote is the trustworthiness and relevance of the data. Both aspects are discussed at length in this publication. The main results are summarized in Chapter 5.

The overall aim of the synthesis is to answer the question:

How do empirical research studies on resilience and academic success of high school and higher education students address the main elements of the resilience concept?

This question was chosen to enhance our understanding of the use of the resilience concept for comprehending and/or improving students' experiences at advanced education levels. The goal is to provide recommendations for practice in high schools and higher education institutions. The synthesis is described in two main parts here: In this introductory section, the author first provides background on the synthesis method. It is outlined how the decision to carry out a synthesis was made, what the characteristics of the synthesis are, which data are used, and which synthesis method is applied. The second part is the presentation of the

findings of a framework synthesis of resilience and academic success at the high school and higher education levels. The results of the synthesis are presented in seven subchapters. Each subchapter contains sections centered on themes which over the course of the framework synthesis were discovered for every resilience element in the conceptual framework. All sections are constructed in the same way: They start with a short introduction of the theme in question. This first part connects the theme to the research background of resilience in education. After that, the theme is analyzed in relation to the sample studies, including a comparison between the high school and the higher education level. At the end of each section, the wider implications of the themes are explored and interpreted.

In essence, the definition of a systematic synthesis is “to integrate the findings of different studies to answer the review question” (Gough & Thomas, 2012, section 2, subsection 2, para. 4). This statement contains the two main characteristics of a synthesis: For one, syntheses focus on the findings of studies. This delineates them from systematic maps, which are mostly concerned with describing study characteristics (Oliver & Sutcliffe, 2012; Thomas et al., 2012). A synthesis merges study results to achieve a “collective body of knowledge” (Thomas et al., 2012, section 1, para. 1) about a certain topic of interest. The second characteristic of syntheses is their close connection to review questions. It is their purpose to answer one or more review questions (Gough & Thomas, 2012; Thomas et al., 2012). In general, every synthesis follows a sequence of five steps: Syntheses commonly start with understanding and analyzing the available data. The reviewers aim to become familiar with their data set (step 1) and to find patterns in that data (step 2) (Thomas et al., 2012). A third step is usually concerned with organizing the data in a way that enables the reviewer to answer the review question. The two main forms of organization are aggregation and configuration which are often used both in syntheses (Gough & Thomas, 2012). Then, as a fourth step, the synthesis quality needs to be considered, in particular regarding the validity of the interpretations in the synthesis (Silverman, 2013). Last, most reviewers consider the further use of their synthesis results (Thomas et al., 2012). Recommendations for practice are often the final results of successful syntheses.

At the beginning of the systematic review process, it is good practice to clarify the necessity and value of carrying out a systematic synthesis. It is claimed in the literature that reviewers should determine the synthesis method with which they plan to analyze the data early on, preferably at the design stage of the review (Oliver et al., 2012). An impact of this choice on other steps of the review process is to be expected (Cherry et al., 2014). It is further argued in the literature that some reviewers might conclude to not carry out a synthesis and

to generate all findings necessary to answer their review questions at the mapping stage (Gough & Thomas, 2012; Oliver & Sutcliffe, 2012). For this review, the plan to research the impact and use of resilience at advanced education levels soon determined the necessity of a synthesis. Moreover, it was clear at an early stage that a synthesis might provide a high value, in particular through the option to gain practical recommendations for high schools and higher education institutions from the synthesis results. All in all, following the methodological literature on systematic syntheses, the author considered four main parameters for planning the synthesis and deciding on an appropriate synthesis method: how important theory is in the review, the conceptual framework connected to the theory, the epistemology of data analysis, and the available data in the sample studies. These four parameters are discussed next.

Characteristics of the Synthesis

The first characteristic of this synthesis is its strong connection to the theoretical background of resilience. In the literature, two main options for the impact of theory on syntheses are outlined. There are syntheses which do not build on a theoretical foundation, often with the aim to establish a new theory, and there are the ones which consider theoretical backgrounds, often attempting to test and/or develop theory further (Gough et al., 2012; Thomas et al., 2012). Gough and Thomas (2012) claim:

“In many theory-driven reviews, the process of synthesis starts from the point at which the theory’s assumptions and components have been unpacked. The process of seeking relevant information to test each part of the theory builds up a picture of the applicability of the theory in different situations on different topics” (section 7, subsection 7, para. 4).

This statement outlines how the resilience concept is handled for the synthesis at hand: Its foundation are the main elements of the resilience concept which are summarized in a conceptual framework developed by the author as part of the review design (see Subchapter 3.1 and Figure 40). In the synthesis, each element of this framework is examined regarding a sample of studies at the high school and higher education levels. The focus on these education levels allows us to test how suitable the resilience concept is in this particular context. As a result, “the final synthesis is mainly a bringing-together of what has been found out about the different parts of the theory to provide an overall view of what is known” (Gough & Thomas, 2012, section 7, subsection 7, para. 4).

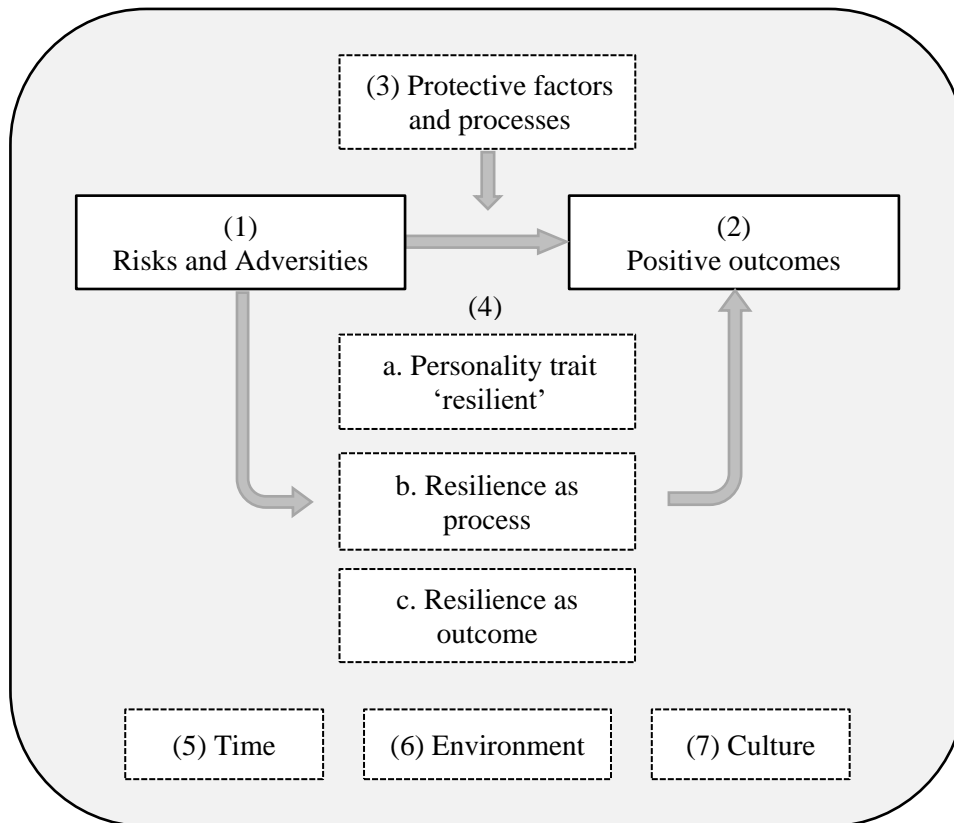


Figure 40. *Conceptual framework of resilience*
(Created by the author)

The second characteristic of this review is its strong orientation towards an established conceptual framework (see Figure 40). The conceptual framework includes seven substantial elements of the resilience concept. First, there is the duality of (1) risks and adversities on the one side and (2) positive outcomes on the other. It is the essence of the resilience concept that students achieve positive outcomes, i.e. academic success in the case of this publication, despite risk preconditions and hardships in their lives. How they overcome risks and adversities can be represented by the element of (3) protective factors and processes. The fourth element comprises the three conceptualizations of resilience, i.e. how the connection between resilience and academic success can be understood: as (4 a.) a trait, (4 b.) a process, or as (4 c.) an outcome. In addition, the conceptual framework considers elements that can set the conditions for resilience. The element of (5) time entails, for instance, how the developmental processes of students as well as their experiences in their education pathways might influence their academic success. The element of (6) environment includes considerations about the possible influences of social connections on students' performance and well-being. Last, the element of (7) culture reminds us to acknowledge both the students' and the researchers' cultural backgrounds in the analysis of resilience and academic success.

The third characteristic is that – while it includes configurative aspects – this synthesis' data treatment is predominantly aggregative. The dichotomy of aggregation and configuration of data is one of the most important dimensions to consider when conducting a systematic synthesis (Gough & Thomas, 2012; Oliver et al., 2012):

- *Aggregation:* Aggregation describes the process of stacking up data about a specific topic from a more or less homogeneous set of publications. In syntheses which use this approach, the key concepts of the review are mostly clear from the beginning, identifying relevant data is largely deductive, and the aim is to examine rather than to create a theory (Gough & Thomas, 2012; Gough et al., 2012; Thomas et al., 2012).
- *Configuration:* Configurative syntheses, by contrast, are mostly concerned with organizing or arranging data about a topic of interest, which often entails assessing data from heterogeneous publications side by side. Such syntheses often follow more inductive and/or iterative approaches for generating themes from the data, and key concepts are usually not that clearly defined in advance. Instead, concepts and themes are discovered and arranged in the synthesis process, frequently with the aim to contribute original theoretical insights about a topic of interest (Gough & Thomas, 2012; Gough et al., 2012; Thomas et al., 2012).

Many scholars argue that systematic reviews and syntheses include aspects of both aggregation and configuration. In fact, some note that the distinction between the two concepts is usually not as clear in practice as it is in theory (Gough & Thomas, 2012; Gough et al., 2012; Oliver et al., 2012).

In this synthesis, the dominance of aggregative data treatment is observable through two aspects: For one, the conceptual framework for the synthesis has been clearly defined in advance. It is a characteristic of aggregative syntheses to base their analyses on existing concepts and themes (Gough & Thomas, 2012; Thomas et al., 2012), which applies to the use of the resilience concept in the case of this synthesis. Second, the author employs tabulations to present the synthesis results. For each element of the conceptual framework, the author calculates, illustrates, and compares the number of studies relevant to various themes of interest for the high school and higher education levels. Such quantitative aspects in the analysis of qualitative data are more suitable for an aggregative than for a configurative approach (Silverman, 2013). Nonetheless, the comparative element of the synthesis, i.e. the comparison between the education levels of high school and higher education for each element of the conceptual framework, entails configurative aspects. Results for both

education levels are arranged side by side instead of being stacked up. In addition, as a second configurative characteristic of the synthesis, while each data form can be used for both, it can be pointed out that the use of qualitative data is more typical for configuration than for aggregation (Gough & Thomas, 2012; Gough et al., 2012; Oliver et al., 2012).

Data for the Synthesis

Regarding the data used for the synthesis, two aspects should be considered: the data types to be included and which data in the studies count towards the analysis. The first decision concerns the data type: In the literature, it is illustrated that often in systematic reviews, a group of studies is analyzed in which one method is employed to generate one type of data. The most prominent example are controlled trial studies, generating standardized quantitative data, in particular in systematic reviews which aim to carry out a meta-analysis at the synthesis stage (Brunton et al., 2012; Cherry & Dickson, 2014; Greenhalgh & Brown, 2014; Harden & Gough, 2012). Nonetheless, the question to pose is not so much if we use quantitative or qualitative data for a synthesis. As Gough and Thomas (2012) explain, “the most clear-cut difference in type of data is whether we are dealing with numbers or text in the synthesis” (section 6, subsection 4, para. 1). For this review, the author opted for the latter. This decision is based on two considerations: For one, early in the searching phase of the review, it became apparent that it would be difficult to find a sample of studies homogeneous enough to use quantitative synthesis methods. More importantly, however, the second reason to focus on text is based on the expected merit for answering the review question (Gough & Thomas, 2012).

Opinions about the application of text data in systematic synthesis are positive: doing so, is considered of high value, in particular concerning the transferability of synthesis results to practical settings (Cherry et al., 2014). In addition, from a process perspective, the basic approach of synthesis remains stable and reliable, no matter whether numbers or texts are included (Gough & Thomas, 2012). The author of this publication thus expects the use of text data from qualitative empirical studies to be valuable for the synthesis at hand. It seems feasible to answer the review question with direct accounts from students at the high school and higher education levels. As Williams and Portman (2014) state, “students possess unique knowledge and insight into the individual, relational, cultural, and contextual factors that affect their academic performance” (p. 13). Beyond that, the students’ perspectives can be considered highly relevant to constructing effective recommendations for practice at the two education levels. As Cherry and colleagues (2014) claim, qualitative data “allows for

synthesis of the perspectives of participants and can provide rich data relating to the impact of a condition, intervention, or policy on the lived experiences and feelings of those involved” (section 2, para 1). Yet, it is important to be aware of the general limitations of qualitative data. The most substantial one seems to be related to self-reports. Some resilience studies used here describe the use of self-reported data from student interviews as a methodological limitation (Orr & Goodman, 2010; Rana et al., 2011; Williams & Portman, 2014). Nevertheless, it is acknowledged here that quantitative data can be an important source. Further investigations should consider the use of quantitative data to back up the synthesis results presented in this publication.

The second decision to make regarding the data of the synthesis is, which data in the studies count towards the analysis. Since one of the main characteristics of syntheses is their focus on study results (Oliver & Sutcliffe, 2012; Thomas et al., 2012), it is to be expected that most reviewers extract their data from the results sections of studies. Recently, scholars started to experiment with taking every part of a study into account as a possible data source (Thomas et al., 2012), but the effectiveness of this approach is not discussed further in the literature. For the review in this subchapter, the majority of data is extracted from those parts of the sample publications that commonly refer to results, namely the findings, interpretation, and/or conclusion sections. There were exceptions, however. Some elements of the conceptual framework required data from the methods sections. This was relevant to the analysis of the studies’ methodological timeframes, for instance, when categorizing the studies into cross-sectional, retrospective, or longitudinal (see Section 6.5.1). The same was the case for the extraction of different institution types (see Section 6.6.1), which were also discussed in the methods sections in most publications. In addition, one theme discussed in the synthesis, the statistical backing of at-risk preconditions (see Section 6.1.1), required data from the introductions of the sample studies.

Method: Framework Synthesis

Framework synthesis is considered the most appropriate method for the synthesis at hand. It relates best to the four criteria to consider when choosing a synthesis method: First, the review question and the clearly defined conceptual framework this question refers to (see Figure 40) point to the applicability of the method, because a framework synthesis allows for a certain flexibility when dealing with conceptual frameworks (Thomas et al., 2012). While the main elements of resilience are determined in the framework, it is the intention of the author to find out about the themes most prevalent for each of the elements in high school

and higher education. We are thus operating with an unfinished conceptual framework at the start that is aimed to be completed over the course of the synthesis. A second point advocating for the relevance of a framework synthesis is its ability to both include aggregation and configuration of findings (Thomas et al., 2012). The synthesis at hand mostly aggregates study results. Nonetheless, configuration is applied as well when the findings from one resilience element are linked to other elements in the conceptual framework, as it is the case for the element of culture for instance (see Subchapter 6.7). In addition, the comparison between the two education levels of high school and higher education can be seen as configurative data treatment. Last, concerning the data used for the synthesis, framework synthesis allows for the analysis of qualitative data (Oliver et al., 2012; Thomas et al., 2012).

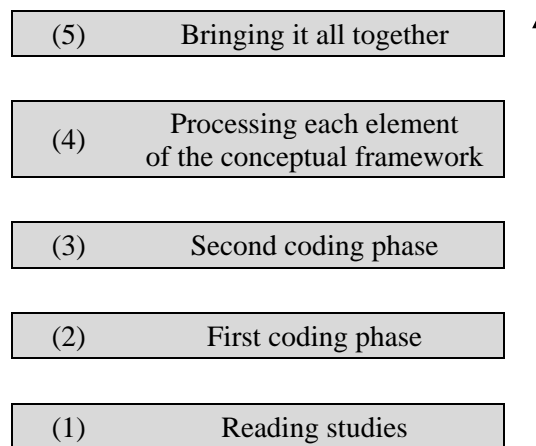


Figure 41. Steps of a framework synthesis
(Created by the author, adapted from Thomas et al., 2012)

The framework synthesis approach can be best described by delineating it from the similar and often used synthesis method of thematic summaries. Thematic summaries strongly rely on a stable conceptual framework as well. In contrast to a framework synthesis, however, they solely rely on the elements of the framework. The elements represent the themes for the synthesis for which data are collected and summarized. As a result, thematic summaries represent a purely deductive and aggregative form of synthesis (Thomas et al., 2012). In comparison, framework synthesis provides more layers for analysis. Thomas and his colleagues (2012) state that it “introduces an inductive element to thematic summaries by allowing an initial conceptual framework to evolve during the synthesis as the reviewers become more familiar with the literature being reviewed” (section 4, para. 1). In the synthesis process, besides a deductive approach of using the elements of the conceptual framework as

the initial codes for data extraction, a further inductive step is carried out to identify the relevant themes within the elements of the framework. In summary, the method enables the author to aggregate as well as configure key aspects relevant to each of the elements. The aim of this process is to form a coherent account of what is being considered for the resilience concept's application in the context of high schools and higher education institutions as well as the transition between the two education levels. Appendix 5 provides the example of synthesizing the conceptual framework element 'Culture'.

Framework synthesis has five major steps (see Figure 41). The first step is to read the sample studies thoroughly, focusing on their findings, interpretation, and conclusion sections. This step aims towards further increasing the author's familiarity with the studies in the review. Moreover, it is possible to identify initial themes at this stage, both concerning existing themes of the conceptual framework and new themes (Thomas et al. 2012). After this, in steps 2 and 3, the search for themes becomes systematic in two coding phases. Categorical coding is carried out first (Oliver & Sutcliffe, 2012). The author codes the passages in the sample studies relevant to the elements of the existing conceptual framework. Subsequently, in the second coding phase, processes of open and axial coding are employed in the passages identified during categorical coding. Open coding is used to find new keywords that relate to the framework elements. In axial coding, the codes and themes collected so far are merged into overarching themes. These themes represent the main aspects discussed for each element of the conceptual framework in the synthesis. All in all, this process can be described as a shift from a known framework to its unknown parts. Thomas and colleagues (2012) argue that at the coding stage of a framework synthesis, "at the beginning the reviewers will rely more on their prior knowledge, and later this will be complemented by their growing understanding of the literature they have found" (section 4, subsection 1, para. 3).

The last two steps revolve around the ways data can be processed (Step 4) and presented (Step 5) to the reader (see Figure 41). One approach to process the data is to create tabulations for the themes in the synthesis (Thomas et al., 2012), i.e. to provide information about how frequent certain aspects are present in the sample studies. This is done for every aspect discussed in the synthesis of this publication. Tabulation is highly recommended in the methodological literature on qualitative data analysis. Silverman (2013), for instance, discusses the option to provide counts of qualitative categories as quantitative elements of qualitative studies to improve their overall validity. He argues that by doing so, "the reader has a chance to gain a sense of the flavor of the data as a whole" (2013, para. 3). Moreover,

it is easier to define the importance of different themes for the discussion (Silverman, 2013) and, in this case, their importance for the answer to the review question as well as its practical implications. Finally, in Step 5, the author aims to achieve a congruent synthesis of the sample literature by bringing everything together in seven subchapters. Every subchapter represents one element of the conceptual framework and has been populated with major themes of interest identified and analyzed in the framework synthesis.

6.1 Risks and Adversities

This subchapter presents the synthesis findings for the first element of the conceptual framework of resilience: risks and adversities. In the first section (6.1.1), the following risk preconditions of students in the sample studies are discussed: minority status, immigrant status, learning disabilities, giftedness, and foster care background. Subsequently, the relevance of these preconditions is compared for the high school and higher education levels. In addition, the section examines the concept of cumulative risk as well as the notion that risk preconditions require statistical backing. The second section of this subchapter (6.1.2) is concerned with the question of how relevant students with no risk preconditions are for the study of resilience and academic success in high school and higher education. A short analysis of the sample studies is provided. It is then argued that useful results in resilience research at the high school and higher education levels might be generated from students with no apparent risk preconditions as well. Last, in the third section (6.1.3), the degrees of adversities found in the sample studies are discussed. A basic separation between common and severe adversities is presented. In addition, the concept of academic buoyancy is introduced to extend the spectrum of how challenges can be conceived in education. At the end of the section, the author outlines the inherent connection between risk and adversity.

6.1.1 Risk Preconditions

The starting point of resilience research in education is often the definition of an at-risk group of students. These are students with risk preconditions for whom a lack of representation and/or performance in the education system can be (statistically) expected. Martin and Marsh (2009) gave several examples of how at-risk groups were defined in different studies. They describe, for instance, that Finn and Rock (1997) investigated chronic underachievers, Gonzalez and Padilla (1997) studied specific underachieving cohorts, Catterall (1998) researched students affected by gang violence, Overstreet and Braun (1999)

were concerned with students living in poverty, and Miller (2002), as well as Meltzer (2004), investigated students with learning disabilities. The premise in resilience research is that the majority of students with risk preconditions are prone to experience difficulties in their studies. At-risk students are less likely to succeed. However, researchers investigate the subpopulation of the students who are successful against the odds. It is their intention to find out about the resilience factors and processes that support the students to be successful in their academic pathways.

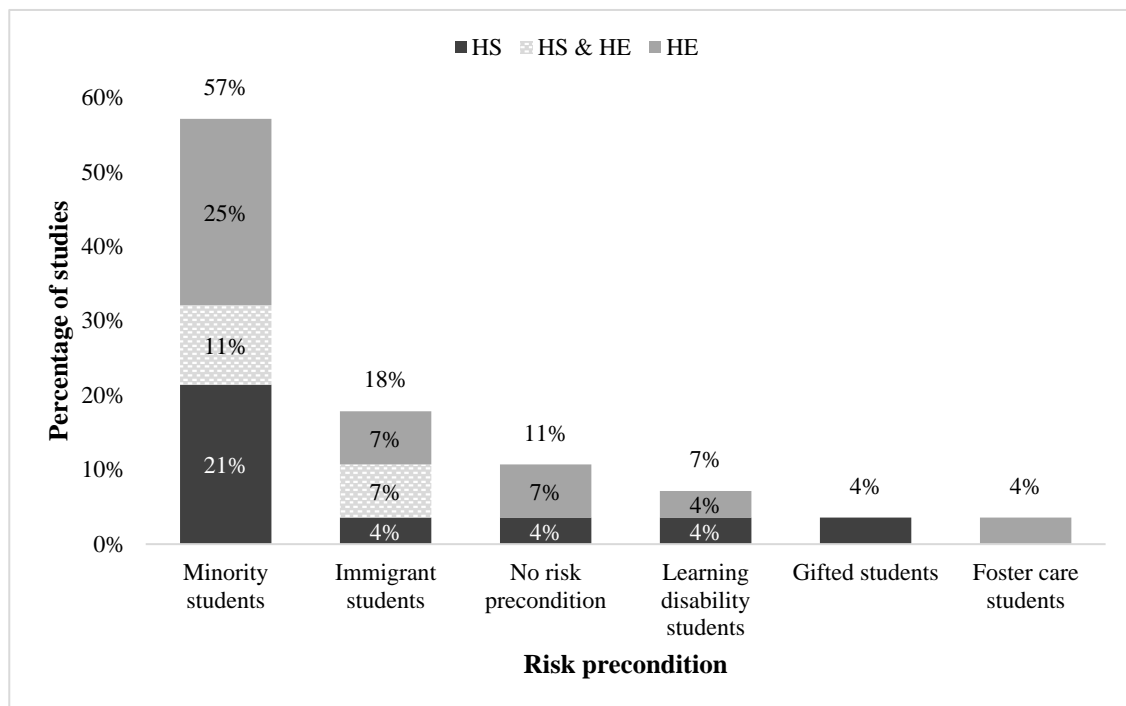


Figure 42. Risk preconditions of the participants in the synthesized studies ($N = 28$ studies)

Figure 42 shows the risk preconditions defined in the sample studies. In the majority of the studies (89%), a risk precondition is defined for the students. All in all, five different at-risk groups can be identified in the sample: minority students, immigrant students, students with learning disabilities, gifted students, and foster care students:

- Minority students:** The sample studies show that the resilience concept is frequently applied to the study of the academic success of minority students, which is the student group studied most often. Over half of the studies (57%) are concerned with the academic success of minority students. The majority applies to higher education studies, followed by high school studies and studies relevant to both education levels. Most of the studies investigate the academic success of African-American students (Carter

Andrews, 2012; Gayles, 2005; Gilford & Reynolds, 2011; Williams & Bryan, 2013; Williams & Portman, 2014), Hispanic-American and Mexican-American students (Cabrera & Padilla, 2004; Campa, 2013; Garza et al., 2014; Graff et al., 2013; Sosa, 2012), or both of these student groups (Morales, 2008a, 2010, 2014) in the United States. Moreover, there is one study each with Afro-Jamaican (Dole, 2014) and African (Cross & Atinde, 2015) participants. In one case, the ethnicity of the immigrant students is not stated (Reis et al., 2004).

- *Immigrant students:* Second, researchers in the sample studies take a particular interest in the academic success of students with an immigration background. Five studies in the sample are concerned with immigrant students, two each for studies at the higher education level and the ones relevant to both education levels, and one for high school. As for the minority students above, the ethnic background of the immigrant students is mostly African (Hersi, 2011; Rana et al., 2011) or Hispanic/Mexican (Casanova, 2012; Morales et al., 2011). A particularly interesting study example here is the one by Rana and colleagues (2011). This study is concerned with refugee students. Having a refugee status can be very challenging for students' academic success. Besides typical challenges for immigrants, like language barriers (Rana et al., 2011) or cultural differences (Casanova, 2012), many refugee students, in addition, have to deal with traumatic past experiences. In this particular example, the students have been placed in foster homes, which makes their risk statuses even more critical. Severe challenges throughout the lives of these students are reported in the study. Another interesting study in this category is the one by Sérór and colleagues (2005). It marks an exception concerning the negative impact of an immigrant status on possibilities for academic success. Asian second language students are the participants in this study. While they are immigrants to the US, they come from wealthy families, which gives them an advantage in certain areas of study. For instance, their parents are able to support them by employing tutors.
- *Students with learning disabilities:* A further at-risk group in the sample studies are students with learning disabilities. Two studies are concerned with this risk precondition, one at the high school and one at the higher education level. The study by Freeman and colleagues (2004) investigates achievement and underachievement of two student groups with learning disabilities at the high school level. Orr and Goodman (2010) examine the experiences of students with learning difficulties in higher education.

- *Gifted students:* In the sample studies, academic giftedness is also described as a possible risk precondition for students. This is argued in one study at the high school level. In a longitudinal study of students' high school experience till graduation, involving parents as well as students, Peterson and colleagues (2009) illustrate various risk factors for gifted students as well as protective factors and processes for them to overcome risk, and succeed.
- *Foster care students:* The last at-risk group are students who had spent their childhood or a part of it in foster care. This risk precondition has been discussed in one study at the higher education level. Mallon (2005) describes the situation of academically successful higher education students who have been looked after in foster care families in the United States.

To summarize, the strong focus on minority students in the sample studies appears to be reasonable considering the research literature. Minority students are a student group with often highly severe risk preconditions that are likely to impede their academic success (Carter Andrews, 2012; Gilford & Reynolds, 2011; Sosa, 2012). Second, it should be noted here that it seems unfortunate that not more of the studies are focused on the situation of refugee students. We might be able to extract valuable results useful for the current and possible future situation of refugee students in Germany. Third, the data show that learning disabilities can be connected to academic success. For the sample studies, it is interesting in particular that the angle of resilience research enables us to understand how some students with learning disabilities are able to overcome difficulties and succeed like it is presented in a highly structured manner by Freeman and colleagues (2004). Fourth, the notion that being gifted can constitute a risk precondition for students seems surprising at first glance. However, as Peterson and her colleagues (2009) show, the risk that follows giftedness might often not be related to academic performance, mainly, but relate to factors connected to the personal lives of students like, for instance, being bullied by peers. Last, investigations on foster care students show the possible – in this case, negative – influences prior experiences can have on students later on. This will be discussed in more detail in Section 6.5.3 below.

For the analysis here, the author aimed to decide on the most prevalent risk preconditions of the students, as it is described in the studies. It is acknowledged, however, that one risk precondition can be linked to others which might further contribute to the risk factors and/or adversities in the students' lives in many cases. Usually, students could be connected to more than one at-risk status. For instance, it is often the case that minority students have low-

socioeconomic statuses as well. A good example of this is the study by Morales (2010). It illustrates that there is often more than one risk precondition present, respectively, that one risk precondition can influence the development of another. Moreover, in the case of the minority groups of Latino/a students, it has been shown in the sample that they might not speak English as a first language (Cabrera & Padilla, 2004) or that they might have to work to support their families and thus have less time for their studies than their peers (Graff et al., 2013). These and further risk constellations have been described in resilience research via the concept of cumulative risk (Luthar, 2006; Masten, 2001; O'Dougherty Wright et al., 2013; Obradović et al., 2012; Sameroff et al., 2003). Such an overlap between risk preconditions is acknowledged in this synthesis.

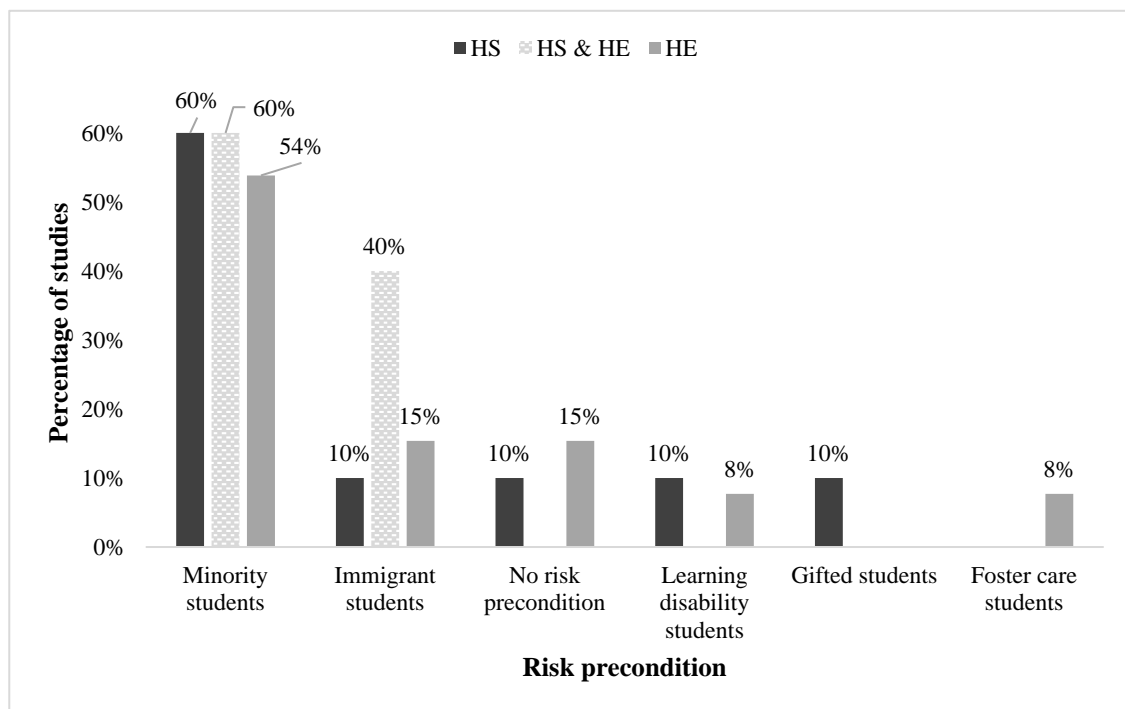


Figure 43. Risk preconditions in high school, higher education, and the transition (HE: $n = 13$ studies, HS: $n = 10$ studies, HS & HE: $n = 5$ studies)

Figure 43 shows the risk preconditions grouped by studies relevant to high schools, higher education institutions, and both these institutions. The data illustrate that for the high school as well as the higher education level, the study of minority students, immigrant students, and learning-disabled students appears to be of approximately the same importance, with slightly higher numbers in two categories (minority and learning disability) at the high school level. A more substantial difference is observable for the last two categories: The category of ‘gifted students’ is relevant to the high school level only. Foster

care students are researched solely at the higher education level instead. Concerning the studies in the sample relevant to both the high school and the higher education level, the data show that minority students and immigrant students are student groups that have been researched for this study type. The proportion is particularly high (40%) for immigrant students. This seems to be a comprehensible finding since, for the student group in question, an understanding of their educational pathways in high school as well as higher education institutions can be important to know and understand. All in all, the sample studies do not reveal major differences between high schools and higher education institutions. In general, it would have been interesting to have more studies relevant to both education levels, to learn more about the transitions of students with learning disabilities or gifted students from one education level to another, for instance.

It is common practice in resilience research to present statistical background information to show that studying a certain at-risk group is worthwhile. This is the case for 43% of the sample studies. There are two forms of how statistical information is used in the studies: First, in the expectable fashion of claiming a statistically lower chance for at-risk students to achieve academic success. This is done in nine studies. Campa (2013), Garza and colleagues (2014), and Graff and colleagues (2013), for instance, outline the low graduation rates of Latino/a students at colleges and universities in the United States. Moreover, other authors describe similar circumstances for student groups in high school, for instance, for students with learning difficulties (Freeman et al., 2004) or African American students (Williams & Portman, 2014). Using statistical information like this can be considered the intuitive way. Pointing out the likelihood of a particular student group to fail is one way to legitimize resilience research in education.

The second form of using statistical data is less intuitive. In some studies, the statistics presented would not suggest a higher risk for the student population in question (Lessard et al., 2014; Morales, 2008a; Orr & Goodman, 2010). Morales (2008a), for example, describes that female African American students exceed their male counterparts in terms of attendance and graduation rates in higher education. In this case, the author chooses not to rely on statistics of academic achievement alone. Instead, he considers issues beyond these statistics which have been shown in previous research, like that female minority students have more challenges to overcome than male students on their way to graduation (Morales, 2008a). Such a study often intends to increase awareness of a problem which might not be visible in the student statistics at present, but which might have negative consequences in the future. All in all, it is surprising that statistical backing of risk preconditions is lacking in many of

the sample studies. However, it should be noted that the risk preconditions can be assumed to be obvious from most of the study contexts. Furthermore, it is common in most of the sample studies to legitimize the research endeavor via the definition of a research gap. Many scholars argue that there is a lack of research about the resilience of a certain at-risk population, and subsequently proclaim that they intend to find out how the research population in question is or can be resilient (Freeman et al., 2004).

6.1.2 No Risk Preconditions

In resilience research in education, the majority of authors carry out studies with at-risk groups. There are studies, however, in which resilience is investigated for students with no apparent risk preconditions. In many cases, such studies are quantitative studies that measure resilience as a personality trait of students, and then connect a resilience value to outcomes within or outside the domain of education (Allan et al., 2014; Hartley, 2011; Martin and Marsh, 2006). Hartley (2011), for instance, carried out measurements of the intrapersonal and interpersonal resilience values of a large group of students in undergraduate programs at U.S. universities and examined how the resilience values relate to the students' mental health scores as well as their academic persistence. While this is common practice, some researchers view it critically. Kaplan (2013), for instance, doubts the "applicability of the concept of resilience to 'well-functioning/low-risk individuals'" (p. 42). Nonetheless, for the author of the publication at hand, the usefulness and relevance of resilience research in education for students with no apparent risk preconditions was deemed an interesting question early in the review process. The phenomenon deserves a closer look, which is provided next for the sample studies.

The previous subchapter has already shown that a large majority (89%) of the sample studies researches students with one or more risk preconditions. In fact, only 11% of them investigate students with no at-risk statuses, two at the higher education level and one at the high school level (see Figure 42). Ben-Tsur (2009) investigates how students in regions in Israel, who are troubled by violent conflict, carry on with their university education. Richardson and colleagues (2015) examine the aftermaths of a severe earthquake in relation to the academic persistence of undergraduate and postgraduate nursing students in New Zealand. Moreover, Lessard and colleagues (2014) examine the differences between successful students and dropout students in Canadian high schools. Two of these three studies describe the academic success of students who have experienced severe adversities (see Section 6.1.3 below). The study by Lessard and colleagues (2014) represents a special

case in this synthesis, because it is the only study which compares the academic success of two student groups which are neither affected by risk preconditions nor any severe adversities.

The sample studies have shown that it is not imperative to define risk preconditions for resilience research at the high school and higher education levels. However, in accordance with the essence of the resilience concept, challenging situations and adversity are likely to be involved. Two of the studies without an at-risk group, for instance, are concerned with severe adversities. In the case of the study by Ben-Tsur (2009), these adversities are caused by warlike circumstances in the community the students live in. In the study by Richardson and colleagues (2015), a natural catastrophe creates highly adverse conditions regarding the ability of students to proceed with their higher education. This topic of severe adversities will be discussed in more detail in the next section. Furthermore, it should be mentioned here that the sample studies show one study that investigates students with neither a stated risk precondition nor severe adversities (Lessard et al., 2014). This study marks an exception in the category of Type 2.2 studies. On the contrary, such studies are common for Type 1 studies defined at the mapping stage (Elizondo-Omaña et al., 2010; Stack-Cutler et al., 2015; Yokus, 2015).

In regard to practical considerations, including non-at-risk students in resilience research, i.e. students not carrying at-risk statuses and/or being victims of severe adversities, could be considered beneficial. Educational institutions might have a use for results tailored to the needs of students for which challenges and difficulties are not in the foreground but are likely to occur in the course of their education. Such considerations relate to the study by Peterson and colleagues (2009), for instance, in which the difficult situations of gifted students are described. The authors argue that gifted students are often denied support because they are deemed to experience no or at least fewer difficulties than their peers, let alone students for which risk preconditions and/or adversities are visible. In conclusion, it appears to be good practice to assume that students for which we would not expect particular hardships at first glance will have to face challenges and difficulties in their studies. For many, these will be minor and thus might not have to be relevant in terms of resilience. However, there will be cases in which highly negative circumstances can develop, for instance, because of highly stressful and adverse occurrences in the social environment like a death in the family (Celik, 2013) or the end of a romantic relationship (Gilbert & Sifers, 2011). In these cases, findings in terms of the resilience of seemingly risk-unaffected

students might be highly useful and relevant to the prevention efforts of educational institutions.

6.1.3 Degrees of Adversity

In addition to risk preconditions, adversities – the various occurrences of challenges students have to struggle with daily during their education – have to be considered for resilience research on students in high schools and higher education institutions. A range of severity degrees of adversity is commonly observable in education. Some authors claim that adversities have to be severe for the resilience concept to apply. Martin and Marsh (2009), for instance, place particular emphasis on this point. They argue that in resilience research in education, we typically refer “to a relatively small number of students (whom it is vital to assist) experiencing rather extreme adversities” (p. 355). As a result, they further argue, the resilience concept is not very suitable for more mundane adversities (Martin & Marsh, 2009). On the other side of the spectrum, as Martin and Marsh (2009) describe it, there are “the many individuals who are faced with setbacks, challenges, and pressures that are part of the ordinary course of life” (p. 356). They argue, we need to be aware of the “everyday adversities experienced by the many” (p. 356) in resilience research. For these mild adversities, which likely need to be faced and endured by most students in high school and higher education, the two authors propose the concept of academic buoyancy (Collie et al., 2015; Martin, 2013; Martin & Marsh, 2008; Martin et al., 2010). In the following paragraphs, the severity of the adversities found in the sample studies is discussed.

The degrees of adversities in the sample studies can be divided into two major types: severe adversities and common adversities. These two types will be described hereafter. In addition, the concept of academic buoyancy is discussed in relation to the sample.

- *Common adversities:* In the majority of the sample studies (89%), the students do not have to deal with severe adversities, but with adversities which can be seen as common for all students at the education levels of high school and higher education. It appears to be a wide-reaching trend to report about increasing difficulties students face in their studies today. For the higher education level, for instance, Allan and colleagues (2014) paint a dim picture of the situation in the United Kingdom at the start of their study about resilience and academic achievement. They state that “over recent years, academic, financial and relationship difficulties may all have increased pressures on university students’ capacity to complete their studies” (p. 9). Nonetheless, while increasing challenges are observable for most students, it should be noted that such common

adversities are to be seen in relation to the risk preconditions of students. For instance, minority students or immigrant students are expected to face various challenges in their studies due to their background, like a low socio-economic status (Morales, 2014; Williams & Portman, 2014), a mother tongue different from the one spoken at school or university (Rana et al., 2011; Séror et al., 2005), and strong cultural differences between their original cultural background and the culture in their new home countries (Casanova, 2012; Cross & Atinde, 2015). This connection between at-risk status and adversities will be discussed in more detail at the end of the current section.

- *Severe adversities:* Severe adversities are dealt with in 11% of the studies only, two in higher education studies and one in a study relevant to both high school and higher education. Two types of severe adversities can be distinguished. The first type are sudden and traumatic events uncontrollable by the students and are expected to have the potential to disrupt their academic resilience and success. In one case, these are warlike conflicts which create a highly challenging learning environment for higher education students in Israel (Ben-Tsur, 2009). In the other case, this is captured in the aftermaths of an earthquake which shook the academic persistence of nursing students in New Zealand (Richardson et al., 2015). The second type of severe adversities is illustrated in the study about refugee students by Rana and colleagues (2011). For this student group, it seems important to consider the severity of past adversities. It offers a longitudinal perspective and is thus of particular interest for the question of how students deal with severe adversities throughout their upper-secondary and tertiary education. We can assume that the students' hardships cannot be compared with those of other at-risk students in many cases. Many refugee students have been confronted with death and destruction, for instance.
- *Academic buoyancy:* The concept of academic buoyancy is not discussed in the sample studies. However, examples of academic buoyancy studies can be found at the mapping stage of this review. Table 10 shows a list of all studies related to the concept of academic buoyancy. The studies by Martin (2013) and Martin and Marsh (2008) introduce the concept to the research field and aim to delineate its characteristics from those of academic resilience. Two other studies connect academic buoyancy with measures of control (Collie et al., 2015) and motivation (Martin et al., 2010), while the study by Lumby (2012) "maps the conceptual terrain concerning resilience, well-being,

buoyancy, enjoyment and happiness and selects factors related to the successful navigation of schooling” (p. 261).

In summary, most of the sample studies are not concerned with adversities of immediate and high severity, but with those that can be considered normal in relation to the education levels and the risk conditions the students are in. Concerning the distribution of the studies about severe adversities at the education levels of high school and higher education, it can be shown that severe adversities are relevant to the higher education level or for both high school and higher education. While there are few severe adversity studies in the sample, the existing examples provide a good overview of the importance and relevance of finding out about students facing such extremities on their education pathways, nonetheless. It seems unfortunate, however, that the concept of academic buoyancy has not been used in any of the studies for this synthesis. The analysis of the whole study set used for the review at hand shows that the buoyancy concept is used for quantitative studies almost entirely, except for the study by Lumby (2012). A second point to mention is that the concept of buoyancy is researched for the high school level only. Future systematic reviews and syntheses might uncover more insights into this interesting concept.

Table 10. Academic buoyancy studies at the mapping stage

ID	First author	Title	Type
0020	Martin, A. J.	Academic buoyancy	Type 2.1 (HS)
0021	Martin, A. J.	Academic buoyancy and academic resilience	Type 1 (HS)
0022	Collie, R. J.	Academic buoyancy, student’s achievement, and the linking role of control	Type 1 (HS)
0099	Lumby, J.	Disengaged and disaffected young people	Type 2.2 (HS & HE)
0200	Martin, A. J.	Longitudinal modelling of academic buoyancy and motivation	Type 2.1 (HS)

This subchapter about the first essential part of the resilience framework closes with the notion that it is imperative to consider the connection between risk preconditions on the one hand and various degrees of adversities on the other. For one, it is likely that when adversities strike – and adversities of various degrees of severity are likely to strike many students, in particular at advanced education levels –, students with risk preconditions are more likely to be struck harder than their peers with no or fewer risk factors in their lives. This has been shown in the sample studies (Rana et al., 2011). Moreover, it is important to acknowledge that all students are likely to experience challenges and hardships with an influence on the

course of their studies, whether this is the case in the domain of education or outside of it. As has been illustrated above, even students with no risk preconditions can be heavily affected by sudden, severe adversities (Ben-Tsur, 2009; Richardson et al., 2015). Furthermore, while not discussed in the sample studies, the concept of academic buoyancy offers another viewpoint on the issue (Collie et al., 2015; Martin, 2013; Martin & Marsh, 2008; Martin et al., 2010). In conclusion, for our day-to-day practice in educational institutions, we should consider variances in the severity of adversities as well as the important relationship between adversities and risk statuses.

6.2 Positive Outcomes

This subchapter presents the synthesis findings for the second element of the conceptual framework of resilience: positive outcomes. The first section (6.2.1) starts with an overview of three different positive outcomes in the sample studies: academic resilience, academic persistence, and academic achievement. The relevance of these three outcomes for the high school and the higher education level is examined. Subsequently, the notion of the subjectivity of success is introduced for the first time in this subchapter. It is argued that success is a highly subjective concept for students, which can make it difficult to determine positive academic outcomes for different student groups. The second section (6.2.2) of this subchapter examines how the sample studies introduce possibilities to learn from successful students. This section ends with the assessment that an external ascription of what academic success means for students does not seem to be constructive in many cases. In the last section (6.2.3), the significance of risk factors is outlined in relation to the sample studies. It is concluded that while risk factors play a role, most of the sample studies do not focus on negative factors but are predominantly concerned with supportive factors for the students' academic success. However, in an extension of the considerations about the subjectivity of success above, it is argued at the end of the section that it can be useful to consider negative factors when determining what academic success might mean for different student groups.

6.2.1 Resilience and Success

A positive outcome is the second essential part of the resilience concept. In education, resilience research is tightly connected to the notion of academic success. This connection is apparent in various definitions of academic resilience. Schoon (2006), for instance, defines academic resilience as “the development and maintenance of average or above average

levels of academic attainment despite the experience of socio-economic adversity” (p. 6). Wang and colleagues (1994) define education resilience “as the heightened likelihood of success in school and in other life accomplishments, despite environmental adversities, brought about by early traits, conditions, and experiences” (p. 46). In this systematic review, a positive outcome has been defined as one of the major inclusion criteria for studies at the selection stage (see Subchapter 3.3). Consequently, as a premise of the review at hand, all the sample studies are connected to academic success.

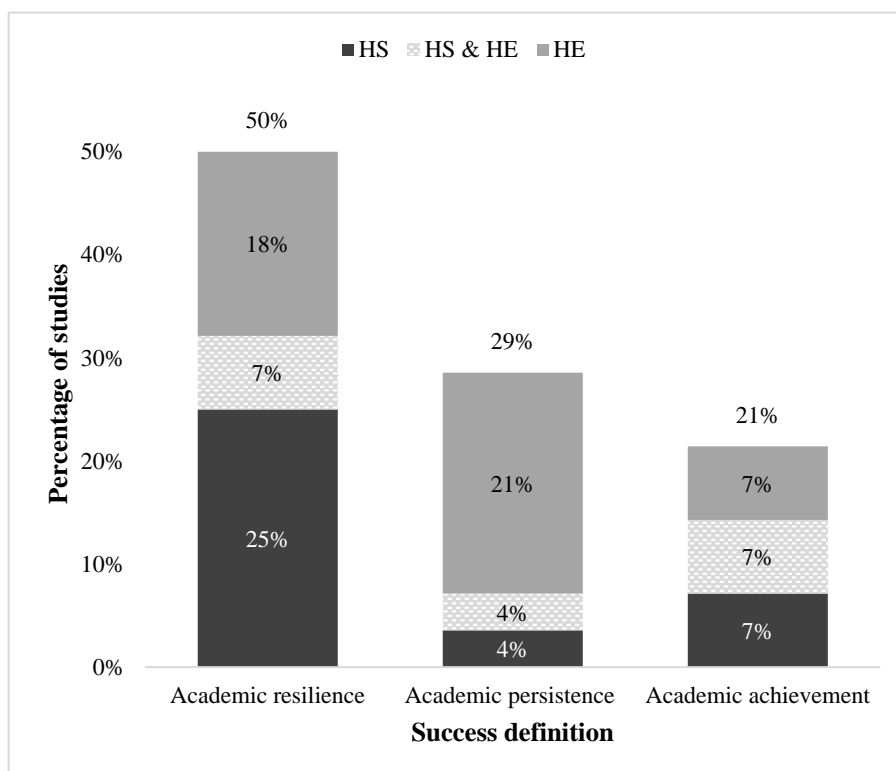


Figure 44. Success definitions in the synthesized studies ($N = 28$ studies)

In the sample studies, academic success can be categorized into three main types: academic resilience, academic persistence, and academic achievement (see Figure 44). While the overarching principle remains academic success, the three-part categorization is chosen in this synthesis to provide a more detailed description of the nuances in which various studies define and use the notion of success in education:

- *Academic resilience:* For this synthesis, the positive outcome of academic resilience is defined as students against the odds persevering successfully in high school and/or higher education. It is about fighting through, withstanding adverse situations, and ultimately, achieving success in the domain of education. Academic resilience is the

most prevalent positive outcome in the sample studies. It is relevant to 50% of the studies, most of them (7) at the high school level (Freeman et al., 2004; Gayles, 2005; Hersi, 2011; Lessard et al., 2014; Sosa, 2012; Williams & Bryan, 2013; Williams & Portman, 2014), followed by five studies at the higher education level (Graff et al., 2013; Morales, 2008a, 2010, 2014; Séror et al., 2005) and two relevant to both education levels (Cabrera & Padilla, 2004; Rana et al., 2011).

- *Academic persistence:* The successful outcome of academic persistence is defined as carrying on with one's education. It is more neutral than academic resilience in that the act of persevering during a difficult time or after a severe adverse event is defined as a successful outcome already. Academic success in a more conventional way, like achieving a high GPA in high school or graduating from university, however, is not mandatory for academic persistence to apply. It is the positive outcome of 29% of the sample studies. The majority of six studies are relevant to the higher education level (Ben-Tsur, 2009; Cross & Atinde, 2015; Garza et al., 2014; Mallon, 2005; Morales et al., 2011; Richardson et al., 2015), followed by one study each for the high school (Carter Andrews, 2012) and both education levels (Campa, 2013).
- *Academic achievement:* Studies in the category of academic achievement include attestable educational achievements as positive outcomes only. In this synthesis, this would be a high school diploma or a college degree. 21% of the sample studies are relevant to this category, with an equal distribution of two studies each for the three education level categories. Examples of studies with high school graduates are provided by Peterson et al. (2009) and Reis et al. (2004). The participants in the studies by Casanova (2012), Dole (2014), Gilford and Reynolds (2011), and Orr & Goodman (2010) are higher education graduates.

In summary, given the focus of this publication on the resilience concept, it is a predictable finding that a majority of the sample studies operate with the outcome of academic resilience. For high school students, Lessard and colleagues (2014) best exemplify the spirit of academic resilience. They aim to determine “why some (...) students persevered and graduated while others ended up dropping out of school” (p. 104). All three studies by Eric E. Morales (2008a, 2010, 2014) in the sample incorporate the concept for the higher education level. The author wants to find out about the factors that foster the academic resilience of minority students, and how we could best use this knowledge to support the further achievement of these students. However, academic resilience is not the sole focus in

the sample. Academic persistence and academic achievement are further outcomes to consider. Academic resilience and academic persistence are both relevant to students before graduation. This aspect distinguishes them from the category of academic achievement, which is relevant solely to studies in which students finish high school or study programs in higher education.

In all sample studies, one of the three described forms of academic success is obtained by the students. It should be noted, however, that other resilience studies illustrate that achieving academic success is not a necessity. There are several examples in which no positive connection between resilience and positive academic outcomes is reported. Examples of such studies were, for instance, found in the larger sample used for the mapping stage of this review (see Chapter 4). The work by Elizondo-Omaña and colleagues (2010), Stack-Cutler and colleagues (2015), and Thornton and colleagues (2006) are three examples. In some cases, even contrary outcomes are reported. Allan and colleagues (2014), for example, show in their study that for males, “higher resilience was linked with poorer prospective academic performance” (p. 18). Nonetheless, judging from the results of the mapping stage, it is possible to say that it is rarer to report a missing or even a negative connection between resilience and academic success than it is to refer to a positive one. Moreover, this phenomenon seems to be more relevant to quantitative studies in which resilience is operationalized as a personality trait.

A comparison by education level yields the following results (see Figure 45): For the high school and the higher education level, the sample studies show little difference for the category of academic achievement. The successful graduation of students is shown in both high school (Peterson et al., 2009; Reis et al., 2004) as well as higher education studies (Gilford & Reynolds, 2011; Orr & Goodman, 2010). For academic resilience and academic persistence, however, the sample demonstrates significant differences. For one, 70% of the high school level studies are concerned with the positive outcome of academic resilience whereas this is the case for 38% at the higher education level only. This might indicate that it can be more important for students to persevere in high school than it is later on at university. Expectations of success might diminish in higher education compared to the high school years. Students might be less expected to finish a higher education degree than this might be the case for high school graduation. Second, the category of academic persistence, conversely, applies to a much higher proportion (46%) of higher education studies than high school studies (10%). A possible explanation might be that the higher education studies describe instances in which students persist after severe adverse conditions (Ben-Tsur, 2009;

Richardson et al., 2015). Concerning the studies relevant to both high school and higher education, most studies (40%) are relevant to the categories of academic resilience and academic achievement. The high share for academic achievement can be explained by the fact that a majority of these studies include high school graduates. All in all, the results of the comparison by education level are not unexpected.

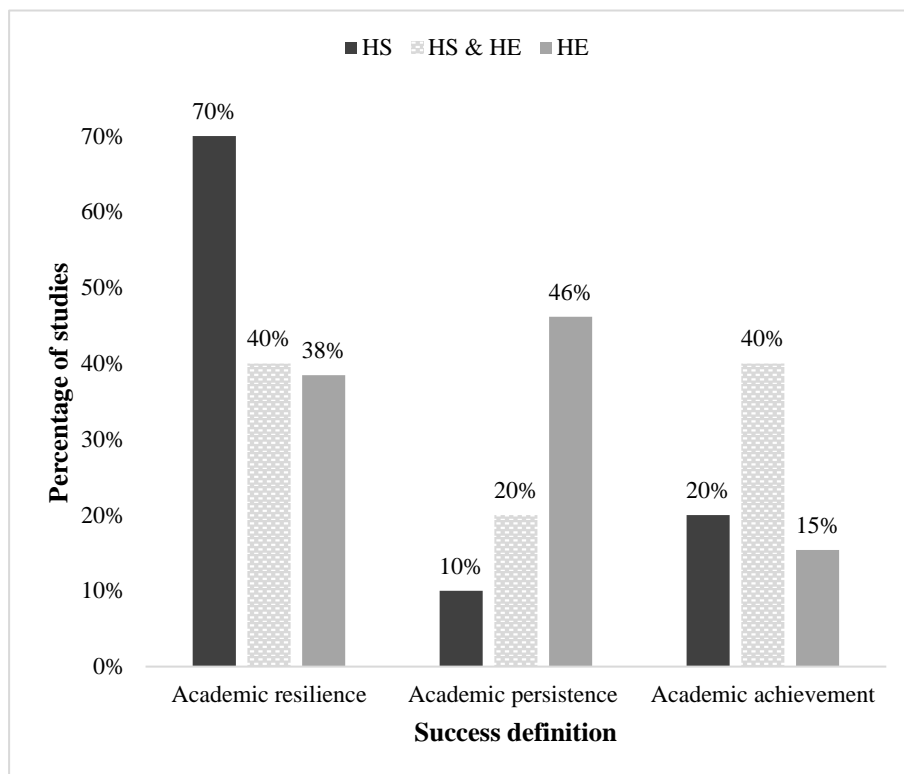


Figure 45. Success definitions in high school, higher education, and the transition (HE: $n = 13$ studies, HS: $n = 10$ studies, HS & HE: $n = 5$ studies)

Success in education can be a highly subjective concept. It likely has different meanings for different students, as it has been described by Bartelt (1994) or Kaplan (2013), for instance. In the sample studies, however, the subjectivity of success is poorly reflected. Only three studies refer to this topic directly. The study by Campa (2013) is a prime example. The author urges us to consider different interpretations of success for different student groups and argues that it be problematic to employ “traditional standards and measurements to assess student progress and success without understanding the nuances of Mexican-American resilience” (p. 449). In conclusion, it seems difficult to determine the academic success of students in a way that reflects their own perceptions of success. Bartelt (1994) gives an interesting example in this context. He describes the situation of Hispanic students for whom earning money instead of pursuing additional education could be considered a

positive outcome. Similarly, Kaplan (2013) asks: “How do we distinguish academic success as resilience from dropping out as resilience” (p. 103)? He discusses subjective judgments by individuals, which make it difficult to define what a positive outcome should look like in resilience research. All of this should remind practitioners to be aware of the difference between established measurements of academic success and the subjective perceptions of students about their success. What constitutes success seems to be a matter of personal judgment in many instances. Individuals have their own concepts of success and failure.

6.2.2 Learning From Successful Students

One of the major aims of resilience research in education is to learn from successful students. The question posed is what we can learn from the students who manage to be successful despite various adversities and challenges in their way. In the literature, the possibility to learn from the results of resilience studies is expressed many times (Allan et al., 2014; Cavazos et al. 2010; Marsh et al., 2012; Martin et al., 2010; Samel et al., 2011). Morales (2008b), for instance, states that “researching and understanding academic resilience has as its primary mission the desire to learn about and thus spread resilience to underachieving groups” (p. 229). The ability to learn from resilience research is frequently connected to interventions in education. Williams and Bryan (2013) describe, for example, that school counselors should know about the resilience strategies of successful students so that they are able to implement effective supportive measures in their schools. This and other examples for the use of resilience research findings are relevant to most studies providing recommendations and/or implications for practice for education personnel and institutions, which will be discussed in Section 6.3.4 in more detail. In this section, the author discusses how the ability to understand and learn about the success of students is reflected in the sample studies.

While it would be possible to assume that every resilience study focused on the positive outcome of academic success provides opportunities to learn from successful students, this synthesis focuses on the cases in which learning stems from the comparison of two different student groups. Our ability to learn from successful students seems particularly evident when researchers compare a successful student group with an unsuccessful one. The sample studies show that this is the case in three publications, all of them at the high school level. First, Freeman and colleagues (2004) examine the differences between successful and unsuccessful students with learning difficulties. The second study example is provided by Lessard and colleagues (2014), who compared two groups of high school graduates and

dropouts. Third, Reis and colleagues (2004) discuss “the development of resilience in talented students who succeeded in a large urban school and the lack of resilience among talented students who did not succeed” (p. 117). Concerning the education levels for which the studies are relevant, the sample studies show that a comparison of student groups is done at the high school level only. A possible explanation for this could be that it is easier to compare the progress and success of high school students than that of students at the transition stage or in higher education because the study conditions of the high school students are more regulated and thus easier to compare in research.

To learn from successful students, success needs to be ascribed to one student group compared to another. In some cases of resilience research in education, teachers do this. This teacher nomination of resilient students has been used in various resilience studies in education, for instance, by Rivera and Waxman (2011), who employed this approach in their study about the attitudes of English Language Learners (ELL) towards mathematics. Another example is provided by Plunkett and colleagues (2008), who – in addition to student questionnaires – used grade records provided by teachers to define the educational resilience of a sample of Mexican American students. Nonetheless, it should be mentioned here that the method of teacher ascription is not ideal. In fact, in some cases, it is even claimed to be a study limitation by the authors using it (Kookken et al., 2013). Coming back to the notion of the subjectivity of success, it can be claimed that teachers cannot be aware of the subjective perspectives of students on success. Consequently, it seems recommendable to let students define and describe their expectations of success themselves. An external ascription of success should only be used if data collection from students is not possible.

6.2.3 Focus on the Negatives

At the beginning of resilience research, there was a strong focus on risk factors. The primary direction of research was to find out about the factors and processes that hindered successful outcomes of individuals. Over time, however, resilience research progressed towards the definition and analysis of protective and/or promotive factors and processes in the literature (Luthar, 2006; Masten & Reed, 2002; Schoon, 2006). As Richardson (2002) describes, “from a historical view, the first wave of resiliency inquiry focused on the paradigm shift from looking at the risk factors that led to psychosocial problems to the identification of strengths of an individual” (p. 309). For resilience research in education, we can thus conclude that a focus on risk factors, i.e. on the factors likely to prevent students from academic success, can be considered outdated. From today’s research standpoint, we are most interested in the

factors and processes that contribute to academic success. As has been shown in the previous section, this might enable us to learn from successful students, i.e. to learn how some students overcome risk and adversity despite the odds being against them in many cases. The extent to which the sample studies discuss challenges and negatives will be discussed in this section.

In the sample studies, risks are considered to a high extent. The data show that close to half (43%) of the studies discuss various risk factors of students. This is done in six high school studies (Carter Andrews, 2012; Freeman et al., 2004; Lessard et al., 2014; Peterson et al., 2009; Reis et al., 2004; Sosa, 2012), five higher education studies (Ben-Tsur, 2009; Gilford & Reynolds, 2011; Mallon, 2005; Morales et al., 2011; Orr & Goodman, 2010), and in one study relevant to both education levels (Rana et al., 2011). For a majority of the studies, a combination of risk and protective factors is observable in the findings. Risk factors are described in combination with those supportive factors and processes that enable the students to succeed despite all that (Ben-Tsur, 2009; Gilford & Reynolds, 2011). In a second, smaller category of studies, the discussion of risk factors and supportive factors is split into two parts. A group of successful students is compared with a group of unsuccessful ones there (Freeman et al., 2004; Lessard et al., 2014). Last, in a couple of the sample studies, risk factors are analyzed in more detail than supportive factors, like in the studies by Peterson and colleagues (2009) and Mallon (2005). The latter represents a special case in that its sole focus is on various intrapersonal and interpersonal as well as institutional risk factors. Due to its connection to a larger study about the academic success of former foster care students, it is relevant to this synthesis, nonetheless.

In general, it is important to note that despite a frequent consideration of risk, the authors of the sample studies aim to uncover supportive factors in the large majority of cases, respectively ways in which the students can or do achieve academic success despite risk and adversities. Highly suitable examples to illustrate this are found in studies in which authors report longitudinally about the life courses of students. Later on, these studies are described as having a life course perspective (see Section 6.5.2). In these studies, we can find reports of many challenging situations the students face in their education pathways. What is shown there, however, is that students indeed overcome these hardships and succeed in education, and how they do it (Cabrera & Padilla, 2004; Campa, 2013; Casanova, 2012; Hersi, 2011). In summary, the sample data show that negatives are considered to different degrees in the studies and that some studies manage the switch to a strength-based view of resilience better than others. In addition, concerning the number of studies per education level, differences

can be reported as well: The percentage of studies discussing risk factors is the highest (60%) at the high school level. Such factors are further relevant to 38% of studies at the higher education level and one study (20%) at both education levels.

At the end of this subchapter, the subjectivity of success shall be discussed further. It is argued here that considering the various challenges and risk factors that are shown to play a role in the sample studies, we might be inclined to further consider how to determine positive outcomes of students in relation to what they are up against. In essence, there seem to be two paths to follow: First, the assessment of academic success via various performance measurements like grades or diplomas as it is the convention in the education system. Second, we could try to see academic success in connection to the challenges and hardships students are facing. It is conceivable that the latter enables us to follow the personal conceptions of students about their success in a better way than the focus on a quantitative operationalization of success. This might have advantages for our ability to cater to the needs of at-risk students in educational institutions. In addition, being aware of existing conventions about success and – if necessary – to reconsider one’s interpretations might be important for understanding the needs of students without severe challenges and hardships as well. It seems safe to assume that many of these students are intellectually capable of achieving positive outcomes in education and other domains of their lives. It might thus be even more important to gain a better understanding of what their definition of success might be, and how we can support them to achieve it.

6.3 Protective Factors and Processes

Subchapter 6.3 presents the synthesis findings for the third element of the conceptual framework of resilience: protective factors and processes. The first section (6.3.1) starts with a presentation and discussion of personality characteristics identified in the sample studies which contribute to the academic success of students, like motivation, determination, and persistence. It further elaborates on the role of gender and cognitive abilities in the sample and compares the use of personality characteristics in studies at the high school and the higher education levels. Moreover, the section provides three reasons as to why the personal characteristics of students are not incorporated in some studies. The second section (6.3.2) is concerned with the social environment of students. It is shown that students’ social connections inside and outside the domain of education play a substantial role in the sample studies. Subsequently, the social environments family, school/higher education personnel, personal network, and community are discussed. This is carried out as a general overview of

the positive as well as negative influences of different individuals in the social sphere of students, and the effects of these positive and negative influences are discussed in the comparison of high schools and higher education institutions. At the end of the section, the author examines which effect the students' cultural backgrounds might have on the positive and/or negative roles of certain groups in their social environments. In addition to the examination of the students' social environment, the institutional environment is explored in Section 6.3.3. In particular, the section discusses the supportive function of institutions inside and outside the domain of education. In the fourth section (6.3.4) of this subchapter, the recommendations and implications for practice provided in the sample studies are illustrated. Different groups designated to be the recipients of recommendations are discussed, like teaching personnel, counselors, or policymakers. Last in the section, the author compares how implications for practice are discussed in studies at the high school and the higher education levels.

6.3.1 Personality Characteristics

Together with factors in the social environment of individuals, which will be discussed in detail in Section 6.3.2 below, the personality characteristics that promote academic resilience and success constitute one of the most important parts of resilience research in education. In the domain of education, they can be defined as the characteristics of students that facilitate their progress and success in academia. These characteristics are often discussed as protective and/or promotive factors in the resilience literature (Fletcher & Sarkar, 2013; Masten & Reed, 2002; O'Dougherty Wright et al. 2013). In education, various positive traits have been defined over the years, like "social competence" (responsiveness; communication; empathy and caring; compassion, altruism, and forgiveness), "problem-solving skills" (planning; flexibility; resourcefulness; critical thinking and insight), "autonomy" (positive identity; internal locus of control and initiative; self-efficacy and mastery; adaptive distancing and resistance; self-awareness and mindfulness; humor) and "a sense of purpose and bright future" (goal direction, achievement motivation, and educational aspirations; special interest, creativity, and imagination; optimism and hope; faith, spirituality, and a sense of meaning) (Benard, 2004, pp. 13-35). The following paragraphs of this synthesis illustrate the personality characteristics found in the sample studies.

The sample studies include various personality characteristics relevant to the academic resilience and success of high school and higher education students. In total, 22 personality

characteristics are identified. Nine of these are mentioned in more than one study (see Figure 46).

- *Motivation*: The personality characteristic used most often in relation to a positive influence on academic success is motivation. This characteristic is relevant to all studies using the terms ‘intrinsic motivation’, ‘motivation’, or ‘personal drive’. It is mentioned in 26% of the sample, in three studies each for the higher education level (Cross & Atinde, 2015; Gilford & Reynolds, 2011; Graff et al., 2013) and the studies relevant to both education levels (Cabrera & Padilla, 2004; Casanova, 2012; Rana et al., 2011) as well as in one study at the high school level (Reis et al., 2004).

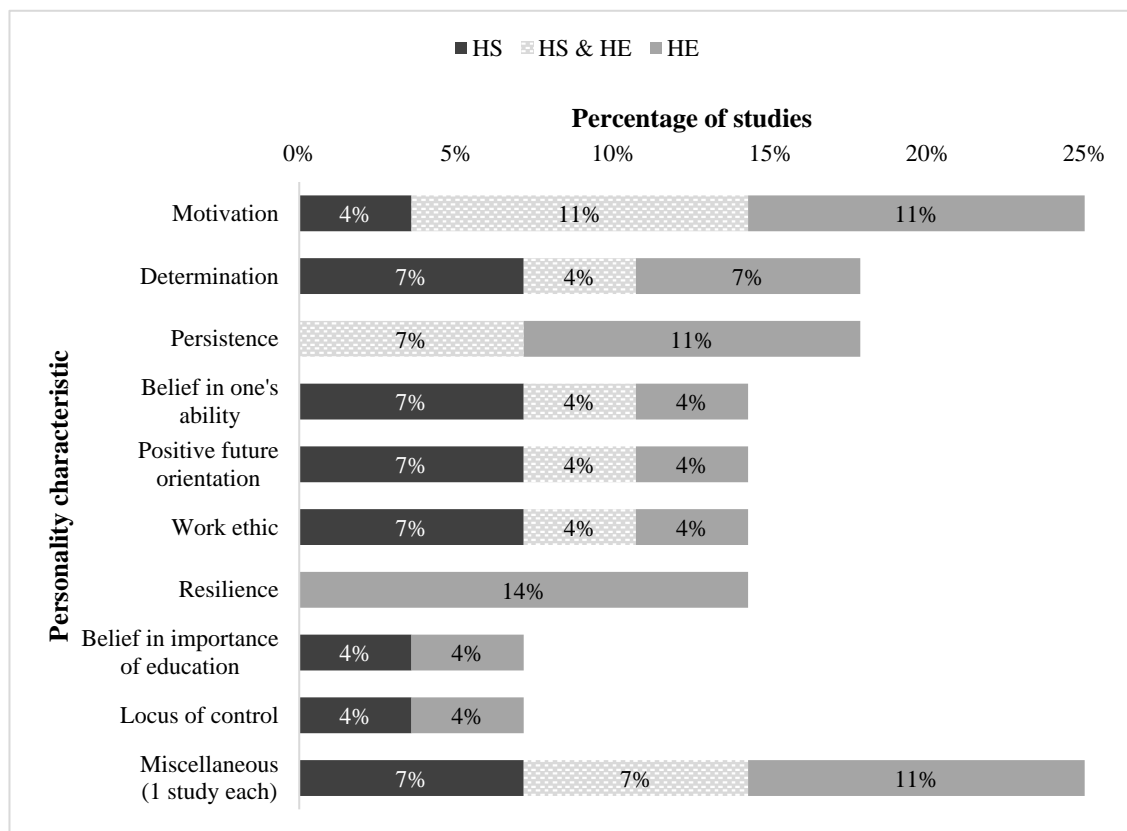


Figure 46. Personality characteristics of the participants in the synthesized studies ($N = 28$ studies) (Multiple entries possible per study)

- *Determination*: The factor of determination is also prevalent in the sample studies. Studies are connected to this term, which discuss the characteristics of ‘commitment’, ‘dedication to success’, and/or ‘determination’. This is relevant to 18% of the publications, including two studies each for high schools (Lessard et al., 2014; Reis et

al., 2004) and higher education institutions (Cross & Atinde, 2015; Séror et al., 2005) as well as one study relevant to both education levels (Casanova, 2012).

- *Persistence*: Closely related to determination is persistence. Studies including the characteristics of either or both ‘persistence’ and ‘perseverance’ are counted for this category. They are relevant to 18% of the sample, distributed to three studies in higher education (Ben-Tsur, 2009; Cross & Atinde, 2015; Morales, 2010) and two studies relevant to both high school and higher education (Dole, 2014; Rana et al., 2011).
- *Belief in one’s ability*: The belief of students in their ability to succeed in education is defined as a supportive personality characteristic as well. In this category, those studies are included which refer to ‘belief in own ability’, ‘belief in self’, and/or ‘sense of ability’. This is the case for 15% of the sample. Two studies at the high school level (Lessard et al., 2014; Reis et al., 2004) include this characteristic as well as one study each relevant to both education levels (Cabrera & Padilla, 2004) and higher education (Morales, 2010).
- *Positive future orientation*: Having a positive outlook on the future is defined as an influential supportive personality characteristic in the sample studies to the same extent as the students’ ability beliefs described above. The category is constructed from those studies that include the characteristics of ‘future orientation’, ‘focus on career objectives’, ‘optimism’, and ‘positive goal orientation’. 15% of the studies are included, with two studies at the high school level (Freeman et al., 2004; Gayles, 2005) and one study each relevant to both education levels (Rana et al., 2011) and the higher education level (Morales, 2008a).
- *Work ethic*: The next category, which is also relevant to 15% of the studies, is the willingness of students to work hard for their academic success. This category includes studies in which the personality characteristics of ‘ability to work hard’, ‘hard-working’, and ‘work ethic’ are described. Two studies refer to the high school level (Lessard et al., 2014; Reis et al., 2004) and one study each to the higher education level (Morales, 2010) and both education levels (Rana et al., 2011).
- *Resilience*: The concept of resilience has also been identified as a supportive personality characteristic in the sample studies. This is the case for 14% of the publications, all of

which are relevant to the higher education level only (Ben-Tsur, 2009; Garza et al., 2014; Gilford & Reynolds, 2011; Richardson et al., 2015).

- *Belief in importance of education:* The belief in the importance of education is mentioned as a success factor in two studies, one on the high school (Gayles, 2005) and one at the higher education level (Séror et al., 2005).
- *Locus of control:* The last factor mentioned in two sample studies, one on the high school (Lessard et al., 2014) and one at the higher education level (Graff et al., 2013), is the students' locus of control. This concept refers to "a generalized sense of being in charge or of having personal power" (Benard, 2004, p. 22).
- *Miscellaneous factors:* In the sample studies, 13 additional supportive personality characteristics have been named. They are not discussed individually here because they have been relevant in merely one study each. All in all, these 13 characteristics are referred to in seven (25%) of the sample studies. Most of these studies (3) are relevant to the higher education level, and two studies each for the high school (2) and both education levels (2). The personality characteristics in question are advocacy (Morales et al., 2011), anxiety management (Lessard et al., 2014), autonomy (Morales et al., 2011), biculturalism (Rana et al., 2011), constructive use of time (Reis et al., 2004), educational aptitude (Rana et al., 2011), faith (Dole, 2014), planning skills (Lessard et al., 2014), problem solving (Morales et al., 2011), resourcefulness (Rana et al., 2011), self-efficacy (Richardson et al., 2015), self-esteem (Morales, 2010), and sense of purpose (Morales et al., 2011).

In summary, the data demonstrate that three main protective factors are identified in the sample for high school and higher education students: motivation, determination, and persistence. While the latter two factors of determination and persistence appear to be similar, a delineation seems appropriate to achieve a more detailed overview of the various personality characteristics at play. It is argued here that the difference between the determination to do something and persevering through it is important to recognize in education.¹² Moreover, the importance of the students' beliefs in their ability to achieve academic success is shown in the data. Outside the sample studies, Yeager and Dweck (2012) provide a valuable relating point. They observe the influence of students' implicit

¹² All the more, as a personal side note, this distinction becomes apparent when writing a doctoral thesis.

theories on their achievement and underline the significance of a mindset of believing in one's ability of academic as well as personal development as a personality characteristic for success (Yeager & Dweck, 2012). Furthermore, the data show the influence of resilience itself on students' academic success. All the studies including resilience as a personality characteristic are representatives of the trait perspective on resilience. It will be discussed in more detail below (see Subchapter 6.4). Last, the connection of the cultural background of students to their belief in the importance of education seems worthwhile to acknowledge here. While this factor is not relevant to many studies, cultural influence represents an important discussion in resilience research (see Subchapter 6.7).

All in all, it seems surprising that some personality characteristics have not been mentioned more often in the sample studies. This is particularly the case for the factor of self-efficacy which has been identified as a strong supportive factor in studies concerned with resilience and academic success by various scholars (Cavazos et al., 2010; Llamas et al., 2014; Sosa & Gomez, 2012). A conceivable explanation might be that the factor is more often studied quantitatively, using scales to measure students' self-efficacy values (Martin & Marsh, 2006, 2008; Martin et al., 2010; Reynolds & Weigand, 2010). In a sample of qualitative studies, its minor presence might thus be explainable. Moreover, the essence of self-efficacy might be reflected in part by the characteristic of 'belief in one's ability' in the sample studies. A further aspect to be mentioned here is the possible cumulative impact of supportive personality characteristics. Dole (2014), for instance, states for the interplay of the factors perseverance and sense of faith that "although each of these factors alone is a strong protective factor, the interplay between the two led to more powerful resilience" (p. 148). In general, of the sample studies in which personality characteristics are discussed, 83% discuss more than one characteristic and thus the cumulative impact of these characteristics on the academic resilience and success of students.

In addition to the personality characteristics discussed above, two further personality traits are discussed next, which commonly play important roles in education research: gender and cognitive ability.

- *Gender*: The connection of the students' gender and resilience processes is discussed in a handful of the sample studies only. It is the case for 22% of the studies, three at the higher education level (Gilford & Reynolds, 2011; Graff et al., 2013; Morales, 2008a), one at the high school level (Gayles, 2005), and two in studies relevant to both education levels (Casanova, 2012; Dole, 2014). Gilford and Reynolds (2011), for instance, discuss the phenomenon of "parentification" (p. 55) in a group of female African American

students, i.e. the impact of the mother-like roles of these students at home on their higher education experiences and academic success.

- *Cognitive ability:* The cognitive ability of students can be an important factor of analysis in studies focusing on resilience and academic success as well and should thus be briefly discussed here in relation to the sample studies. Cognitive ability is not a prominent topic in the sample. In fact, in solely one study at the high school level (Rana et al., 2011), the personality characteristic of educational aptitude is discussed together with the influence of various other traits on the academic success of immigrant students.

All in all, regarding the gender aspect, it is interesting to note that the large majority of these studies (5 out of 6) focus on young women. There is only one study in which men are in the foreground. In this study, Gayles (2005) analyzes the reasons for the high achievement of three African American students in urban high schools. Concerning the stance of cognitive aptitude, the lack of importance of this factor can be interpreted positively from the standpoint of current resilience research for several reasons. First, if cognitive ability is overstated as a promotive factor for academic success, students who are not academically successful might be automatically considered having low cognitive abilities. Such a mono-factored connection can be assumed to be incorrect for most cases (Freeman et al., 2004). Instead, as described above, it is likely that the cumulative impact of various personality characteristics needs to be considered (Dole, 2014). Second, high cognitive abilities might be misinterpreted as having positive consequences for students in every case. On the contrary, as shown in the sample studies, gifted students are also confronted with challenging situations in their studies. This might result in neglecting the needs for support of this particular student group (Peterson et al., 2009; Sosa, 2012). Last, interpersonal factors in the social environment of students would need to be included as well to get a more complete picture of the situation (see Section 6.3.2).

Regarding the importance of different personality characteristics at the education levels of high school and higher education, three interesting points are to be reported for the top three characteristics found (see Figure 47): First, for the most prevalent characteristic of motivation, we can conclude from the data that it plays a more prominent role in higher education (23%) than in high school (10%). A possible explanation for this might be that students are left to their own devices to a greater extent in later education levels and might thus profit from strong internal and/or external motivational factors to carry on their studies. A similar dynamic might be at play for the second point to mention here: The characteristic

of persistence is not relevant to studies on the high school level. Because day-to-day schooling in high schools is in many aspects more structured than higher education curricula, it might not be that important for high school students to persist and persevere on their own accounts. A further explanation might be that finishing high school is expected from the students to a higher extent than it is the case for higher education. This is, in particular, relevant to the sample of studies in this synthesis, with its strong focus on the United States, where graduating high school has become the norm over the past couple of decades (McFarland et al., 2018). This result is reflected in the positive outcome category of academic persistence as well. It was shown to be much more prominent for the higher education level (46%) than for the high school level (10%) (see Section 6.2.1).

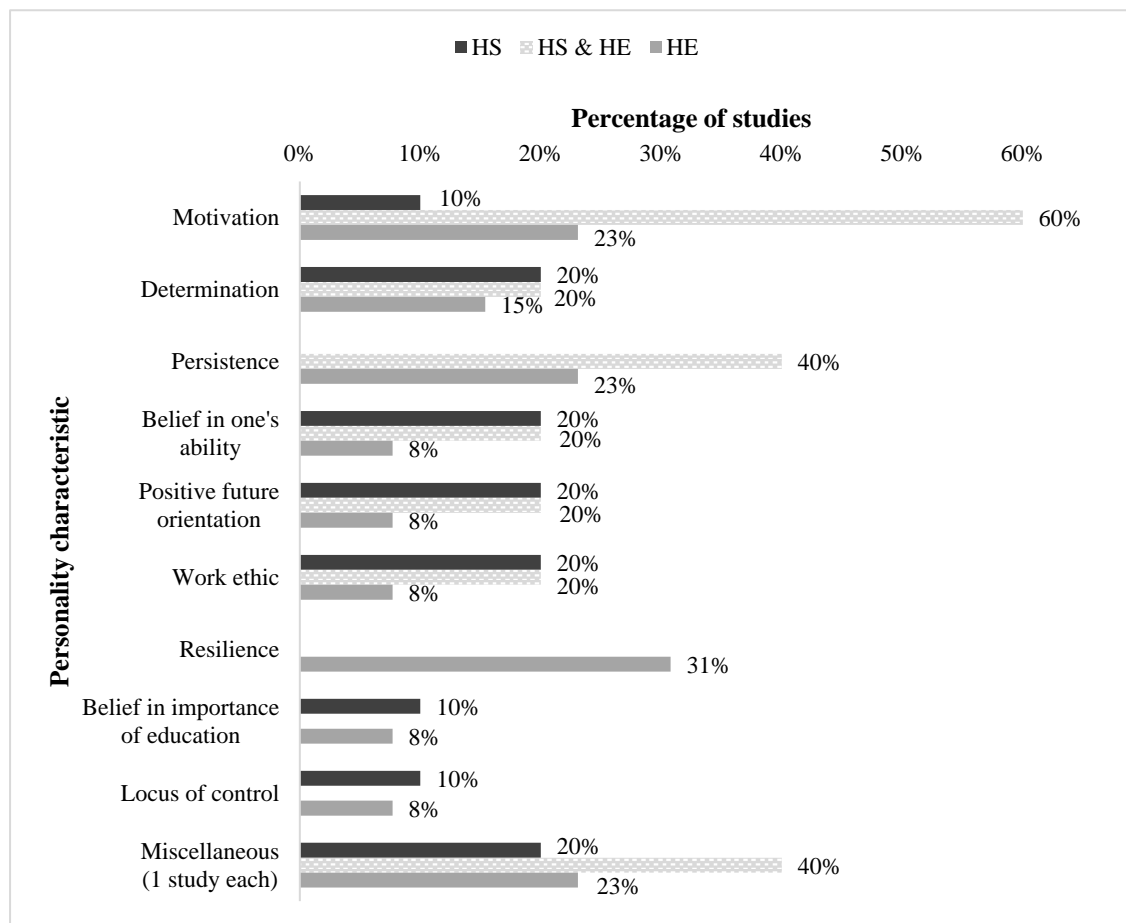


Figure 47. Personality characteristics in high school, higher education, and the transition (HE: $n = 13$ studies, HS: $n = 10$ studies, HS & HE: $n = 5$ studies) (Multiple entries possible per study)

A third notable result when comparing the high school and the higher education level is that the factor of determination seems to be almost equally important for both education levels, with a slight decrease from 20% to 15% for higher education. Moreover, it can be

reported that the trait of resilience is relevant to the higher education level only. This does not seem to be a content-related issue. Instead, it might point to a preference in resilience research for these education levels. The prevalence of resilience research at the higher education level has already been demonstrated in this and prior chapters of this publication (see Chapters 3 and 4). Concerning the transition stage between the two education levels, the sample shows that most personality characteristics play a role there, except for ‘resilience’, a ‘belief in the importance of education’, and ‘locus of control’. An interesting point to emphasize is the high prevalence of the characteristics of motivation (60%) and persistence (40%) for the transition stage. This result seems to be suitable, considering how frequent the importance of transitions from one education level to the next is described (Cabrera & Padilla, 2004; Casanova, 2012; Rana et al., 2011). Students can be expected to be motivated to a high extent to master such transitions as well as being able to persevere through various challenging situations. Furthermore, the students’ determination seems to be an important factor, in particular, if they are fighting risk and adversities on the way.

In general, personality characteristics are mentioned in 64% of the studies to have a positive influence on the academic success of students. Three reasons are proposed here as to why the rest of the studies do not identify personality characteristics: For one, there are studies which solely focus on resilience factors in the social and institutional environment of students. This is relevant to the majority of the studies which do not discuss personality characteristics and will be examined in more detail later in this subchapter (see sections 6.3.2 and 6.3.3). Second, in some studies, resilience strategies rather than resilience characteristics are discussed. While these strategies are connected to personality characteristics, they mostly represent learned behaviors in the course of the students’ education pathways and their lives in general (Campa, 2013; Carter Andrews, 2012; Hersi, 2011; Peterson et al., 2009). Campa (2013) calls such strategies “pedagogies of survival” (p. 449), for example. It is interesting to note that they only exist in connection with factors in the social environment of the students. Therefore, we might argue that the students’ acquisition of these strategies is triggered by other individuals, mostly. This is particularly obvious for those studies referring to the supportive influence of positive prior experiences in the students’ lives. Various studies illustrate the ability of students to adapt supportive strategies at later education stages after they had adopted them at prior stages through different positive and/or negative experiences (Gilford & Reynolds, 2011; Graff et al., 2013; Séror et al., 2005). Last, a third category consists of the special case of the study by Mallon (2005) in which risk factors are discussed exclusively.

6.3.2 Social Environment

The interaction of individuals with their social environment is a crucial component of the resilience concept. For students, different social connections inside and outside the domain of education can be considered one of the most important factors for academic resilience and success. This has repeatedly been shown in the literature (Benard, 2004; Langenkamp, 2010; Plunkett et al., 2008). For instance, Toland and Carrigan (2011) refer to “the powerful effect of supportive environments” (p. 99) on students. In this regard, the protective role of teachers is widely acknowledged (Hawkins et al., 2003; Smokowski et al., 2000; Werner & Smith, 2001). Moreover, the positive and/or negative influences of family (Cavazos et al., 2010; Fujimoto, 2013), friends (Lee et al., 2015; Perez et al., 2009), and community (Waterman & Lindley, 2013; Willems, 2012) on resilience processes of students have been observed in education. All in all, as Luthar (2006) states, “resilience rests, fundamentally, on relationships” (p. 780). This section illustrates how and to what extent the sample studies discuss positive and/or negative influences of four different social environments on the academic success of students in high school, higher education, and in the transition between these two education levels.

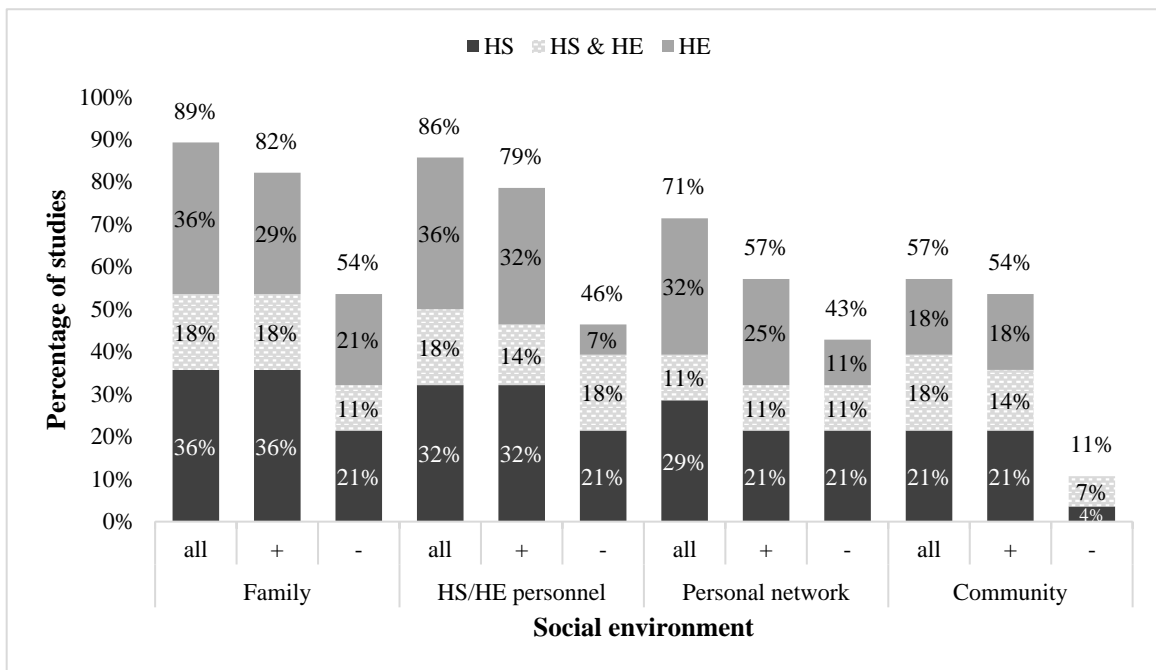


Figure 48. Social environments of the participants in the synthesized studies ($N = 28$ studies) (Multiple entries possible per study)

The sample studies show a strong focus on social environments in research on the connection between resilience and academic success in high schools and higher education

institutions (see Figure 48). In every sample study¹³, one or more resilience factors and/or processes are centered on the social connections and relations of students. Social connections have a positive influence on the students' academic success in almost every case. In fact, 96% of the sample studies show a positive impact of one or more of the students' social environments. Nonetheless, 68% also report a negative impact. A closer look at the discussions of social environments in the studies reveals that more than half (64%) of the sample studies describe both positive and negative influences of various social environments, 32% solely focus on positive impact factors, and 4% of them are concerned with negative influences only. For the figures in this section, the author opted to use aggregated numbers, counting each study twice that discusses both positive and negative influences. To provide a more detailed overview, the descriptions provided in the text differentiate in addition between sole positive, sole negative, and both positive as well as negative influences. Next, the four social environments found in the sample studies are split into subgroups and discussed.

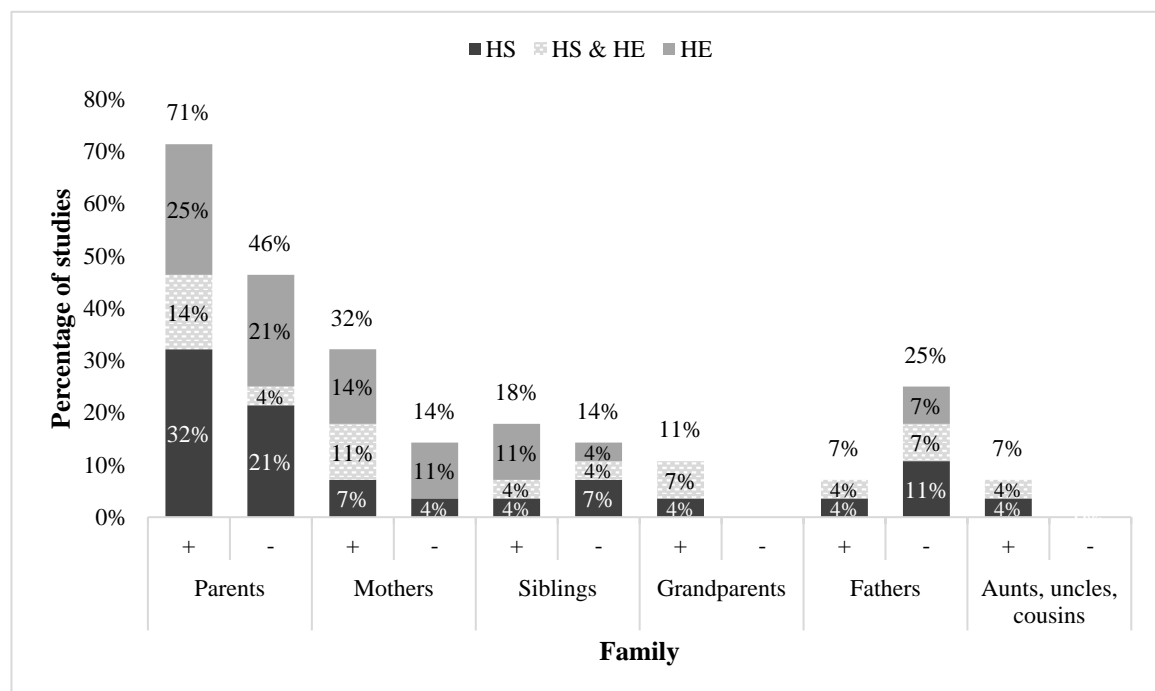


Figure 49. Family in the synthesized studies ($N = 28$ studies)
(Multiple entries possible per study)

¹³ The fact that the social environment plays a role in all sample studies is notable compared to the amount of influence the students' personality characteristics have regarding their academic success. In 64% of the sample studies, personality characteristics are identified to have an influence on the students' performance (see Section 6.3.1).

The sample studies show that family has the highest influence on the academic success of students in high school and higher education (see Figure 48). This social environment is discussed in 89% of the studies. A majority (82%) asserts a positive influence of family members on the students' academic success, while also more than half (54%) discuss negative influences. 13 of the studies illustrate both positive and negative influences of family members, ten describe positive impacts only, and two studies show solely negative effects of families on the academic success of students. The family category includes the following subgroups:

- *Parents*: In the sample studies, parents have the highest positive influence (71%) on academic success in the family category (see Figure 49). 46% of studies report a negative influence. Of all 23 studies relevant to the influence of parents, ten describe a sole positive influence (Carter Andrews, 2012; Casanova, 2012; Dole, 2014; Gayles, 2005; Morales, 2010; Morales et al., 2011; Orr & Goodman, 2010; Rana et al., 2011; Williams & Bryan, 2013; Williams & Portman, 2014). At the same time, with ten studies as well, the portion of studies describing a positive as well as a negative influence of parents is just as high. This is the case for the articles by Ben-Tsur (2009), Cabrera and Padilla (2004), Freeman and colleagues (2004), Gilford and Reynolds (2011), Graff and colleagues (2013), Hersi (2011), Lessard and colleagues (2014), Peterson and colleagues (2009), Reis and colleagues (2004), and Séror and colleagues (2005). A solely negative impact of parents is illustrated in three of the sample studies only (Mallon, 2005; Morales, 2008a; Sosa, 2012).
- *Mothers¹⁴*: The students' mothers are shown to have the second highest positive impact in the family category (see Figure 49). It is relevant to 32% of the sample, while 14% describe negative influences by mothers. A sole positive role is outlined in seven articles (Cabrera & Padilla, 2004; Campa, 2013; Cross & Atinde, 2015; Dole, 2014; Morales, 2010; Orr & Goodman, 2010; Williams & Bryan, 2013). However, despite their supportive role, two studies also illustrate that mothers can have both a positive and a negative impact on academic success (Gilford & Reynolds, 2011; Lessard et al., 2014). Two studies further claim mothers having a purely negative influence (Mallon, 2005; Morales, 2008a).

¹⁴ The influence of mothers and fathers is counted separately when they are discussed separately in the sample studies, i.e. not subsumed in the category of parents.

- *Siblings*: The impact of siblings on students' academic success is described as positive in 18% and as negative in 14% of the sample studies (see Figure 49). Three of these studies illustrate that brothers or sisters can have both a positive and a negative impact (Casanova, 2012; Gilford & Reynolds, 2011; Sosa, 2012). Moreover, two studies assert a solely positive impact of siblings (Graff et al., 2013; Orr & Goodman, 2010), and in one study, siblings are described to have a negative impact only (Reis et al., 2004).
- *Grandparents*: In three of the sample studies (11%), the positive influence of grandparents is stressed (see Figure 49). Campa (2013), Dole (2014), and Williams and Bryan (2013) describe this dynamic. Together with aunts, uncles, and cousins, the students' grandparents represent one of two family member groups for which no negative influence on academic success is asserted in the sample studies.
- *Fathers¹⁴*: Fathers are the only family members for whom more studies report negative influences than positive influences. 25% of the sample studies describe that fathers have negative influences on the academic success of students, a positive influence is reported in only 7% (see Figure 49). Five publications assert a sole negative impact (Dole, 2014; Lessard et al., 2014; Mallon, 2005; Morales, 2008a; Sosa, 2012), two studies describe fathers to have both negative and positive influences on students (Cabrera & Padilla, 2004; Hersi, 2011), and there is no study in the sample for which a sole positive influence is ascribed to fathers.
- *Aunts, uncles, cousins*: For this family member group, the least information is offered in the sample. Figure 49 illustrates that two studies (7%) discuss their possible influence on the students' academic success (Campa, 2013; Williams & Bryan, 2013). Like for grandparents, positive influences are discussed only.

In summary, the data show a high positive influence of family members on students' academic success. This is, in particular, the case for parents, and, more specifically, for mothers (Cabrera & Padilla, 2004; Dole, 2014; Williams & Bryan, 2013). The negative impact of family members, on the contrary, is low. In fact, the positive influence of family members surpasses the negative influence for every family member except fathers. In regard to fathers, the sample studies show that their negative impact surpasses any positive influence they might have. It is shown that fathers can have a hindering impact on the academic aspirations and success of their daughters in particular (Dole, 2014; Morales, 2008a). This phenomenon can largely be explained by the cultural backgrounds of the

students observed in the sample. Female students from minority groups frequently have to overcome a specific gender role assigned to them, which foremost stresses their familial responsibilities. Education is often deemed secondary for these young women.

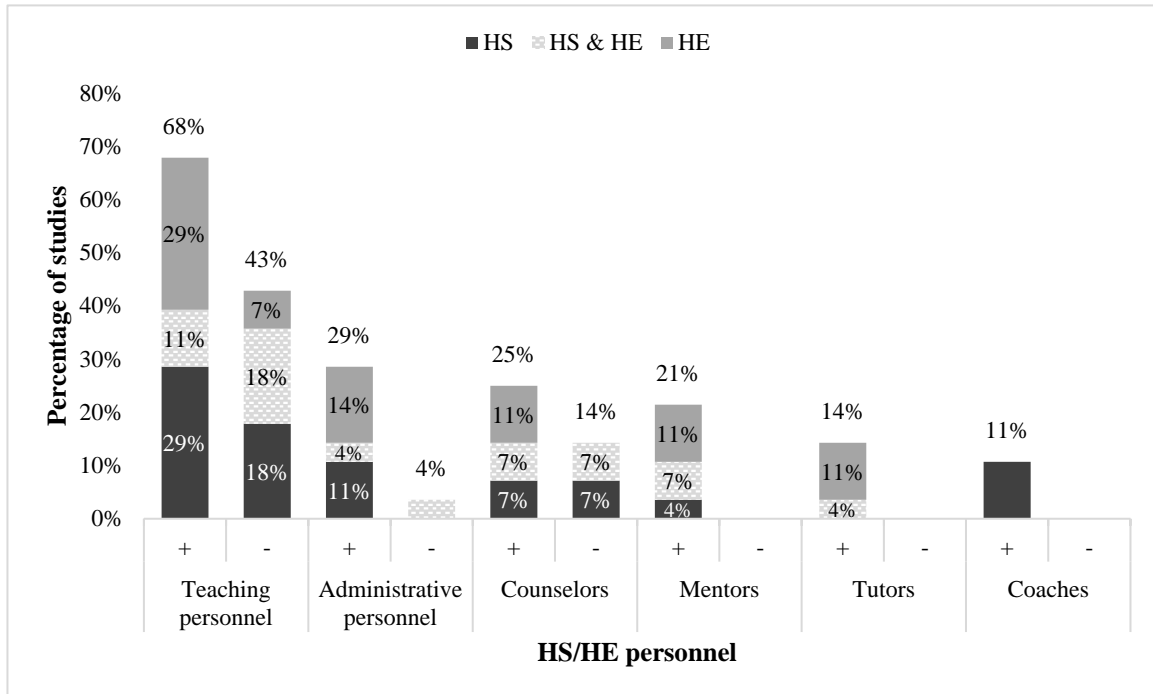


Figure 50. High school and higher education personnel in the synthesized studies ($N = 28$ studies) (Multiple entries possible per study)

The personnel in high school and higher education institutions form the social environment with the second highest influence on the academic success of students. 86% of the sample studies refer to one or more relevant personnel group/s (see Figure 48). A positive influence on students' academic success is discussed in 79% of the studies. 46% broach the issue of negative influences in this social environment. Eleven of the studies each are describing solely positive and both positive and negative impacts. Similar to the family environment, only two studies argue that school or higher education personnel have a solely negative impact on academic success. The following subgroups can be found in the sample:

- *Teaching personnel*¹⁵: The teaching personnel in high school and higher education institutions have the highest positive impact (68%) on academic success in this category

¹⁵ Included in this group are studies in which the influences of 'faculty', 'instructor/s', 'lecturer/s', 'teacher/s', and 'professor/s' are discussed. Both high school teachers as well as the teaching staff at higher education institutions are part of this category.

(see Figure 50). 43% of the studies show a negative impact. Eleven studies present a purely positive picture, showing that teaching personnel has various opportunities to increase the chances for students to achieve academically (Cross & Atinde, 2015; Gilford & Reynolds, 2011; Hersi, 2011; Morales, 2010, 2014; Orr & Goodman, 2010; Peterson et al., 2009; Richardson et al., 2015; Séror et al., 2005; Williams & Bryan, 2013; Williams & Portman, 2014). Besides these publications, a considerable amount of eight studies discusses the capacity of teachers to have both a positive as well as a negative impact on their students (Ben-Tsur, 2009; Casanova, 2012; Dole, 2014; Freeman et al., 2004; Lessard et al., 2014; Rana et al., 2011; Reis et al., 2004; Sosa, 2012). Moreover, four studies focus on sole negative impacts of teaching personnel. They describe factors and processes through which teachers increase challenges for students (Cabrera & Padilla, 2004; Campa, 2013; Carter Andrews, 2012; Graff et al., 2013).

- *Administrative personnel*¹⁶: The group with the second highest positive impact on the academic success of students is the administrative personnel in high schools and higher education institutions. This is described in 29% of the sample studies (see Figure 50), a negative impact is shown in 4% only. Eight studies declare a sole positive influence (Ben-Tsur, 2009; Carter Andrews, 2012; Gilford & Reynolds, 2011; Morales, 2010; Rana et al., 2011; Reis et al., 2004; Richardson et al., 2015; Williams & Bryan, 2013). Concerning a negative impact, only one study is relevant (Dole, 2014).
- *Counselors*: The counselors in high school and higher education institutions are shown to have an important supportive role in the sample studies as well. A positive impact on students' academic success is described in a quarter (25%) of the studies (see Figure 50). Nonetheless, negative impacts of counselors are described in 14% of the studies as well. Six of the sample studies are focused on the positive role of counselors only (Cabrera & Padilla, 2004; Morales, 2010, 2014; Orr & Goodman, 2010; Rana et al., 2011; Williams & Bryan, 2013). Three publications describe a sole negative influence (Campa, 2013; Casanova, 2012; Williams & Portman, 2014), and in one study, both a positive and a negative influence is ascribed to counselors (Reis et al., 2004).

¹⁶ Those studies are included in this group in which the positive and/or negative influences of 'administrator/s', 'principal/s', and 'staff' are discussed.

- *Mentors*: The mentors whom students encounter in high school and higher education are part of one of the three personnel groups in this social environment for which solely positive influences are described in the sample studies (see Figure 50). 21% of the studies mention a positive impact of mentors on academic success (Cabrera & Padilla, 2004; Casanova, 2012; Morales, 2008a, 2010; Orr & Goodman, 2010; Williams & Bryan, 2013).
- *Tutors*: As for mentors, an exclusive positive impact of tutors is described in the sample studies (see Figure 50). Four of the studies do so (14%). They are authored by Cabrera and Padilla (2004), Cross and Atinde (2015), Richardson and colleagues (2015), and Séror and colleagues (2005).
- *Coaches*: Last, coaches are solely described to have a positive impact on the academic success of students (see Figure 50). This is the case for three of the sample studies (Reis et al., 2004; Williams & Bryan, 2013; Williams & Portman, 2014).

All in all, the sample studies underline the substantial supportive role of different personnel groups in high schools and higher education institutions. The group with the highest positive impacts is teaching personnel (68%). The supportive role of high school teachers and higher education faculty is discussed by a variety of authors (Cross & Atinde, 2015; Hersi, 2011; Morales, 2010; Williams & Bryan, 2013). However, the data also illustrate that teaching personnel is prone to have both a positive and a negative influence in quite a few cases (8 studies) and even a sole negative impact in some cases (4 studies). The two manifestations of teacher impact as both positive and negative are an important takeaway from the analysis of the sample studies in this synthesis. A similar dynamic can be observed for counselors: While their positive impact is relatively high (25%), they can also have a sole negative impact on academic success (Campa, 2013; Casanova, 2012; Williams & Portman, 2014). Regarding the impact of administrative personnel, it is interesting to note that a large majority of the relevant studies asserts a positive influence on this group (29%), while one study only (4%) refers to a possible negative impact. Such high numbers on the positive side with low or no studies on the negative side is shown in the sample to be a common pattern for academic personnel. It is the case for mentors, tutors, and coaches as well. Of these three, the supportive role of mentors is specifically underlined in various studies (Morales, 2008a, 2010; Orr & Goodman, 2010; Williams & Bryan, 2013).

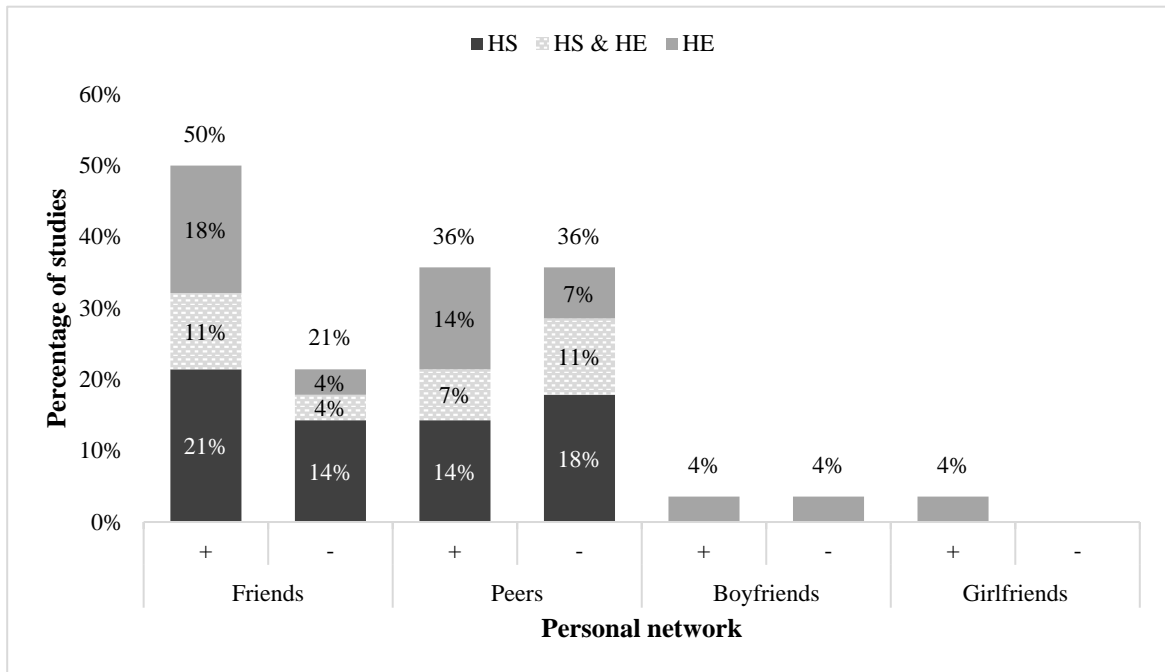


Figure 51. Personal network in the synthesized studies ($N = 28$ studies)
(Multiple entries possible per study)

71% of the sample studies discuss the impact of friends, peers, and/or boyfriends/girlfriends on the academic success of high school and higher education students (see Figure 48). Positive and negative influences are represented at similar levels, with 57% on the positive and 43% on the negative side. The same number of studies (8) is each relevant to a sole positive influence as well as both a positive and negative influence. With four studies, the amount of publications describing a sole negative impact of the personal social network is quite low. Specific findings for friends, peers, boyfriends, and girlfriends are discussed next:

- *Friends:* The students' friends represent the most influential social group in their personal social network (see Figure 51). In 50% of the sample studies, a positive influence on academic success is ascribed to friends, while only 21% discuss negative influences. Ten studies are relevant to a sole positive impact (Casanova, 2012; Cross & Atinde, 2015; Freeman et al., 2004; Garza et al., 2014; Hersi, 2011; Orr & Goodman, 2010; Rana et al., 2011; Richardson et al., 2015; Séror et al., 2005; Williams & Bryan, 2013). In addition, there are four studies showing positive as well as negative influences of friends (Cabrera & Padilla, 2004; Lessard et al., 2014; Peterson et al., 2009; Reis et al., 2004). Regarding negative influences, the data likewise illustrate that friends can have hindering influences only in two cases (Morales, 2008a; Sosa, 2012).

- *Peers*: Students' peers in and outside classrooms and campuses are discussed to have positive and negative impacts to the same extent (36%) in the sample studies (see Figure 51). Most studies (6) discuss both a positive and a negative influence on academic success (Ben-Tsur, 2009; Casanova, 2012; Freeman et al., 2004; Lessard et al., 2014; Rana et al., 2011; Reis et al., 2004). Four publications describe peers to have a sole positive impact (Cross & Atinde, 2015; Richardson et al., 2015; Séror et al., 2005; Williams & Bryan, 2013). Furthermore, for the same number of studies, a sole negative influence is reported (Cabrera & Padilla, 2004; Carter Andrews, 2012; Mallon, 2005; Peterson et al., 2009).
- *Boyfriends*: Female students' boyfriends are shown to exercise both positive (4%) and negative (4%) influences on their academic success (see Figure 51). There is one study each for the two positions. Gilford and Reynolds (2011) describe that boyfriends can take on a protective role. On the contrary, Morales (2008a) describes the possible negative influence of boyfriends.
- *Girlfriends*: One study is relevant to the positive influence of a girlfriend on a male student (see Figure 51). Orr and Goodman (2010) discuss this for higher education students. There is no negative impact of girlfriends discussed in the sample studies.

In conclusion, the sample studies underline the importance of friends in the personal social networks of students. They have the highest positive impact on the students' academic success in this category. Compared to this, the positive impacts of other personal social contacts, namely peers, boyfriends, and girlfriends, are not as important. Regarding negative influences, the sample shows that peers are most relevant, which is illustrated with a negative impact in 36% of the studies. A possible explanation for this seems to stem from the social dynamics at play in educational institutions, particularly in high schools. The acceptance or exclusion by peers can both have positive (Richardson et al., 2015; Williams & Bryan, 2013) or negative (Carter Andrews, 2012; Mallon, 2005) impacts on students. A relative high number of studies (6) that refer to both positive and negative impacts of peers underlines such in-group/out-group dynamics. Moreover, similar mechanisms might be at play concerning friends, for which 21% of the publications are relevant to hindering impacts. Last, regarding the influence of boyfriends and girlfriends, the principle of good phases (acceptance) versus bad phases (exclusion) might likewise be relevant, considering the dynamics of modern romantic relationships of young adults. This is shown for the influence of boyfriends, which is illustrated to be positive (Gilford & Reynolds, 2011) or negative

(Morales, 2008a) in the data. Nonetheless, it must be noted that we need to be cautious about conclusions here, as few studies discuss the possible influence of boyfriends and girlfriends on resilience and academic success.

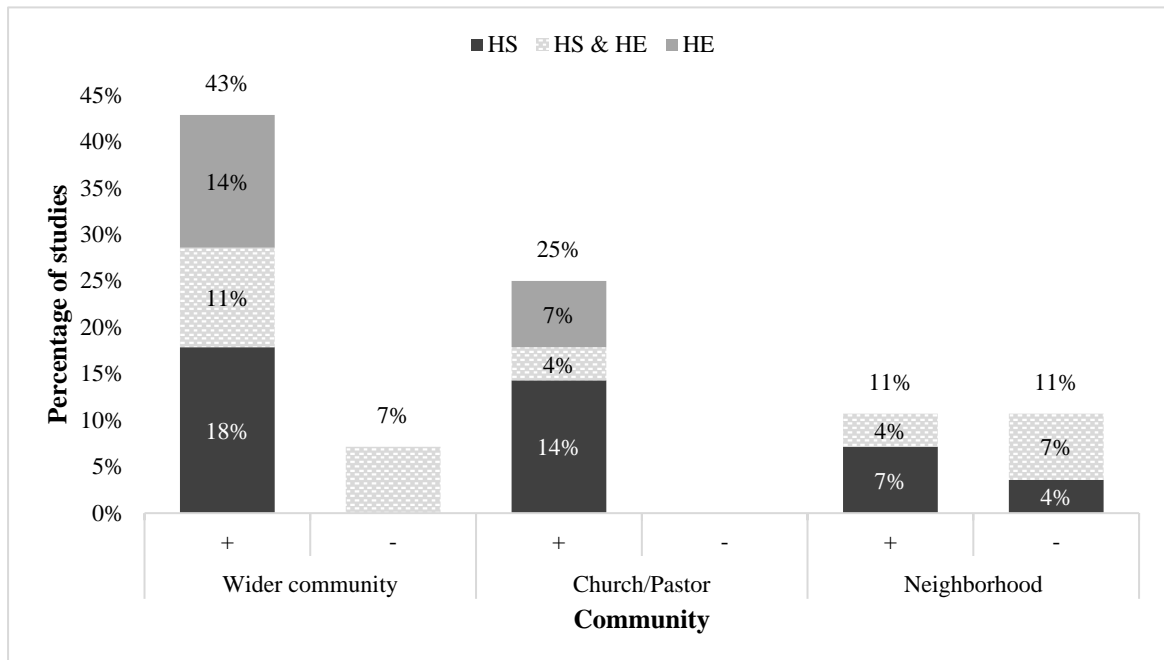


Figure 52. Community in the synthesized studies ($N = 28$ studies)
(Multiple entries possible per study)

More than half of the sample studies (57%) describe the influence of the community on students' academic success in high school and higher education (see Figure 48). For this social environment, the biggest difference in the amount of studies with a positive impact (54%) and of those with a negative impact (11%) on academic success can be reported. A sole positive influence is almost universally stated in the sample (13 studies). It is as high as for none of the other social environments. In addition, only two studies refer to both positive and negative impacts of the community, and merely one study asserts a sole negative impact of this environment. The following subgroups are described as part of the community environment in the sample:

- *Wider community*¹⁷: The role of the wider community for the academic success of students is shown to be mainly positive (43%) in the sample studies (see Figure 52). Only 7% assert a negative influence. A sole positive impact is described in eleven of the sample studies (Campa, 2013; Carter Andrews, 2012; Cross & Atinde, 2015; Gayles, 2005; Hersi, 2011; Morales, 2010; Orr & Goodman, 2010; Rana et al., 2011; Richardson et al., 2015; Williams & Bryan, 2013; Williams & Portman, 2014). On the other side, a negative influence of the wider community is relevant to one study only (Cabrera & Padilla, 2004). Moreover, there is one study in which a positive as well as a negative impact of the wider community is reported (Casanova, 2012).
- *Church/Pastor*: A second community-related environment are church communities and their pastors (see Figure 52). This social community is referenced in a quarter of the sample studies (25%) to be a supportive force on the students' education pathways (Dole, 2014; Freeman et al., 2004; Gilford & Reynolds, 2011; Hersi, 2011; Orr & Goodman, 2010; Williams & Bryan, 2013; Williams & Portman, 2014). No negative impact of the church and/or pastors is asserted in the studies.
- *Neighborhood*: Last, some studies discuss the influence of the students' neighborhoods. They show that this influence can go either way. Positive and negative influences are each reported in 11% of the studies (see Figure 52). Two studies describe a sole positive impact (Williams & Bryan, 2013; Williams & Portman, 2014) and an exclusive negative influence is likewise asserted in two publications (Cabrera & Padilla, 2004; Carter Andrews, 2012). Moreover, one study underlines the capability of neighborhoods to be both supportive and challenging for students (Casanova, 2012).

Overall, the sample studies show a highly positive influence of communities on students' academic success. Very few studies describe instances in which the wider community or neighborhoods constitute hindrances for academic progress, and there are no studies in which negative effects of church communities are described. The latter is congruent in part with what is known about the influences of religious communities on the resilience of individuals. While the supportive function of the personality characteristic of faith is

¹⁷ The author chose to delineate wider community from neighborhood. While the neighborhood can often have a negative impact on students (Cabrera & Padilla, 2004; Carter Andrews, 2012), measures of the wider community are often able to counterbalance that and exert a positive influence (Rana et al., 2011; Williams & Portman, 2014). We would be unable to see such differences if the two categories would be considered together. Differentiating between the two is thus expected to result in a more thorough analysis.

emphasized in the literature (Benard, 2004)¹⁸, religious communities have been shown to have both positive as well as negative influences on resilience processes (Luthar, 2006). Last, the cultural background of students needs to be considered here again. In the case of the possible supportive role of the church community, for instance, it has been claimed that religious values play an important role for African American students (Gilford & Reynolds, 2011; Williams & Bryan, 2013; Williams & Portman, 2014). In addition, it has frequently been shown that the community is of high importance for the resilience and well-being of student groups growing up at risk because of bad neighborhoods and/or lacking familial connections (Carter Andrews, 2012; Orr & Goodman, 2010; Rana et al., 2011). The wider community can often serve as a buffer for these students and support their aspirations in education. It is further interesting to note that coming from at-risk neighborhoods and/or communities is considered motivating by some students. This has been illustrated in studies by Cross and Atinde (2015), Gayles (2005), and Morales (2010). Students are motivated to improve their own lives and/or by the prospect of being able to give back later on to the communities that enabled them to succeed.

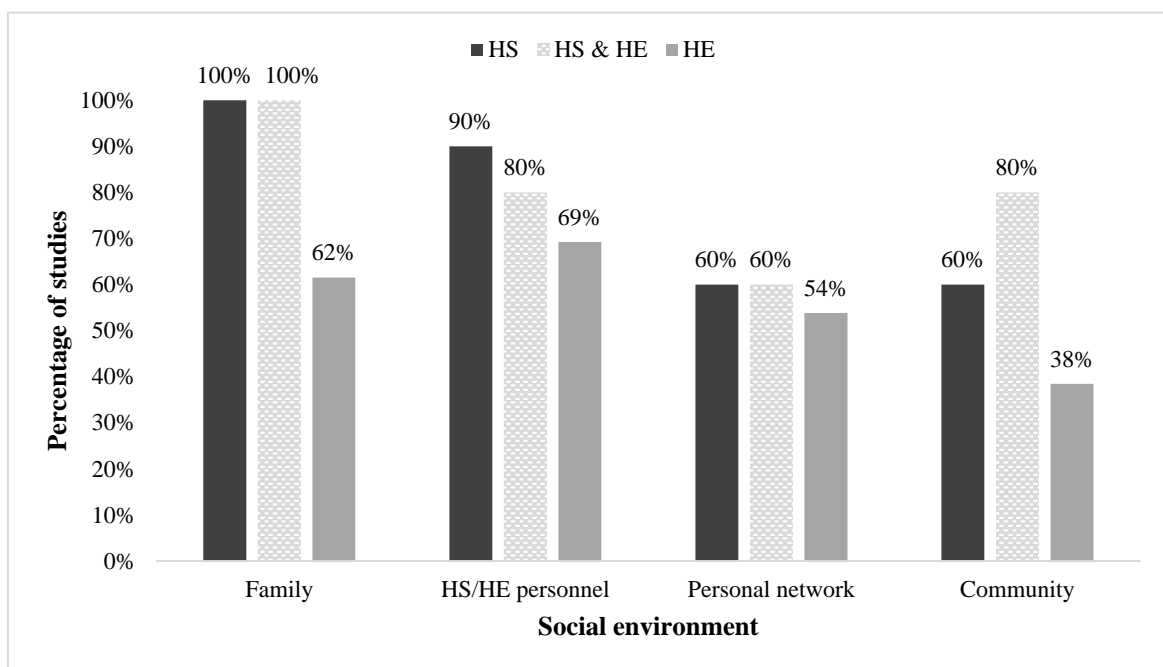


Figure 53. Positive influences of social environments in high school, higher education, and the transition (HE: $n = 13$ studies, HS: $n = 10$ studies, HS & HE: $n = 5$ studies) (Multiple entries possible per study)

¹⁸ The synthesis does not show the factor of 'faith' to play any role for the academic success of students (see Section 6.3.1).

Differences and commonalities of studies in high school, higher education, and at the transition between the two education levels are discussed. The two main categories of comparison are the positive (see Figure 53) and negative (see Figure 54) influences of social environments.

- *Family:* All studies at the high school level as well as all studies relevant to both the high school and the higher education levels include a discussion of positive influences by family members on students' academic success (see Figure 53). At the higher education level, this influence drops to 62% of the studies. In regard to the negative impact (see Figure 54), the number of relevant studies for high school and both-level-studies reaches 60% each. The negative influence then drops to 46% at the higher education level. All in all, a fading familial influence can be observed in higher education institutions, both considering their positive and negative impacts on students' academic success. From a developmental viewpoint, this is an expected result for adolescents and young adults. It is common for them to move away from the influences of their caregivers, whereas other social relationships increase in importance (O'Dougherty Wright et al., 2013). The older students get, the more independent from family influences they commonly become. Nonetheless, the data show that while family influences decrease, they still play a rather important role at all three education levels. A possible explanation might be found in the cultural backgrounds of the students. For many minority group students, we can expect that family ties are of higher importance than it is the case for typical Western families. This phenomenon is, for instance, described for Mexican American students (Casanova, 2012; Morales, 2010) and African American students (Carter Andrews, 2012; Williams & Bryan, 2013) in the sample studies.
- *School/Higher education personnel:* For this social environment, the comparison of the three education levels shows that the positive influence of high school and higher education personnel is gradually decreasing (see Figure 53). It starts at 90% for high school level studies, followed by 80% for studies relevant to both high school and higher education, and ending in a decrease to 69% in higher education. On the negative side (see Figure 54), 100% of the studies relevant to both education levels include a description about possible negative influences high school and higher education personnel can have on students' academic success. The number of relevant studies is much lower in higher education (15%), and it is also quite lower for high schools (60%).

In conclusion, similar to the family environment, we might have expected less influence of the education personnel at the higher education level. Instead, the data show that the positive influence of teaching personnel, for instance, remains high in higher education institutions. The study by Morales (2014) is of particular relevance in this context. He specifically asks what teaching personnel at the higher education level can do to support at-risk students. Moreover, the sample studies show that high school and higher education personnel are substantial to act as supporters and facilitators at a transition stage (Hersi, 2011; Morales, 2010; Orr & Goodman, 2010). Cabrera and Padilla (2004) argue that the parents' support to convey the "culture of college" (p. 167), i.e. an understanding of the circumstances and requirements of the higher education system, is often not enough. The provision of such insider knowledge cannot be expected from parents because they themselves rarely have experiences in higher education (Cabrera & Padilla, 2004). Instead, there is a need for dedicated personnel in the domain of education.

- *Personal network:* For the personal networks of friends, peers, boyfriends, and girlfriends, the amount of positive impact studies stays essentially at the same level in the comparison of high schools and higher education institutions (see Figure 53). It begins at 60% for high school studies and studies relevant to both high school and higher education. In higher education, a slight decrease to 54% is then observable. The number of negative impact studies is the same for the first two education levels (60%). After that, however, a steep drop to 23% occurs at the higher education level (see Figure 54). All in all, there are two aspects of note: For one, the positive and negative impact levels start with the same amount of studies at the high school level. This marks a big difference compared to all other social environments in which the number of positive influences has been described considerably higher than that of negative influences. An understanding of this phenomenon might best be achieved in consideration of the dual influences conceivable for peers. In particular, we can consider the possible negative influence of bullying by peers, which contributes to the high number of negative influence studies in this social environment (Peterson et al., 2009). The second aspect of note is closely related to this observation: We can expect that at the higher education level, such negative group dynamics caused by bullying, for example, should likely decrease, what makes the large drop to 23% of studies describing a negative influence at the higher education level comprehensible. It is shown in the literature that new relationships are formed in later life stages, which are often outside of the common social

circles of individuals (Luthar, 2006; Rutter, 2000). These can bear positive or negative influences. The data here point to largely positive influences.

- *Community*: A positive influence of the community is described for all three study groups (see Figure 53). Community support is discussed the most (80%) in studies relevant to both high schools and higher education institutions. 60% of high school studies refer to a positive community role, and 38% do so for the higher education level. A negative impact is asserted mostly in studies relevant to both education levels (40%). There is no negative impact of the community environment reported in higher education, and only in the case of one study at the high school level (see Figure 54). In conclusion, the analysis shows that positive impacts can be expected from communities in many cases. First, this assertion can be documented by the high relevance of studies at both the high school and the higher education level, which points to the observation that communities might provide ‘push factors’ for students at the transition stage (Campa, 2013; Rana et al., 2011). Conversely, only one study reports possible hindrances of communities for successful education level transitions (Cabrera & Padilla, 2004). Second, the data illustrate that the supportive impact remains high at the higher education level (Cross & Atinde, 2015; Morales, 2010), whereas no negative impact of community factors can be found there. This result underlines the importance of the outreach capacity of higher education institutions to communities. Various examples for such efforts are, for instance, provided in Type 3 studies at the mapping stage (Bethea & Robsinson, 2007; Borrero et al., 2013; Knaggs et al., 2015). Universities might have many opportunities to support and collaborate with community stakeholders and thereby support the students’ in their transitions to higher education and beyond.

To sum up, the comparison between education levels shows three major aspects for the sample studies: For one, negative influences commonly apply to fewer of the sample studies than positive influences. One exception to this can be found for studies relevant to both the high school and the higher education level, concerning the negative influence of school/higher education personnel. Moreover, in the personal network of students, the positive and negative influences in high schools and at the transition stage are reported at the same level. A substantial decrease occurs at the higher education level then. Second, the positive as well as the negative influences of the four social environments are always higher in high schools than in higher education. This is an expected result, considering various discussions in the literature about the decreasing influence of, for instance, family and early

childhood friends on later education stages (Langenkamp, 2010; Luthar, 2006; O'Dougherty Wright et al., 2013; Rutter, 2000). Nonetheless, for this particular set of studies, the positive as well as negative influences of social environments are still considerably high in higher education. This phenomenon can largely be explained via a cultural lens on the students participating in the sample studies. It seems safe to assume that the cultural backgrounds of these students enhance the importance of social environments in all three study groups (Carter Andrews, 2012; Casanova, 2012; Graff et al., 2013).

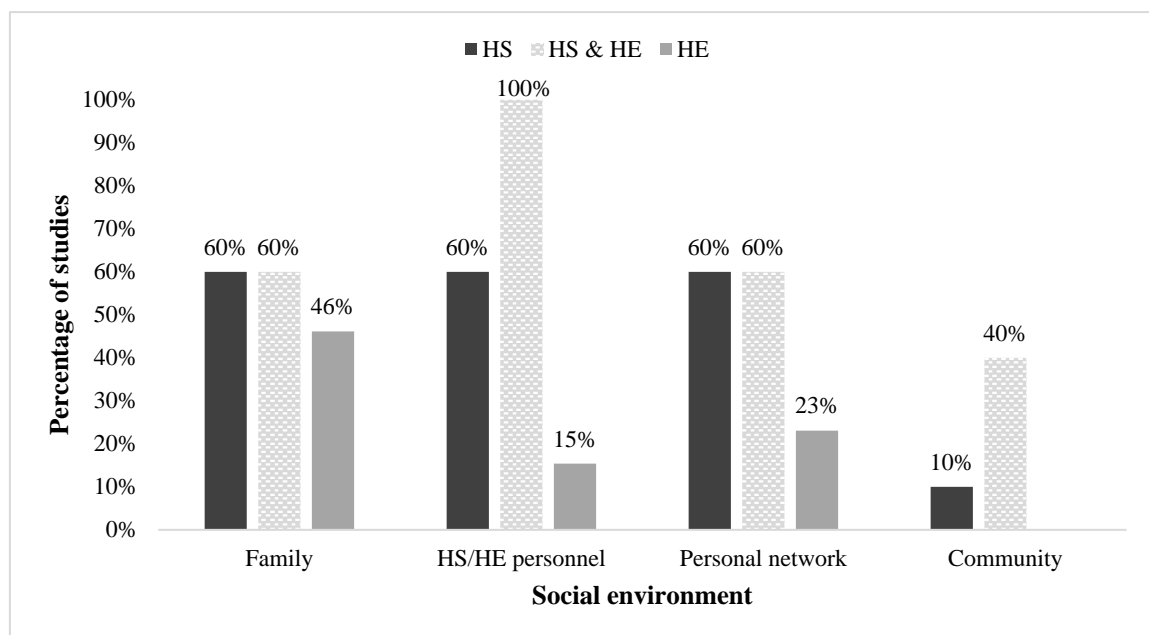


Figure 54. Negative influences of social environments in high school, higher education, and the transition (HE: $n = 13$ studies, HS: $n = 10$ studies, HS & HE: $n = 5$ studies) (Multiple entries possible per study)

Last, the analysis shows that the most complex situation is given for studies relevant to both education levels: In positive impact studies, the number of studies referring to both high school and higher education is similar or the same as for the high school studies in three of the five social environments (family, school/higher education personnel, personal network). For the community environment, however, a rise of 20% is observable between high school and higher education, and for higher education institutions, a drop of 20% is visible after high school. On the other side, for negative impact studies, it is shown that studies relevant to both education levels are the most prevalent in three social environments (school/higher education personnel, community, education/other institutions), while their number stays the same as for the high school level for the remaining two social environments. All in all, the

results of the education level comparison highlight the importance of considering social environments at the transitions stage from high school to higher education.

In conclusion, the findings as well as the literature stress that various social connections have a high impact on students' academic success. The sample affirms what is claimed by various scholars in resilience research: social interactions and transactions need to be considered at least to the same extent as personality characteristics when investigating resilience processes inside and outside education (Luthar, 2006; O'Dougherty Wright et al., 2013; Rutter, 2000). To do so effectively, the cultural backgrounds of students have to be understood and addressed, as described in various positions in this synthesis and in most detail in Subchapter 6.7 below. This is one of the key findings. It has been shown time and time again that we need to consider the cultural backgrounds of students in relation to what their backgrounds can tell us about their interactions with various social environments. A prevalent example discussed in this section is the negative influence fathers can exert on their daughters' aspirations in education (Morales, 2008a), which is closely connected to family structures in the Latina/o community. A second important takeaway is the interplay of different social environments. As Williams and Portman (2014) suggest, for instance, "collaborative relationships among family, school, and community partnerships have the capacity to mitigate barriers to students' chances of success in school and life" (p. 25). Positive and/or negative influences of the social environment can usually not be explained through one environment only. Instead, an interaction between different environments should commonly be assumed.

6.3.3 Institutional Support

Resilience research in education frequently delineates and analyzes the impact of different institutions' environments on students. It has been shown that institutions can either serve as a risk or a protective function. The protective role of educational institutions has been demonstrated in various research projects over the years. Several authors have illustrated, for instance, how essential the support by schools is in relation to academic resilience (Cairns & Cairns, 1994; Greenberg et al., 2003; Hawkins et al., 1999; Weare & Gray, 2003; Werner & Smith, 2001; Zins et al., 2004). Toland and Carrigan (2011), for example, declare that "the school environment is very important in determining the level of social and emotional well-being of pupils and (...) that the school environments that enhance social competence are those that actively foster warm relationships, encourage participation, and provide clarity about boundaries, rules, and expectations" (p. 100). This section will list and describe the

institution types found in the sample studies, and it will outline if and how these institution types are supportive or impeding factors in the academic lives of students.

The sample studies show that the negative and/or positive impacts of institution types are often strongly related to the at-risk statuses of students. For African American students, for instance, it has been illustrated that Predominantly White Institutions can be challenging environments (Carter Andrews, 2012). Urban schools constitute a further example of the connection between institution type and at-risk group. The sample studies illustrate that many of the students in these institutions are at risk in one way or another and thus less likely to succeed academically. On the contrary, supportive institutions like special schools are shown to have a positive impact on students' academic success. This is described in the study by Hersi (2011), for example, in which supportive institutional measures for immigrant students are described in a special school. In conclusion, we should be aware of the influence of institution types on students' academic outcomes and general well-being. This might be of particular relevance for transitions from one institution type to another, especially if the institution types differ from each other, like it might be the case, for instance, in a transition from an urban high school with a high proportion of African-American students to a Predominantly White Institution at the higher education level.

All in all, 39% (11) of the sample studies refer to either or both educational institutions and other institutions to impact the academic success of high school and higher education students. The sample illustrates that in six of these studies, institutions have a sole positive impact (Cabrera & Padilla, 2004; Hersi, 2011; Morales, 2014; Orr & Goodman, 2010; Richardson et al., 2015; Williams & Bryan, 2013), while three of them discuss both a positive as well as a negative influence on academic success (Ben-Tsur, 2009; Freeman et al., 2004; Reis et al., 2004). The number of studies asserting a sole negative influence is low (Campa, 2013; Casanova, 2012). A negative influence of institutions is exemplified by Casanova (2012), for instance, who describes a student's "institutional discrimination through being tracked into lower-level classes due to her status as an English language learner and her immigrant background" (p. 396). However, it is also shown in the data that immigrant students profit from institutional support, for instance, through special schools that focus on their requirements (Hersi, 2011). Furthermore, the sample studies illustrate that extracurricular activities can play an important supportive role (Cabrera & Padilla, 2004; Orr & Goodman, 2010; Williams & Bryan, 2013). Williams and Bryan (2013), for instance, report that their participants "identified community resources and institutions, such as churches, community centers, libraries, local businesses, youth organizations, and other

organizations, as contributing to their academic success” (p. 296). Such cases illustrate that in addition to educational institutions, institutions in other domains can support students’ academic success.

The sample studies show that institutional influence is described most frequently for studies relevant to both high schools and higher education institutions. Notably, 40% of these studies also discuss the negative influences of institutions. A further 20% postulate positive influences. At the high school level, 40% of studies refer to institutional influences (20% positive and 20% both positive and negative). Compared to these numbers, the higher education level includes a slightly higher amount (23%) of studies addressing a positive impact of institutions on academic success, while the number of studies referring to both positive and negative influences is decreasing to 8%. All in all, it is unexpected that institutional support is under-represented at transition stages. In fact, most studies relevant to both education levels report a negative impact of institutions (Campa, 2013; Casanova, 2012). The only positive example is provided by Cabrera & Padilla, 2004, who describe how one participant benefited from extracurricular learning programs like Upward Bound or Advancement Via Individual Determination (AVID). A further interesting aspect in the data is that institutional support does not stop after high school, and that its level remains quite high at the higher education level. For at-risk students, this might be a vital factor for academic success.

6.3.4 Recommendations and Implications for Practice

The focus on students succeeding against the odds in resilience research in education often results in resilience studies providing recommendations and implications for practice for different stakeholder groups, frequently involved in the support of at-risk students. Early on, resilience researchers have become aware of the possibility of improving the lives of individuals in various domains. In the literature, authors illustrate this describing the connection between resilience research and practical insights for prevention and intervention efforts (Luthar, 2006; Masten, 2001; Rutter, 2000). O’Dougherty Wright and colleagues (2013) have discussed the transition of research endeavors towards a strong focus on interventions which constitutes wave three of the four-wave development of resilience research. They argue that “investigators of the third wave began to translate the basic science of resilience that was emerging into actions intended to promote resilience” (p. 27). In regard to the three main conceptualizations of resilience discussed in this subchapter, interventions can be conceived as representative of the process perspective. Various scholars describe how

interventions can function as protective processes for individuals (Luthar et al., 2000; Masten & Reed, 2002; Rutter, 2000). Nonetheless, interventions as such are not discussed here. Interventions studies were categorized as Type 3 studies at the mapping stage of this review (see Subchapter 4.2) and are thus not part of the synthesis. Instead, the author presents the recommendations and implications for practice included in the sample studies. Later in this publication, in Subchapter 7.5, the author will follow the example of a considerable share of the research analyzed here and provide recommendations for the high school and higher education levels.

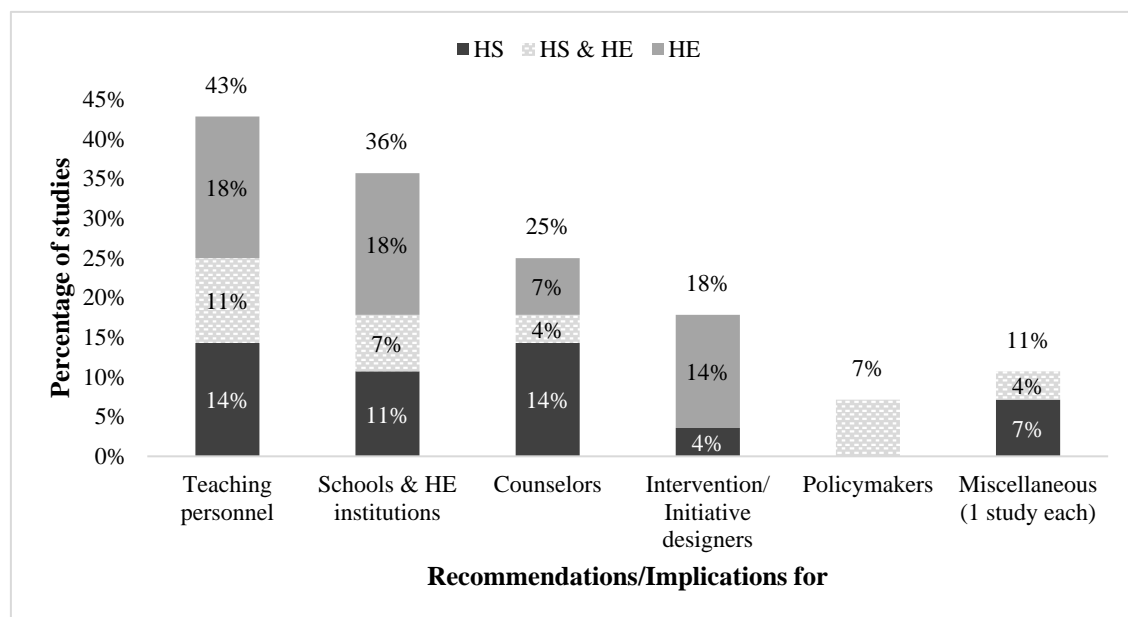


Figure 55. Recommendations/Implications for practice in the synthesized studies ($N = 28$ studies) (Multiple entries possible per study)

A large majority of the sample studies (86%) provide recommendations and/or implications for practice in high school and higher education institutions. Figure 55 shows which stakeholders have been addressed in the studies and to which extent this is the case in the sample studies. What follows are descriptions and examples:

- Teaching personnel:** Recommendations and implications for teaching personnel at both the high school and higher education levels can be found in the largest number of sample studies. It is relevant to 43% of them: four studies at the high school level (Carter Andrews, 2012; Hersi, 2011; Lessard et al., 2014; Sosa, 2012), five at the higher education level (Ben-Tsur, 2009; Gilford & Reynolds, 2011; Morales, 2014; Morales et al., 2011; Orr & Goodman, 2010), and three at both levels (Campa, 2013; Casanova,

2012; Dole, 2014). At the high school level, the importance for teachers to understand the students' backgrounds is highlighted, for instance, when they arrived as immigrants in the country (Hersi, 2011). Lessard and colleagues (2014) stress the importance of strong connections with teachers. They state that "teachers can also build relationships with their students on which the students can bank and use later to keep them on track" (p. 109). At the higher education level, the study by Morales (2014) constitutes a significant example for the theme of recommendations for teaching staff. The author discusses in great detail what teaching personnel can do to facilitate the academic success of minority students. Recommendations brought forward are to "constantly build students' self-efficacy" (p. 95), to "help students realistically appraise their own strengths and weaknesses" (p. 97), to "encourage help seeking tendencies" (p. 98) in the students, and to "provide clear linkages between academic success and future economic security" (p. 99).

- *Schools and higher education institutions:* 36% of the sample studies provide recommendations and implications at the institution level for either or both high schools and higher education institutions. This is the case for three studies at the high school level (Carter Andrews, 2012; Freeman et al., 2004; Hersi, 2011), five studies at the higher education level (Ben-Tsur, 2009; Garza et al., 2014; Graff et al., 2013; Morales, 2010; Richardson et al., 2015), and two studies at both levels (Campa, 2013; Rana et al., 2011). Recommendations for high schools include employing recruitment policies through which schools can reach prospective personnel able to support students with risk preconditions on their academic journeys (Hersi, 2011). In addition, it is recommended for schools to implement training programs to foster the cultural awareness of their teaching staff (Carter Andrews, 2012; Hersi, 2011). An essential aspect discussed in higher education is the early preparation of high school students for their entries in colleges and universities. Garza and colleagues (2014) state, for example, that "preparation of Hispanic students should begin as early as high school with school counselors providing much needed fostering of student strengths and college direction" (p. 12). Graff and colleagues (2013) recommend fostering "outreach efforts" (p. 342). The authors stress that higher education institutions should attempt to address at-risk students as early as possible. Cooperation with schools should be fostered to achieve the highest support.

- *Counselors:* Recommendations and implications for counselors are discussed for a quarter of the sample studies. This includes four studies at the high school level (Lessard et al., 2014; Reis et al., 2004; Williams & Bryan, 2013; Williams & Portman, 2014), two studies in higher education (Garza et al., 2014; Gilford & Reynolds, 2011), and one study relevant to both education levels (Casanova, 2012). At the high school level, two studies, in particular, are concerned with counselor recommendations (Williams & Bryan, 2013; Williams & Portman, 2014). Williams and Portman (2014) present a list of various recommendations for how counseling personnel can support students. Among these are, for instance, to listen to and learn about the needs of the students as well as their families and community members. Moreover, they underline that “school counselors would benefit from embracing a strength-based approach to highlight the strengths and resilience” (p. 26) of their clients. Regarding the higher education level, counseling activities are less prevalent. Nonetheless, a handful of the sample studies discuss what counseling staff at universities can do to support students’ academic success. They recommend learning about the at-risk students (Garza et al., 2014) and what these students might require for succeeding inside as well as outside the domain of education (Gilford & Reynolds, 2011).
- *Intervention/Initiative designers:* A small part of the sample studies provides recommendations for professionals involved in designing interventions and/or initiatives in education to address the needs of at-risk students. This applies to 18% of the sample, of which four studies are relevant to the higher education level (Gilford & Reynolds, 2011; Mallon, 2005; Morales, 2008a, 2010) and one study for the high school level (Gayles, 2005). The authors’ recommendations mostly focus on identifying student groups in needs, for which specific organizations might be helpful in some cases (Gilford & Reynolds, 2011; Mallon, 2005). Once the students in need are identified, it should be the aim of intervention/initiative designers to define in detail how the students can be supported. As Morales (2010) claims, “by knowing which types of services and assistance should be offered in which combinations and at which times, those responsible for implementing programming designed to facilitate academic achievement can more skillfully employ limited resources” (p. 173).
- *Policymakers:* Even fewer of the sample studies are concerned with recommendations for policymakers. Only 7% of the studies address this group. All of them apply to both high schools and higher education institutions (Casanova, 2012; Rana et al., 2011). In

their recommendations, Rana and colleagues (2011) refer to measures of curriculum design and cooperation between different educational institutions, in ways that make education systems better prepared and equipped for the needs of immigrant students, for instance, to achieve highly in school and universities as well as in the job market.

- *Miscellaneous:* Three stakeholder groups were identified in one study each. Recommendations are provided for teacher education, resettlement agencies, and parents. At the high school level, Carter Andrews (2012) provides implications for teacher education. She argues that teaching students should be prepared specifically for working with at-risk students. Second, also at the high school level, Lessard and colleagues (2014) discuss that parents should try to enhance their children's personality characteristics of self-awareness and self-esteem. Last, in one study relevant to both high school and higher education, Rana and colleagues (2011) underline the importance of resettlement agencies for the support of immigrant students.

All in all, the analysis shows that the large majority of recommendations and implications in the sample studies focus directly on stakeholders in the domain of education. Minor attention is given to individuals who can be involved in the well-being of students outside the education system, like family, friends, and the wider social network of students. Nonetheless, albeit not directly connected to recommendations in most cases, individuals outside the domain of education are discussed in a great majority of the sample studies. This has been described in detail in Section 6.3.2 above.

When comparing the high school and higher education levels (see Figure 56), it can first be noted that for the teaching personnel and the institutional level, little difference is shown in the data. Albeit there is a slightly larger amount of recommendations given at the institution level for higher education institutions (38%) compared to high schools (30%), the two are still relatively close. What seems more worthwhile to point out here is the significant focus on recommendations for teaching personnel in higher education (38%), which is more or less the same as for high schools (40%). This was a surprising result. Conversely, for the author, a significantly higher focus on teaching in high schools would have been expectable, as in day-to-day practice, improving teaching practices seems to be not an issue as prevalent at universities compared to schools. A second outcome of the comparison between the two education levels is that implications for counselors are much more common at the high school level. This was expected, in particular, because the study sample focuses on Anglo-Saxon countries. In these countries, most high school staff includes counselors with whom

the students stay in frequent contact, for instance, for career counseling. Last, it is an interesting outcome of the analysis that a much larger portion of recommendations for intervention/initiative designers is centered at the higher education level (31%) than at the high school level (10%). This might relate to the counseling aspect. It is conceivable that large parts of intervention efforts in high schools are planned and carried out by school counselors rather than external personnel.

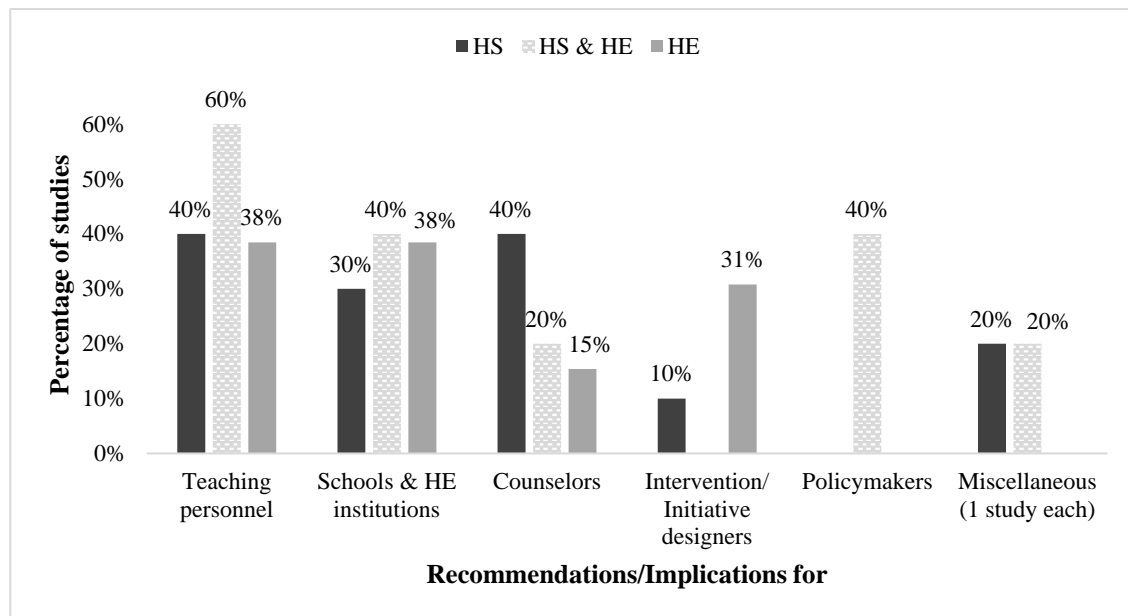


Figure 56. Recommendations/Implications for practice in high school, higher education, and the transition (HE: $n = 13$ studies, HS: $n = 10$ studies, HS & HE: $n = 5$ studies) (Multiple entries possible per study)

Regarding studies covering both the high school and the higher education experiences of students, it should first be emphasized that more than half (60%) of these studies provide recommendations for teaching personnel. The authors suggest an important supportive role of teachers in the transition of students from high school to higher education (Campa, 2013; Casanova, 2012; Dole, 2014). Similarly, the amount of recommendations for schools and higher education institutions is high (40%) in the studies, pointing to the significance of institutional facilitation for transitions. A further interesting point uncovered by the analysis is that studies about the transition between the two education levels exclusively address implications for policymakers (Casanova, 2012; Rana et al., 2011). A possible explanation might be that most of these studies are relevant to immigrant students. These students' progress in the education system might often be closely related to decisions by policymakers in different state- and federal institutions. In conclusion, the analysis of the sample studies

shows that no stakeholder group is exceedingly considered regarding recommendations and implications for practice. The large majority remains below 50%, with the mere exception of 60% of studies giving recommendations for teaching personnel at the transition stage between high school and higher education.

6.4 Conceptualizations of Resilience

This subchapter presents the synthesis findings for the fourth element of the conceptual framework of resilience: the three conceptualizations of resilience. It discusses how these conceptualizations as a trait, an outcome, and a process are reflected in the sample and which differences we might find concerning the education levels of high school and higher education. This is followed by a discussion of the potential downside of framing resilience as a personality trait, which can be summarized in the risk of stereotyping certain student groups. Stereotyping is discussed for either case of negative as well as positive stereotyping. Subsequently, the author closes the section by highlighting the advantages of viewing resilience as a dynamic process. He outlines the importance to consider the students' ability to be reflective in terms of their difficulties and progress in education. The students' ability to both interpret their role in and to interact with their social environments inside and outside the domain of education is discussed in relation to resilience processes. It is proposed that the ability to reflect might enhance the students' chances for academic success at the high school and higher education levels.

There are three main conceptualizations of resilience: as a trait, an outcome, or a process. In the domain of education, the trait perspective describes resilience as an innate ability of students that supports their academic success. An example for a resilience definition reflecting this perspective is given by Martin and Marsh (2009), who state that resilience is “the student’s capacity to overcome acute or chronic adversities that are seen as a major assault on educational processes” (p. 353). Second, the outcome perspective equalizes academic resilience and academic success. The resilience definition by Wang and colleagues (1994) represents this perspective, for instance, as they state that educational resilience is “the heightened likelihood of success in school and in other life accomplishments, despite environmental adversities, brought about by early traits, conditions, and experiences” (p. 46). The third resilience perspective conceptualizes resilience as a process. It is addressed in the definition by Morales and Trotman (2004), for instance: “the process and results that are part of the life story of an individual who has been successful, despite obstacles that prevent the majority of others with the same background from succeeding” (p. 8). This view stresses

the dynamic nature of the concept. It contradicts the trait as well as the outcome perspective in that resilience is neither conceived as an inherent personality characteristic nor an outcome, but that being resilient is understood as a process in the lives of individuals that is characterized by interactive and reflexive transactions with other individuals. This perspective is the one most commonly accepted in research today (Egeland et al., 1993; Luthar, 2006; Masten, 2001; Rutter, 2000; Schoon, 2006). In the following paragraphs, the sample studies are analyzed regarding the conceptualizations of resilience used.

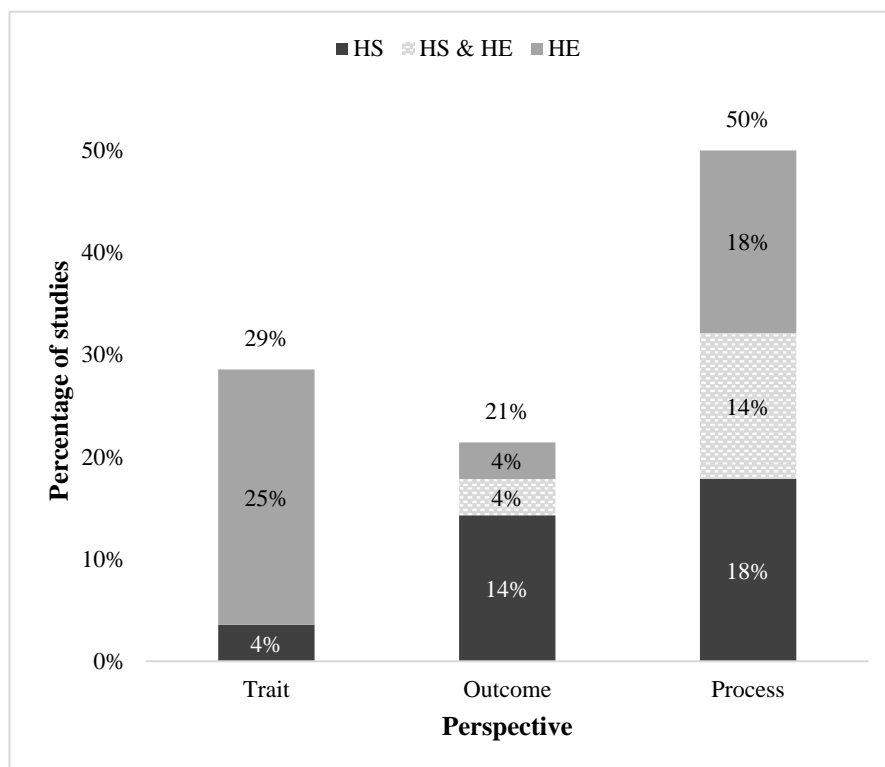


Figure 57. Resilience perspectives in the synthesized studies ($N = 28$ studies)

In the sample studies, examples for all three resilience perspectives can be found (see Figure 57). The relevant perspective per study is identified via the resilience definitions used and, additionally, by consulting other text passages in the studies. Examples for this are provided in the following descriptions:

- *Trait perspective:* The sample shows that the trait perspective on resilience is used in 29% of the studies, seven of which are relevant to the higher education level (Ben-Tsur, 2009; Garza et al., 2014; Gilford & Reynolds, 2011; Mallon, 2005; Morales et al., 2011; Orr & Goodman, 2010; Richardson et al., 2015), and only one for the high school level (Freeman et al., 2004). For a study to be categorized as relevant to the trait perspective,

it either has to include trait-related resilience definitions or other information in the text which point towards a trait view. Concerning the first criteria, definitions by Garabino (1995), Garnier and colleagues (1997), or Connor-Davidson (2003) were relevant, for instance. Moreover, an example for a relevant text passage would be one in the study by Mallon (2005) in which he proclaims that “only those who develop resilience can hope to survive and sustain a life worth living” (p. 100). Another example is provided in the study by Gilford and Reynolds (2011) in which the authors point to the “apparent strength and resilience of the women” (p. 74).

- *Outcome perspective:* The outcome perspective on resilience is less prevalent than the trait perspective in the sample studies. It applies to 21% of the studies only. The majority is relevant to the high school level (Gayles, 2005; Hersi, 2011; Williams & Bryan, 2013; Williams & Portman, 2014), and one study each is relevant to the higher education level (Séror et al., 2005) as well as both education levels (Rana et al., 2011). As for the trait perspective above, the relevance of the studies is defined both via suitable definitions and other text passages. The former criterion is met, for instance, when the highly popular resilience definition by Wang and colleagues (1994) was used in a study: “the heightened likelihood of success in school and in other life accomplishments, despite environmental adversities, brought about by early traits, conditions, and experiences” (p. 46). The latter is best expressed in the following passage in the study by Gayles (2005), who claims that “for the purposes of the research presented here, academic resilience is defined as academic achievement when such achievement is rare for those facing similar circumstances or within a similar sociocultural context. (...) In this sense, resilience is treated as an outcome” (pp. 250-251).
- *Process perspective:* The process perspective on resilience is the most used in the sample. Half of the studies apply to this perspective. Five each do so at the high school (Carter Andrews, 2012; Lessard et al., 2014; Peterson et al., 2009; Reis et al., 2004; Sosa, 2012) and higher education levels (Cross & Atinde, 2015; Graff et al., 2013; Morales, 2008a, 2010, 2014), whereas the perspective is relevant to four studies concerned with both education levels (Cabrera & Padilla, 2004; Campa, 2013; Casanova, 2012; Dole, 2014). To determine studies relevant to the process perspective, three criteria were applied to the sample: First, as it was already done for the other two perspectives described above, it was examined if the studies include process-related resilience definitions. The most important definition examples found in the publications

are the one by Morales and Trotman (2004) – “the process and results that are part of the life story of an individual who has been successful, despite obstacles that prevent the majority of others with the same background from succeeding” (p. 8) – and Luthar and colleagues (2000) – “a dynamic process encompassing positive adaptation within the context of significant adversity” (p. 543). Second, the process view was attributed to those studies that describe how students develop and nourish resilient behavior over time. This is relevant, for instance, to the studies by Peterson and colleagues (2009), Reis and colleagues (2004), or Cross and Atinde (2015). Moreover, in most cases, this is connected to studies describing a life-course view on resilience, like the ones by Cabrera and Padilla (2004), Campa (2013), or Casanova (2012). Cabrera and Padilla (2004) claim, for example, that they aim “to show that maintaining a sense of resiliency for students from the most impoverished homes is a struggle that begins before kindergarten and that continues through graduation from the university” (p. 154). Third, for the process view to apply, studies that express the temporal nature of resilience were relevant. Morales (2010), for instance, underlines “the temporal working relationships of groups of protective factors and how these processes result in academic success” (p. 166). This represents a counterpoint to an interpretation of resilience as a trait where students continuously use their innate resilience to succeed.

In summary, the strong focus on the process perspective in the sample studies reflects the prevalent standpoint in current resilience research that resilience should be considered a process (Egeland et al., 1993; Luthar, 2006; Masten, 2001; Rutter, 2000; Schoon, 2006). However, this finding should be regarded with caution. While the sample shows that there is less focus on the perspectives of resilience as traits and outcomes at the high school and higher education levels, the mapping stage has shown various examples in which both are still relevant. Most notably, this is the case for ‘Type 1 studies’ which illustrate the importance of the trait view on resilience in quantitative research (see Subchapter 4.2).

Concerning the distribution of the three resilience perspectives over the education levels of high school and higher education (see Figure 58), it can be noted that the trait view is much more prominent for research in higher education (54%) compared to high school (10%). Conversely, the outcome view is mostly adapted at the high school level (40%), while this view is relevant to 8% of the higher education level studies only. Last, for the process view, the amount of high school and higher education studies is at a similar level. Regarding the studies at both education levels, it is interesting to note that a large majority of them is relevant to the process view. Only one of these studies is relevant to the outcome view, while

none applies to the trait view. Considering the fact that almost all the studies with a process perspective are also relevant to a life-course perspective (Cabrera & Padilla, 2004; Campa, 2013; Casanova, 2012; Lessard et al., 2014) and/or a longitudinal view on resilience (Morales, 2008a, 2010, 2014; Peterson et al., 2009; Reis et al., 2004), this is an expectable result (see Subchapter 6.5). All in all, it seems likely that the education level distribution says less about the content than about the preferences in resilience research at the high school and the higher education level. Surprisingly, the amount of studies with a trait view is still relatively high for studies in higher education. Considering the criticism of this perspective (Leipold & Greve, 2009; Masten, 2001; O'Dougherty Wright et al., 2013), this situation might be considered unfortunate.

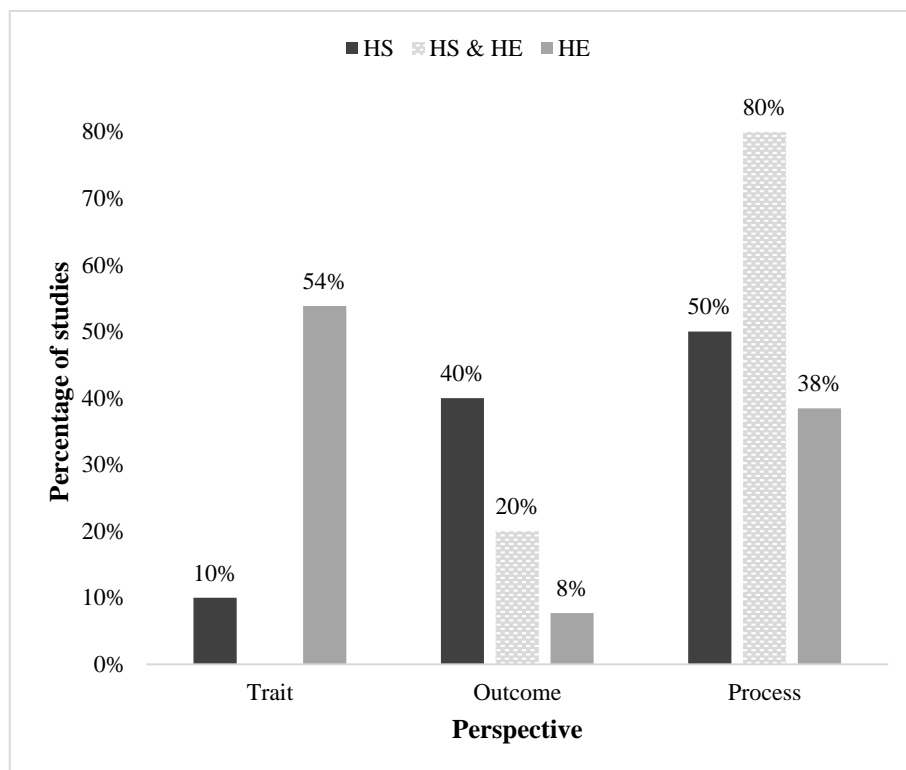


Figure 58. Resilience perspectives in high school, higher education, and the transition (HE: $n = 13$ studies, HS: $n = 10$ studies, HS & HE: $n = 5$ studies)

When applying the resilience concept in the domain of education, we should be aware of the potential downside of fostering stereotypes about particular student groups. It has been repeatedly shown in the literature that the premise of resilience research to focus on the often-small number of successful individuals with at-risk backgrounds might enforce stereotypes of at-risk groups (Riley & Masten, 2005; Schoon, 2006; Toland & Carrigan, 2011). In education, this can result in negative stereotypes about the overall low academic

performance of various at-risk students being multiplied by resilience studies. This dynamic is described in various of the sample studies. Several authors underline that they aim to defy the negative stereotypes about certain at-risk student group, as they exist, for instance, for African American students (Carter Andrews, 2012) or Mexican American students (Morales, 2010). Moreover, a second fashion the sample studies deal with stereotypes is to discuss them as well as various forms of stigmatization and discrimination as part of the risk preconditions of students (Campa, 2013; Casanova, 2012; Graff et al., 2013; Morales et al., 2011). There are four studies (Carter Andrews, 2012; Casanova, 2012; Cross & Atinde, 2015; Morales, 2010) in which both the first and second way of addressing stereotyping are relevant.

In relation to the different resilience perspectives discussed in this section, it should be noted that the label of ‘resilient’ can also contribute to stereotyping successful students. This issue has been summarized as positive stereotyping (Peterson et al., 2009) as a result of which certain student groups might develop similar problems in their studies as the ones facing negative stereotypes. This is the downside of labeling students as ‘resilient’ or ‘non-resilient’, and the trait perspective is frequently criticized for promoting such a dichotomist division of student groups (Leipold & Greve, 2009; Masten, 2001; O’Dougherty Wright et al., 2013). The problem with the resilience stereotype is that it is possible that resilience labels might determine the way the students’ chances for academic success are conceived over a long period of time. In the worst case, this can mean that students identified as resilient do not receive enough support during their studies (Peterson et al., 2009), only because their resilience was determined to be high at one time and understood to be a lasting innate personal quality. Conversely, those students labeled ‘non-resilient’ might be stereotyped as incapable of academic success, with a worst-case scenario of them being neglected in the education system altogether. In conclusion, rather than as a trait, resilience should be understood as a developing process. We should prevent to discount “the process leading to academic success (...) in favor of a static view of the factors contributing to the resiliency manifested in students” (Cabrera & Padilla, 2004, p. 154).

The process perspective on resilience incorporates the ability of students to reflect about their situations and to achieve different outcomes when interpreting and interacting with their environments. Considering that we are discussing the resilience processes of high school and higher education students here, we might be able to assume that these students are fully capable to do so. In the sample studies, the reflexive behavior of students is best captured by Sosa (2012) and Cross and Atinde (2015). The authors in both studies refer to

negotiating processes by the students. Sosa (2012) argues that the information gathered from the students in her study “illustrate[s] how negotiating resilience means assessing what they need; actively seeking the resources they require; and using their agency, capacity, and strengths” (p. 43). And Cross and Atinde (2015) claim that their “article has shown that students from historically disadvantaged backgrounds can negotiate their success at the university successful” (p. 322). They also state that “realizing that university studies provide an opportunity for a better life is not just a given, but an outcome of reflective and evaluative activities” (p. 317). Consequently, it should be argued here that we should grant it to students in high school and higher education to be able to understand and reflect about the situation they are in, and that they can know and/or learn how to best react/act and behave in their studies.

6.5 Time

This subchapter presents the synthesis findings for the fifth element of the conceptual framework of resilience: time. In the first section (6.5.1), the following three methodological timeframes available in the sample studies are discussed: cross-sectional, retrospective, and longitudinal. In addition, the timeframe of follow-up research is introduced. After that, the use of the three timeframes is compared between studies at the high school and higher education levels, followed by a description as to why longitudinal research is the preferable methodological timeframe in resilience research in education. The second section (6.5.2) of this subchapter is concerned with two important topics in relation to academic resilience: the life-course approach of studies and transition between education levels. Both topics are discussed in reference to the sample studies, and their application in high school and higher education studies is compared. Subsequently, the notion of life turning points is introduced in this section. In the third section (6.5.3), the importance of students’ prior experiences for their academic success is evaluated for the sample studies. It is shown that prior experiences inside and outside the domain of education can have either positive or negative influences on the academic success of high school and higher education students. At the end of the section, in relation to the impact of prior experiences, the author discusses the question whether resilience research on advanced educational institutions like high schools or universities might be carried out too late.

6.5.1 Timeframes of Studies

Timeframes refer to the methodological designs used in resilience studies to incorporate the factor of time. For the field of education, the literature shows that resilience researchers have different options to conduct studies. It is frequently recommended to use longitudinal data, for instance, which can enable researchers to observe the resilience processes at play over longer periods of time (Schoon, 2006; Toland & Carrigan, 2011). As Morales (2008b) claims, in research on academic resilience, “time passing is an essential element to deeply understand the lasting significance of key factors” (p. 230). Moreover, longitudinal studies can support our understanding of important turning points in individuals’ lives (Luthar, 2006), which will be discussed in more detail in Section 6.5.2 below. In addition, the literature shows that longer time stretches can be addressed with follow-up studies. Morales (2008b) argues, for example, that “by having (...) students reflect on their beliefs a decade ago and how those beliefs have evolved in light of their academic and professional achievements, (...) a rare view into the time-sensitive phenomenon of enduring resilience” (p. 228) is provided. All in all, the methodological timeframes chosen can be highly relevant to the breadth and depth of the findings of resilience research in education. The following section will illustrate and describe the timeframes found in the sample studies.

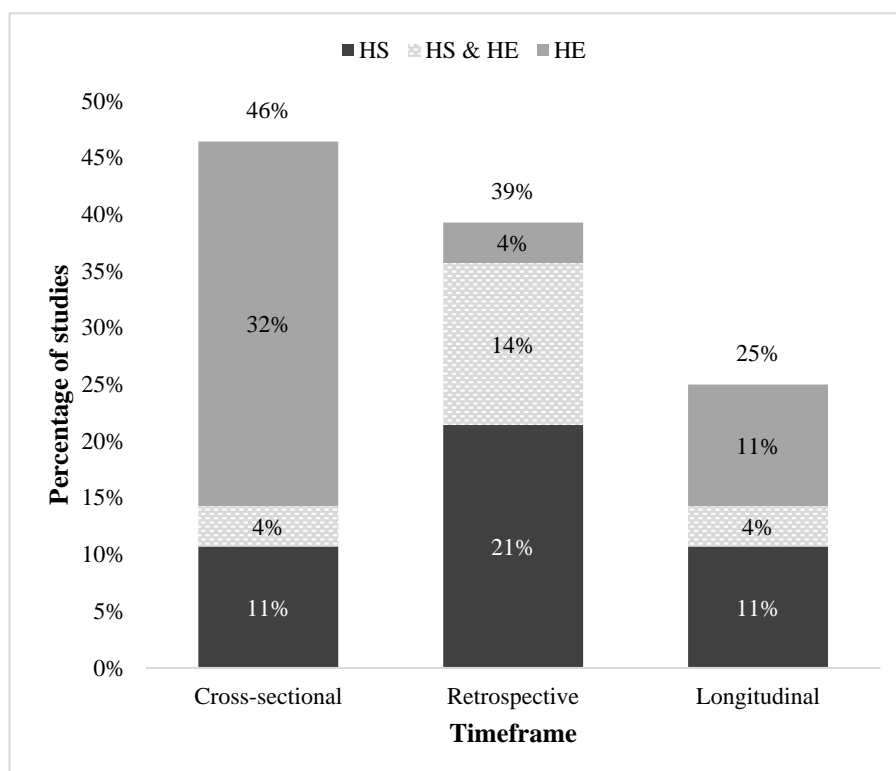


Figure 59. Timeframes of the synthesized studies ($N = 28$ studies)
(Multiple entries possible per study)

Three methodological timeframes are available in the sample studies: cross-sectional, retrospective, and longitudinal (see Figure 59). These three timeframes, as well as the additional one of a follow-up approach, which is not part of the sample studies, are presented next:

- *Cross-sectional approach:* The cross-sectional approach is most common in the sample studies. Cross-sectional studies investigate the connection of resilience and academic success of students at one point in the students' lives. Almost half of the studies (46%) are carried out in this way, most of them at the higher education level (Ben-Tsur, 2009; Cross & Atinde, 2015; Garza et al., 2014; Gilford & Reynolds, 2011; Graff et al., 2013; Morales et al., 2011; Orr & Goodman, 2010; Richardson et al., 2015; Séror et al., 2005), followed by three high school studies (Carter Andrews, 2012; Hersi, 2011; Sosa, 2012) and one study relevant to both education levels (Campa, 2013).
- *Retrospective approach:* The approach used second most frequently in the sample studies is retrospective. In these studies, students are asked to look back at their experiences in education and thus to report retrospectively about the resilience factors and processes relevant to their academic success. It is shown in the sample that retrospective viewpoints of the students can reach far into their past. This is particularly the case for studies observing the life-courses of students like, for instance, the study by Cabrera and Padilla (2004), in which the participants are asked to report about their childhood experiences and how these possibly contributed to their resilience processes. 39% of the sample studies have been carried out retrospectively, most of them (6) at the high school level (Freeman et al., 2004; Gayles, 2005; Lessard et al., 2014; Peterson et al., 2009; Williams & Bryan, 2013; Williams & Portman, 2014), followed by four studies relevant to both education levels (Cabrera & Padilla, 2004; Casanova, 2012; Dole, 2014; Rana et al., 2011), and one higher education study (Mallon, 2005).
- *Longitudinal approach:* A quarter and thereby the lowest number of sample studies are longitudinal studies in which the connection between resilience and academic success is observed over longer periods of time. Three studies both at the high school (Gayles, 2005; Peterson et al., 2009; Reis et al., 2004) and higher education levels (Morales, 2008a, 2010, 2014) are represented in this category. Moreover, there is one study relevant to both education levels (Casanova, 2012). Three of these studies are both relevant to the longitudinal and the retrospective approach (Casanova, 2012; Gayles, 2005; Peterson et al., 2009).

- *Follow-up approach:* An additional form of longitudinal research to be mentioned here is that of follow-up research. In follow-up studies, students are re-interviewed after a significant stretch of time has passed to evaluate their intermediate academic and/or professional success. While no follow-up study is part of the sample studies, such a study can be found by Morales (2008b) in the larger sample used at the mapping stage (see Chapter 4). He investigates the resilience factors of a group of Mexican American participants ten years after he had done the same investigation with the same group who had been students at that time.

In summary, the data show that most of the sample studies employ a cross-sectional design. Cross-sectional research is a well-established methodological approach that is highly common in education. However, in relation to resilience research, it is essential to consider its shortcomings, in particular, if resilience is considered being a dynamic process rather than a fixed personality trait (Egeland et al., 1993; Luthar, 2006; Masten, 2001; Rutter, 2000; Schoon, 2006). For instance, findings for resilience and academic success might differ considerably in relation to the time at which a study is carried out. Due to the changing nature of resilience processes, the results of cross-sectional studies might lose their relevance a year later, a month later, or even the next day, in particular, if we consider the possibility of severe adversities to disrupt observed constellations. This might be even more relevant when students switch schools or transition from one education level to the next (Campa, 2013; Orr & Goodman, 2010; Rana et al., 2011). Consequently, it is important to note that the cross-sectional approach provides a snapshot of the situation only, and that the dynamics of time and different contexts related to the point of time in the lives of students might not be sufficiently understood in such snapshots.

The remaining two timeframes are more sensitive to aspects of time. First, the retrospective approach is the second most popular approach used in the sample studies. It often seems suitable for authors to adopt a retrospective design because the academic success of the students has been proven at this point in most cases. In the majority of retrospective studies, we can be certain a positive outcome has occurred, which constitutes an important part of the essence of the resilience concept. Nonetheless, a limitation to consider is that we have to rely on the self-reports of students. This is mentioned as a major shortcoming in retrospective studies (Rana et al., 2011; Williams & Portman, 2014). Second, there is the longitudinal approach. Many of the sample studies are longitudinal studies (Morales, 2008a, 2010, 2014; Peterson et al., 2009; Reis et al., 2004). Moreover, some studies that do not employ a longitudinal design remark on this lack as a limitation (Williams & Bryan, 2013).

In one instance only, it is illustrated that a longitudinal approach can have disadvantages as well. If the timeframe of research is very long, as it is the case in the study by Peterson and colleagues (2009), for example, there can be problems with participant attrition over the course of the study and thus with connecting and comparing the data at the data analysis stage.

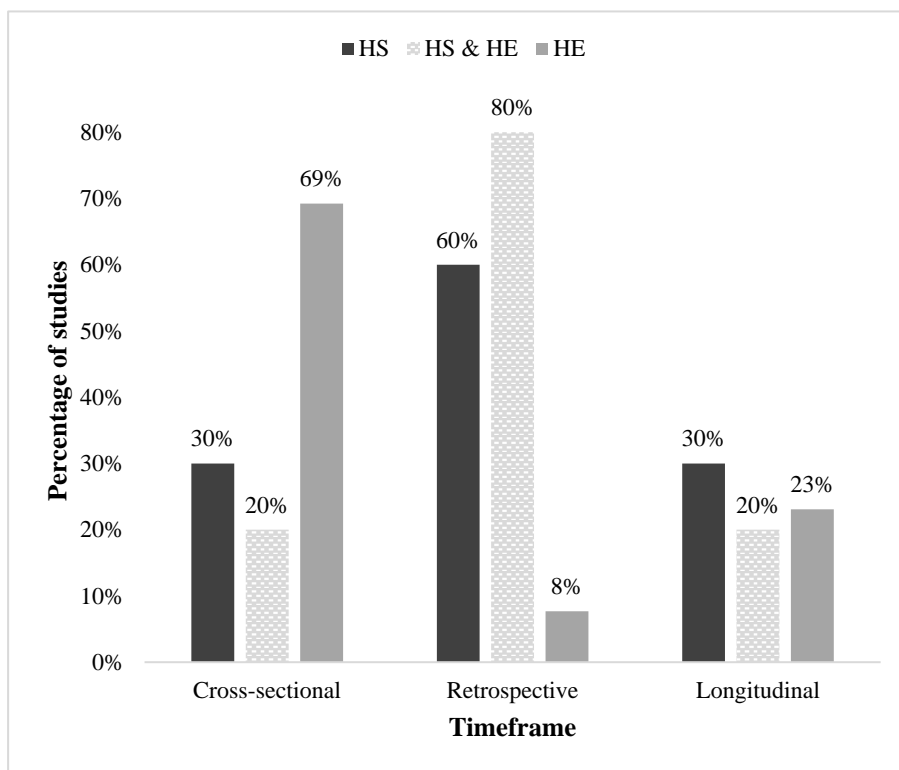


Figure 60. Timeframes in high school, higher education, and the transition (HE: $n = 13$ studies, HS: $n = 10$ studies, HS & HE: $n = 5$ studies) (Multiple entries possible per study)

A comparison between the two education levels of high school and higher education reveals several differences (see Figure 60): First, retrospective studies are much more prevalent at the high school (60%) than at the higher education level (8%). There are various studies in which university students are asked to report about their experiences in high school (Williams & Bryan, 2013; Williams & Portman, 2014). Conversely, only a few studies attempt to research university graduates' retrospective views on their academic success (Cabrera & Padilla, 2004; Casanova, 2012). Second, the sample shows that cross-sectional research is more than two times more prevalent in higher education (69%) than it is for high schools (30%). It is by far the most used research approach at the higher education level. Last, concerning the longitudinal approach, the sample studies are distributed more or less

evenly with 30% for high school and 23% for higher education studies. Regarding the studies relevant to both education levels, we can observe that 80% of them are relevant to the retrospective approach. This is the case because the students are asked in these studies – either in higher education (Dole, 2014; Rana et al., 2011) or after graduation (Cabrera & Padilla, 2004; Casanova, 2012) – about their experiences in both high school and university. For the cross-sectional approach as well as the longitudinal approach, on the contrary, the percentage of studies is low, within both cases 20% only. This is unexpected in case of the longitudinal studies. Given that the studies span two education levels, we might have expected a bigger number of studies of this type.

Since time and development are such important factors in resilience research, longitudinal studies might deliver the greatest insights in the connection between resilience and academic success in high schools and higher education institutions. They can foster our awareness of the malleability and ever-changing nature of resilience, so we do not assume that students who are deemed to be resilient at one point in time in school and/or university are also resilient at another point in time (Fletcher & Sarkar, 2013; O’Dougherty Wright et al., 2013; Rutter, 1987; Windle, 2011). Furthermore, they are able to incorporate adversities over longer time stretches (Casanova, 2012), which is of considerable importance for resilience processes as well. For cross-sectional studies, conversely, this would mostly not be the case. As described above, it is easy to imagine for such studies that severe adversities with an effect on resilience and academic success might occur after they were conducted as it is shown in the sample studies through the examples of a natural disaster (Richardson et al., 2015) and violent conflicts (Ben-Tsur, 2009). In summary, with a longitudinal perspective, authors can incorporate a view on the life-courses of students in their work (see Section 6.5.2). In addition, such studies enable us to identify and describe turning points in students’ lives. Nonetheless, the majority of research in the sample studies is not longitudinal. Instead, most studies present snapshots of the resilience factors and processes of students at one point in their lives. While we can expect valuable insights from these cross-sectional research studies, it should be mentioned that a higher number of longitudinal studies might have contributed to the depth of the findings provided in the sample. In the same vein, however, it needs to be mentioned that longitudinal research is connected to high efforts and resource demands. Its feasibility is thus often limited and should not be expected for the majority of research endeavors.

6.5.2 Life-courses and Transitions

In resilience research, the element of time needs to be considered regarding two important concepts: the life-course perspective and transitions. The life-course perspective can be conceived as one of the most insightful research designs in resilience research. Extensive longitudinal studies are carried out, which often follow individuals from childhood to adulthood. While such studies require a high amount of resources and dedication, they – besides incorporating the advantages of longitudinal research (Morales, 2008b; Schoon, 2006; Toland & Carrigan, 2011) – offer the additional advantage to enable researchers to observe and analyze transitions of individuals over long periods of time. In general, it has been shown that the resilience concept is particularly valuable for research on transitions in education. In the literature, transitions are frequently presented as challenging situations for students (Allan et al., 2014; Hernandez-Martinez & Williams, 2013; Langenkamp, 2010; Plunkett et al., 2008). As Reynolds and Weigand (2010) describe for the context of higher education, “college students face unexplored territory when attending college for the first time. For many students this major life transition can be difficult” (p. 176). It is the task of researchers in the field to investigate the resilience processes of students who overcome challenges and obstacles and who succeed in the domain of education. The next paragraphs will describe how life-course perspective and transitions are examined in the sample studies.

In the sample, studies which adopt a life-course perspective (4 relevant studies) are much rarer than those discussing transitions of students as well as the possible impacts of these transitions on the students’ academic success (14 relevant studies). Both aspects are examined in the following paragraphs:

- *Life-course perspective:* In total, 14% of the sample studies represent examples of studies from a life-course perspective. Life-course studies present observations and analyses about various stages in students’ lives, often starting from early childhood and ending with adulthood. The majority of these (3 studies) are discussing both high school and higher education (Cabrera & Padilla, 2004; Campa, 2013; Casanova, 2012). Merely one study that focuses on the high school level is relevant to this concept (Lessard et al., 2014). None of the studies are at the higher education level.
- *Transitions:* Half of the sample studies pick up the topic of transitions. Two forms of transitions are discussed in the sample. For one, there is the transition between the education levels of high school and higher education. This transition is naturally reflected in all five studies in which the high school as well as the higher education

experience of students is discussed (Cabrera & Padilla, 2004; Campa, 2013; Casanova, 2012; Dole, 2014; Rana et al., 2011). In these studies, the challenges of transitioning between the two education levels are described as well as how such challenges can be overcome. In addition, transitions play a role in all four life-course perspective studies (see above). The second form of transitions found in the sample are transitions into new environments at the same education stage. This is the case, for instance, when students switch from one high school to another, as it is described in the study by Lessard and colleagues (2014). Furthermore, this transition category applies when students transition into a new cultural environment. In the sample studies, this is most relevant to studies presenting the narratives of immigrant students. Immigrant students have to deal with severe changes of their Lifeworld [Lebenswelt], and this can often be connected to new challenges to overcome (Casanova, 2012; Rana et al., 2011; Séror et al., 2005). Most of the transition studies (6) are relevant to higher education (Cross & Atinde, 2015; Garza et al., 2014; Morales, 2010; Morales et al., 2011; Orr & Goodman, 2010; Séror et al., 2005), followed by five studies relevant to both education levels (Cabrera & Padilla, 2004; Campa, 2013; Casanova, 2012; Dole, 2014; Rana et al., 2011), and three high school studies (Hersi, 2011; Lessard et al., 2014; Peterson et al., 2009).

In the domain of education, a transition period can be considered one of the most defining resilience moments for students. Students in transition periods from one education level to the next can be considered vulnerable to adversities and challenges in many cases. They have to decide and/or learn how to interact with new environments, whereas many of their interactions might have been routine in the environments known to them before the transitions. This has been shown many times in the research literature on academic resilience (Hernandez-Martinez & Williams, 2013; Langenkamp, 2010; Plunkett et al., 2008), and it should be considered for discussions about resilience and academic success both in research and in practical settings. Therein, we can assume that the transition to higher education might be of particular importance. For many students, this transition is related to changes with a lasting impact on their lives. They are, for instance, away from home for the first time or form new social connections outside of their usual social networks (Allan et al., 2014; Reynolds & Weigand, 2010).

A comparison between the two education levels shows that for transitions, studies at both education levels are the most relevant ones. All of them are concerned with research on transitions in one way or another. Conversely, for studies focusing on one of the two education levels, the data show that transitions are less important. 30% of the high school

level studies are relevant here. They are concerned with the above described second transition type, which relates to transitions within the same education level. This is the case for the studies by Peterson et al. (2009), Lessard et al. (2014), and Hersi (2011). At the higher education level, transitions are slightly more important (46%). In most of these studies, the students' transition experiences from high school to higher education are discussed retrospectively (Cross & Atinde, 2015; Morales, 2010; Orr & Goodman, 2010). Regarding the life-course perspective, an education level comparison illustrates that the majority (60%) of the studies relevant to both education levels apply to this perspective. For the remaining two education levels, relevant studies are almost unavailable. There is one for the high school level only. This is an expected result because the studies focusing on both education levels are bound to analyze larger stretches of the lives of students. In summary, the data show the relevance of studies spanning two education levels for the analysis of transitions as well as life-courses of high school and higher education students. It underlines the usefulness of studies that observe students longitudinally over longer time periods (see Section 6.5.1).

Related to the life-courses and transitions of students is the notion that individuals can turn around their lives to the better at various points in their lives. The concept of life turning points has been introduced to describe this phenomenon in the literature (Luthar, 2006; Masten, 2001; Rutter, 2000; Toland & Carrigan, 2011). In the sample studies, life turning points are often connected with the social environment of students. Lessard and colleagues (2014) apply the notion of "lifelines" (p. 109) in this regard. They argue that the successful students in their sample could rely on "people who were there for the duration of the academic experience" (p. 109). Further examples are provided by Dole (2014) and Orr and Goodman (2010). The latter underlines the importance of mentors for successful transitions to higher education. In general, it is frequently described in the sample studies that students profit from the input and, sometimes, mentorship of key individuals inside and/or outside the domain of education. Hersi (2011), Peterson and colleagues (2009), and Williams and Portman (2014) outline, for example, that the support of individual teachers in high school enabled some students to endure through hardships and succeed academically. Authors at the higher education level assign similar positive impacts to teaching personnel (Cross & Atinde, 2015; Morales, 2010; Séror et al., 2005). In conclusion, life turning points should be regarded as closely connected to both the life-course perspective and transitions in education. Transitions from one education level to another, as they can be observed over the life-courses of students, will likely have the potential for life turning events or encounters in students' lives.

6.5.3 Prior Experiences

In resilience research in education, an important aspect to consider are the students' prior experiences inside as well as outside the education system. When researching resilience at high school and/or higher education levels, it is worthwhile to consider the time before. We should always reflect on the path students took previous to data collection, i.e. what students might bring with them when they come to high school and/or higher education institutions. In the literature, this issue has been discussed at various times (O'Dougherty Wright et al., 2013; Rutter, 2000). Rutter (2000), for instance, argues that "longitudinal studies have (...) shown the importance of indirect chain effects by which behavior or experiences at one age predispose to the occurrence of risk or protective experiences at a later age" (p. 656). All in all, we should be aware of the students' accumulated prior experiences because these experiences might have a positive and/or negative impact on their academic resilience and success. It is to be expected that this is of particular importance at transition stages from one education level to the next, as it has been discussed in the previous section. Notably, students should not be considered 'clean slates' when they come to high school or university. We need to consider their experiences. The education and life experiences the students have had up to the current point should not be neglected in research of the connection between resilience and academic success.

All in all, 64% of the sample studies refer to the influences prior experiences might have had on students' current situation in high school and/or higher education. Most of these studies (10) take place at the higher education level, followed by four high school studies as well as four studies relevant to both education levels. Two forms of influences of prior experiences are discussed in the sample: positive and negative influences:

- *Positive impact of prior experiences:* Almost half of the sample studies (46%) refer to the positive impact of prior experiences on students' current or retrospective academic success. Two main ways in which students use past experiences positively are described in the sample: Foremost, various authors illustrate that students learn from their experiences. They are able to develop strategies of resilience, which are often connected to a sense of 'survival', cultivated during their often-challenging lives (Campa, 2013; Carter Andrews, 2012; Rana et al., 2011). Campa (2013) states that "the lessons (...) students have learned from their own struggles, and those of their ancestors and family members, have been essential to the development of pedagogies of survival" (p. 449). "They come to the university with their own mechanisms and strategies that may enable them to cope with the challenges they face" (Cross & Atinde, 2015, p. 322). A second

manner in which students can use past experiences to their benefit is by reframing challenges and difficulties. In some cases, students are motivated by the difficult situations they had to overcome in the past because they know that the reward of succeeding can be a better life. As Graff and colleagues (2013) observe, “their determination to finish their degrees was enhanced by their desire to ‘improve’ their lives and the lives of their children” (p. 343). Gilford and Reynolds (2011) and Morales (2008a) also show the impact of students’ personal drive to tackle barriers and opposition in their education pathways. Most positive past influences (6) are reported for the higher education level (Ben-Tsur, 2009; Cross & Atinde, 2015; Gilford & Reynolds, 2011; Graff et al., 2013; Morales, 2008a; Séror et al., 2005), followed by four studies relevant to both education levels (Cabrera & Padilla, 2004; Campa, 2013; Dole, 2014; Rana et al., 2011), and three studies at the high school level (Carter Andrews, 2012; Hersi, 2011; Peterson et al., 2009).

- *Negative impact of prior experiences:* Five sample studies (18%) discuss the negative impact of past negative experiences on the academic success of students. The sample studies suggest that this is of particular relevance for students who experienced severe adversities during their studies, like an ongoing violent conflict near their community (Ben-Tsur, 2009) and the aftermaths of a natural disaster (Richardson et al., 2015). In general, of the studies discussing a negative impact of prior experiences, a majority (4) is relevant to the higher education level (Ben-Tsur, 2009; Morales, 2014; Orr & Goodman, 2010; Richardson et al., 2015). Only one study at the high school level discusses prior negative experiences of students as well (Sosa, 2012).

A plausible explanation as to why the negative impact of prior experiences is discussed much less than the positive impact is the fact that students can use their prior experiences to their advantage, even if these experiences had been negative. This is an integral part of the academic resilience and success of students, frequently shown in the sample studies, for instance, in the studies by Dole (2014), Gilford and Reynolds (2011), Graff and colleagues (2013), and Morales (2008a). In his discussion about the academic resilience of high achieving female minority students, Morales (2008a) stresses a “unique phenomenon gaining popularity in the resilience literature, namely the transformation of potential risk factors into a positive dynamic” (p. 208).

When comparing the two education levels of high school and higher education, the data show that the positive influence of prior experiences is mainly analyzed in studies relevant

to both high schools and higher education institutions. 80% of the studies in this group discuss this theme. They illustrate how positive high school experiences can contribute to academic success at universities. Three of these studies are relevant in terms of resilience strategies students learned in prior experiences (Cabrera & Padilla, 2004; Campa, 2013; Rana et al., 2011). Concerning the motivation students generate from overcoming past obstacles, one study is relevant (Dole, 2014). Regarding the comparison between the high school and the higher education levels, it seems a rather unexpected result that no study relevant to both high school and higher education is referring to negative impacts of past experiences. Instead, such negative influences are most prevalent in research at the higher education level.

The discussion about a possible positive and/or negative impact of prior experiences on academic resilience and success is closely connected to the question if resilience research at advanced education levels is carried out too late. It might be claimed that students, in particular, if they had to deal with risks and adversities throughout their lives, have had to be resilient during the whole course of their education before entering high school and/or higher education. They might have had to adapt and endure adversities many times on their earlier education pathways, which enabled them to build resilience factors and processes along the way. Cross and Atinde (2015) discuss this phenomenon as building up “compensatory capital” (p. 309). They describe that some students are able to develop “compensatory skills such as coping mechanisms, self-reliance, perseverance, adaptability, and flexibility in the choices they make to their advantage, and the ability to consult or seek advice from older or more experienced people” (p. 309). In this view, we might describe resilience as an additive phenomenon that can be expanded the more ‘resilience capital’ individuals collect throughout their lives.

An additive viewpoint on resilience is mostly the case for studies in which resilience is conceived to be a trait, like in the studies by Freeman et al. (2004), Garza et al. (2014), or Orr and Goodman (2010). Following this argumentation, one would be inclined to argue that all students – certainly all at-risk students – reaching high school or even higher education have to be resilient, and that resilience research at such advanced education levels thus forfeits most of its value. On the contrary, it should be argued here that it is by no means too late to connect resilience and academic success in high schools and higher education. As resilience is relevant to later development stages (Bonanno, 2004; Bonanno et al., 2007; Fergus & Zimmerman, 2005; Olsson et al., 2003), it is deemed to be relevant to later education levels too. The main reason for this, in concurrence with many scholars of the

field, is the dynamic nature of the resilience concept, which is often summarized under the notion of resilience as a process (Egeland et al., 1993; Luthar, 2006; Masten, 2001; Rutter, 2000; Schoon, 2006 and Subchapter 6.4). Resilience might have to be negotiated at different stages of a student's life. It is not a one-time-thing, and neither can we assume it to be lasting if it has been experienced at a time in a student's life. Moreover, the possible occurrence of life turning points (Dole, 2014; Lessard et al., 2014; Orr & Goodman, 2010) in students' lives, also discussed in this subchapter (see Section 6.5.2), contributes further to the proposed viewpoint that resilience processes are relevant at advanced education levels, whenever students are able to turn their luck around, for instance, with the support of key individuals and mentors inside and outside the domain of education.

6.6 Environment

Subchapter 6.6 presents the synthesis findings for the sixth element of the conceptual framework of resilience: the environment. Important aspects concerning this element have already been discussed in Subchapter 6.3, when the positive and/or negative influences of the social environment (see Section 6.3.2) and the role of institutional support (see Section 6.3.3) were discussed in regard to the sample studies. In this subchapter, two further environmental factors relevant to the high school and higher education levels are analyzed: institution types and subjects. The next section (6.6.1) discusses the four institution types found in the sample studies (urban schools, Predominantly White Institutions, special schools, community colleges). The author outlines to what extent these types are relevant at the high school level compared to the higher education level. Afterwards, Section 6.6.2 examines whether the sample studies include descriptions of subjects and their possible impact on students' academic success. This is examined in a comparison of studies at the high school and higher education levels as well. In addition, at the end of the section, the possible impact of faculty cultures [Fachkulturen] on academic success is considered.

6.6.1 Institution Types

The analysis of the sample studies illustrates that over half of the sample studies (54%) do not explicitly describe institutions (see Figure 61). They analyze students in high schools and higher education institutions without referring to particular characteristics of these institutions. In 46% of the studies, however, specific institution types are stated. The four institution types found in the sample studies are presented below:

- Urban schools:* The institution type of urban schools is considered most often in the sample studies. Notably, the term ‘urban school’ often serves as a collective term for describing public high schools with a high number of minority students from low-income families. A substitute term used in resilience research is ‘inner-city schools’ (Wang & Gordon, 1994). Urban schools are discussed in 18% of the sample studies, all of which are relevant to the high school level only (Gayles, 2005; Reis et al., 2004; Sosa, 2012).

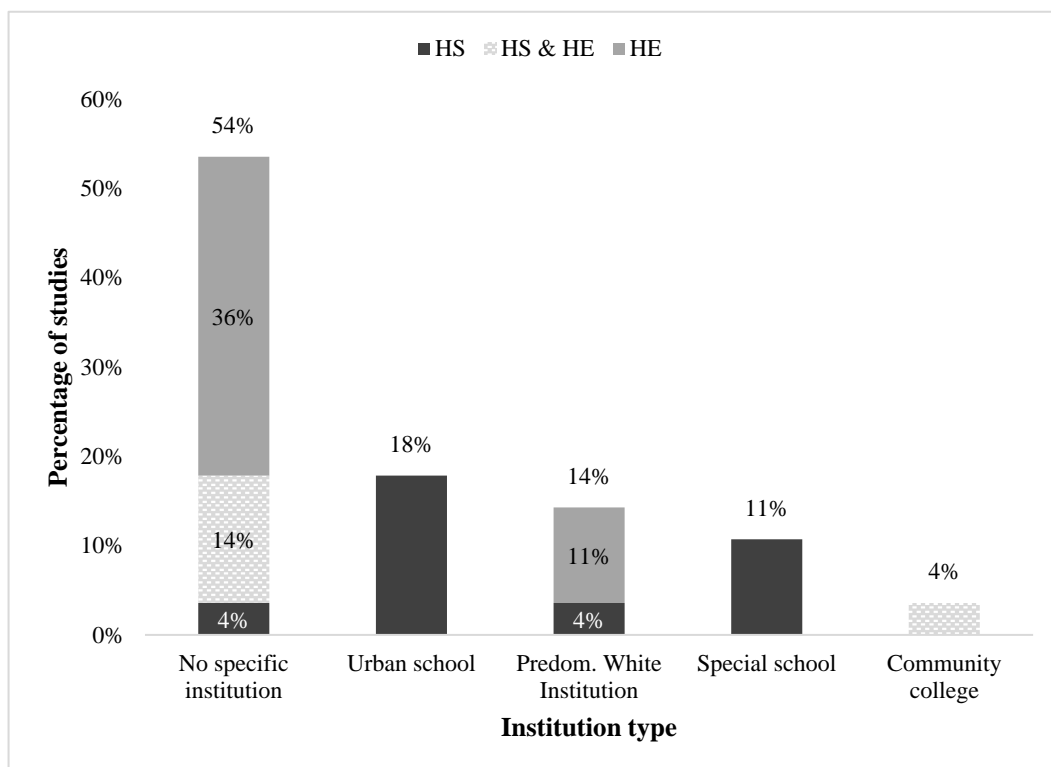


Figure 61. *Institution types in the synthesized studies (N = 28 studies)*

- Predominantly White Institutions:* Another specific institution type discussed in the sample studies are so-called Predominantly White Institutions (PWIs). As suggested by the name, these are institutions in which White students constitute the majority of the student body and other student groups like African American students (Carter Andrews, 2012) or Mexican American students (Morales, 2008a, 2010, 2014) are the minority. A total of 14% of the studies discuss PWIs, most of them (3) at the higher education level (Morales, 2008a, 2010, 2014) and one at the high school level (Carter Andrews, 2012).

- *Special schools:* A further institution category are so-called special schools. In the sample, these are high schools which cater to the needs of specific student groups like immigrant students (Hersi, 2011) or students with learning difficulties, who attend an adult education program to achieve high school credentials (Freeman et al., 2004). An additional example is provided by Peterson and colleagues (2009), who discuss the experiences of students in a high school for gifted students.

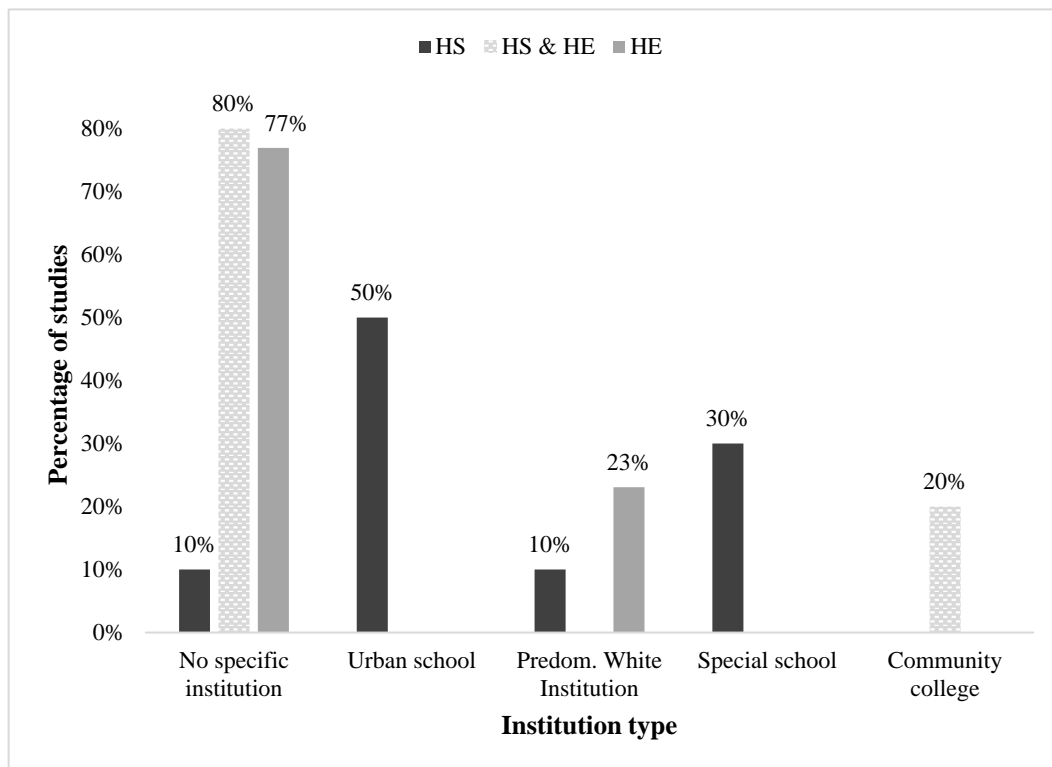


Figure 62. Institution types in high school, higher education, and the transition (HE: $n = 13$ studies, HS: $n = 10$ studies, HS & HE: $n = 5$ studies)

- *Community colleges:* The last institution type referenced in the sample studies are community colleges. Community colleges are the only higher education institution type in the sample differing from traditional colleges and/or universities. One study relevant to both the high school and higher education levels was carried out with community college students (Campa, 2013).

In summary, the data show that urban schools are discussed the most in the sample studies, followed by Predominantly White Institutions, special schools, and community colleges. Most of the studies (9) which discuss specific institutions are carried out at the high school level. In addition, three publications at the higher education level are referencing a specific

institution type (Predominantly White Institution) as well as one study relevant to both high school and higher education (community college).

The comparison between the high school and the higher education levels shows that almost all the high school level studies (90%) are referring to specific institution types (see Figure 62). They discuss students in urban schools (50%), special schools (30%), and Predominantly White Institutions (10%). At the higher education level, conversely, only 23% of studies are specific for an institution type, and these studies all refer to Predominantly White Institutions. Concerning studies relevant to both education levels, one is connected to the institution type of community colleges. All in all, there are much fewer studies relevant to specific institution types at the higher education level compared to the high school level. In general, it might be argued that this is due to less institutional diversity at the higher education level. Nonetheless, further institutional differences could have been discussed for colleges and universities. It might have been interesting, for instance, to examine elite or Ivy League institutions, which might have provided new insights concerning support and challenges for students, in particular in the United States. Conversely, since resilience research focuses on at-risk students in most cases, elite institutions might often not provide the appropriate institutional context.

6.6.2 Subjects

Subjects in schools and/or higher education institutions can be relevant to academic resilience and success. In the research literature, this is often discussed in relation to challenges that some subjects pose for students. One of the most prevalent examples is mathematics (Martin & Marsh, 2008; McGee, 2015; Sinicrope et al., 2015). It is argued by Hernandez-Martinez and Williams (2013), for instance, “that institutional transitions can pose new challenges and obstacles to students that can threaten their progression and many students and teachers consider mathematics as particularly problematic during these transitions” (p. 46). A further subject area of interest is teacher education in higher education, respectively, the experiences of pre-service educators. Studies about pre-service educators are mainly focused on their resilience as beginning and/or experienced teachers in the classroom (Mansfield et al., 2012; Muller et al., 2014; Roselle, 2007), or they examine their academic achievement in training programs at universities and during classroom placements (Sinicrope et al., 2015; Yokus, 2015). Another interesting study example for pre-service teachers is provided by Esping (2014), who describes and analyzes the experiences of at-risk students on their ways to become successful teachers. Moreover, some studies discuss

specific subject cases. Stallman (2012), for example, illustrates the challenges of law students. She focuses on the challenge of competition and how students are best capable of succeeding in the competitive environment of law programs at universities. This section outlines the relevance of subjects in the sample studies.

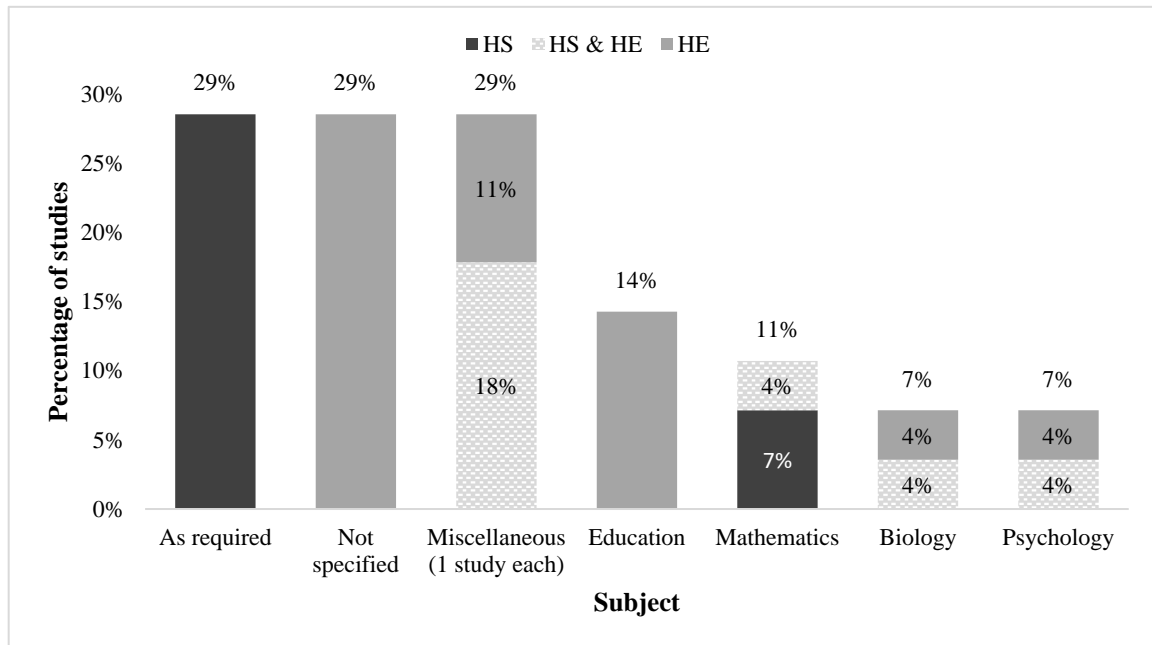


Figure 63. Subjects in the synthesized studies ($N = 28$ studies)
(Multiple entries possible per study)

A majority of the sample studies (58%) do not refer to specific subjects. They can be grouped into two categories (see Figure 63): First, these are studies at the high school level for which it can be assumed that students take subjects as required in high school (29%). Second, this time at the higher education level, just as many studies (29%) specify no subject. For both categories, subjects have no influence on the analysis of resilience and academic success. On the other side, 42% of studies provide information about subjects, most of them (5) at the higher education level and both the high school and higher education levels (5), followed by studies at the high school level (2). The following subjects are included in the sample:

- *Miscellaneous subjects:* Most relevant is the category of miscellaneous subjects. The category includes all studies that refer to a subject that is not stated in another study as well. In total, 21 of such subjects are mentioned, ranging from American History (Rana et al., 2011), Business (Orr & Goodman, 2010), and Nursing (Richardson et al., 2015), to Fashion Design (Orr & Goodman, 2010) and Sign Language Interpreting (Campa,

2013). For all these cases, no particular influence is discussed for the students' academic success. The subjects are provided to offer more context to the reader.

- *Education:* The subject of education is discussed most often in the sample studies (14%). Four studies at the higher education level refer to it (Cross & Atinde, 2015; Graff et al., 2013; Orr & Goodman, 2010; Séror et al., 2005). In these studies, the subject of education is not connected to the discussion of the students' academic success. The authors mention the subject when describing the study participants in the methodology sections.
- *Mathematics:* Three studies address the subject of mathematics, two at the high school level and one at the higher education level. Mathematics is the only subject for which particular considerations are given in relation to a possible influence on the academic success of students (Hersi, 2011; Lessard et al., 2014). Hersi (2011) describes for immigrant students, for instance, that "some students' experiences with advanced mathematics had not prepared them for the scientific calculations and other technologies used in their math and science classrooms in the United States" (p. 197). Nonetheless, such observations are available for these two studies only. In the third study (Rana et al., 2011), mathematics is part of the participant descriptions. Moreover, it does not include mathematics solely, but mathematics is one subject among others listed for the participants.
- *Biology and Psychology:* Last, the subjects of Biology and Psychology are each mentioned two times in the sample studies. Orr and Goodman (2010) refer to both Biology and Psychology. Moreover, the study by Rana and colleagues (2011) is relevant to Biology, and the one by Campa (2013) for Psychology. As for the large majority of subjects, Biology and Psychology are not discussed in relation to academic success, but to provide the reader with more information about the participants.

In summary, subjects play a minor role in the sample studies. When they are discussed, they are irrelevant for the analysis of students' academic success in the large majority of cases. The studies by Hersi (2011) and Lessard et al. (2014) represent the only exceptions for mathematics. In general, mathematics seems to be a suitable subject to provide as an example for which resilience factors and processes might be important for students to stay on track, due to the difficulties it can provide for students at the high school as well as the higher education level. For mathematics students in higher education, for instance, entry-level

courses can prove very challenging, because the content of high school mathematics and higher education mathematics differ profoundly (Hernandez-Martinez & Williams, 2013).

The comparison between both education levels (see Figure 64) shows that subjects are more often specified in higher education studies than in high school studies. In fact, at the high school level, a large majority (80%) of studies are not subject-specific, with only two exceptions referring to mathematics. On the other side, while 62% of higher education level studies do not specify subjects, 31% of these studies refer to the subject of Education, and the rest is distributed between Biology, Psychology, and miscellaneous other subjects mentioned each in one study only. Last, all the studies relevant to both the high school and the higher education level mention at least one miscellaneous subject. In addition, they add to the number of studies relevant to Mathematics and Biology (Rana et al., 2011) as well as Psychology (Campa, 2013). All in all, it is explainable why subjects are less frequently mentioned at the high school level. Core subjects in high school are relevant to all students. There is less choice than at the higher education level. Nonetheless, the minor relevance of subjects in the sample studies seems unfortunate.

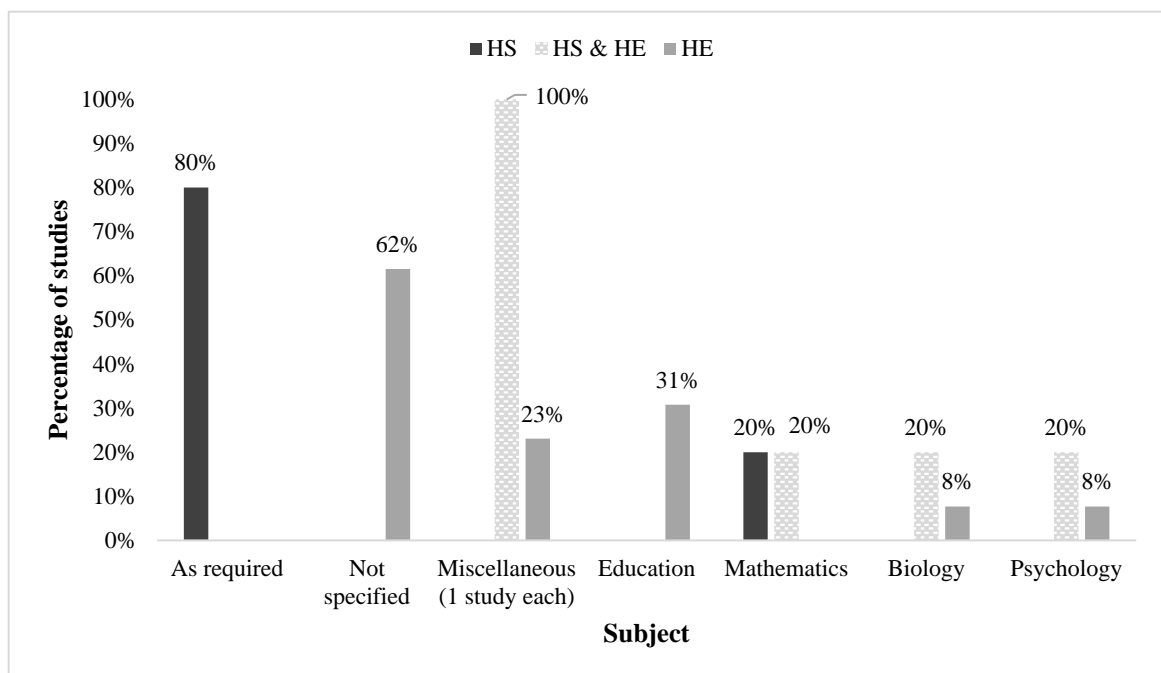


Figure 64. Subjects in high school, higher education, and the transition
(HE: $n = 13$ studies, HS: $n = 10$ studies, HS & HE: $n = 5$ studies)
(Multiple entries possible per study)

One reason why more subject-specific resilience research would be appreciated is the notion of faculty cultures [Fachkulturen]. This concept is widely discussed in the German education system (Huber, 1991; Lojewski, 2011; Multrus, 2004). In essence, it implies that

each subject provides different environments for students, for instance, represented by subject-specific teaching and learning modes, which can potentially influence their academic experience and/or success. For instance, an impact of different faculty cultures on academic success can be conceivable through the way social connections are formed in different subjects at the higher education level. For subjects in which studying in groups is more prevalent, like in science or engineering, we might assume the students to have more opportunities to form social connections early on, which might subsequently support them throughout their studies. Such positive effects are one reason why some scholars claim that future studies should focus on subjects to a greater extent (Martin et al., 2010).

6.7 Culture

This subchapter presents the synthesis findings for the seventh element of the conceptual framework of resilience: culture. After a short introduction, the role culture plays in the sample studies is discussed. It is shown that cultural aspects are considered to a great extent, concerning students' adaptation strategies, the difficulties they face through their cultural backgrounds, and the value they place on education. Moreover, the studies underline the importance of fostering cultural awareness in educational institutions, some criticizing the lack of cultural considerations in resilience research. Second, in this subchapter, the role of cultural aspects is examined for the high school level compared to the higher education level. Last, the author aims to illustrate the connection of the element of culture to three other elements of the resilience framework: risk preconditions (see Subchapter 6.1), positive outcomes (see Subchapter 6.2), and the social environment (see Section 6.3.2).

Time and time again, the essential role of cultural aspects has been mentioned in resilience research in education. Two forms of this should be considered: First, the researcher's own cultural perspective needs to be evaluated. A bias towards the Western education systems is frequently criticized in the literature (Schoon, 2006; Ungar & Liebenberg, 2011; Waller, 2001). It is claimed, for instance, that it is difficult to understand a concept like academic success for students with cultural backgrounds different from one's own. In this regard, Ungar (2008) argues that resilience research is largely "western-based with an emphasis on individual and relational factors typical of mainstream populations and their definitions of healthy functioning" (pp. 218-219). The second aspect is the influence of students' cultural backgrounds on their academic resilience and success. Various scholars argue that this perspective is often lacking in resilience studies, i.e. that cultural differences are not a prominent enough topic in research on resilience in education (O'Dougherty Wright

et al., 2013; Ungar & Liebenberg, 2011). “As a result, there has been little cross-cultural validation of findings, nor rigorous inquiry (qualitatively or quantitatively) into culturally determined outcomes that might be associated with resilience in non-western cultures and contexts” (Ungar, 2008, p. 219). In this subchapter, these aspects are discussed for the sample studies.

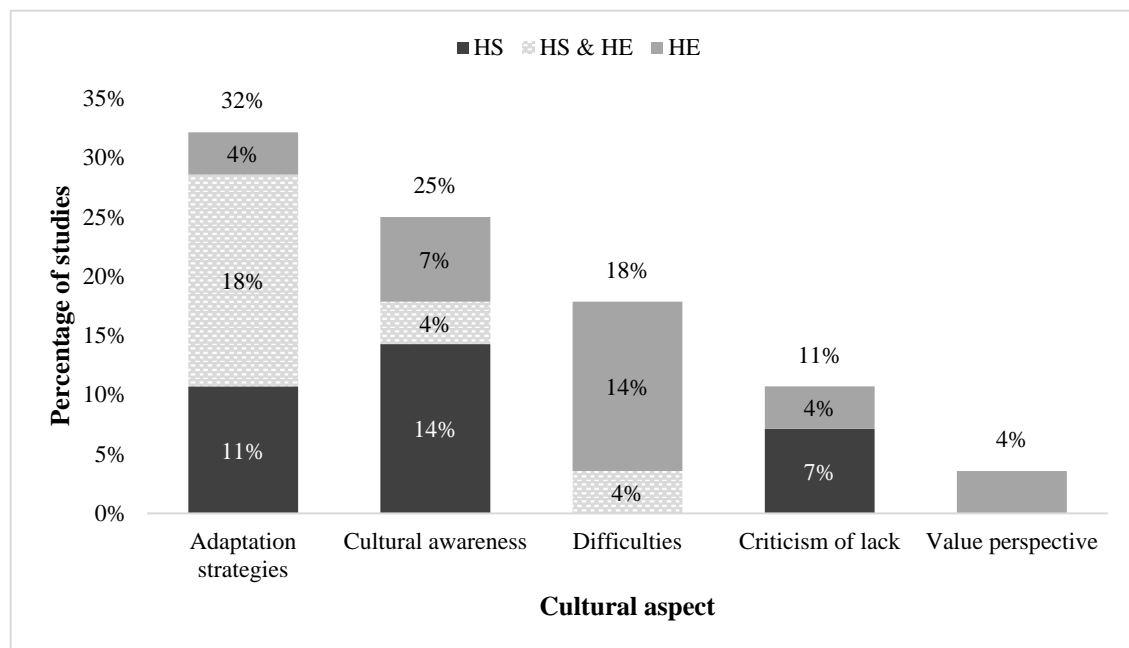


Figure 65. Cultural aspects in the synthesized studies ($N = 28$ studies)
(Multiple entries possible per study)

The sample studies include considerations about several cultural aspects (see Figure 65). In fact, a potential connection between cultural aspects and students' academic success is discussed in the vast majority of the studies (71%), distributed over eight studies at the high school level, seven studies at the higher education level, and five studies relevant to both high school and higher education. Five core ideas can be distilled from these discussions:

- *Adaptation strategies:* The strategies of students to adapt to new cultural environments are examined the most in the sample studies. Cultural adaptation strategies are referred to in 32% of the studies, most of them (5) relevant to both the high school and higher education levels (Cabrera & Padilla, 2004; Campa, 2013; Casanova, 2012; Dole, 2014; Rana et al., 2011), followed by three studies on the high school (Carter Andrews, 2012; Gayles, 2005; Reis et al., 2004) and one study at the higher education level (Séror et al., 2005).

- *Cultural awareness:* The second most prevalent aspect in the sample studies are claims for the increase of cultural awareness in schools and higher education institutions. A quarter of the sample studies include a demand for more cultural awareness, with most of them (4) applying to the high school level (Carter Andrews, 2012; Hersi, 2011; Williams & Bryan, 2013; Williams & Portman, 2014), followed by two studies in higher education (Morales, 2010, 2014) and one study at both education levels (Rana et al., 2011).
- *Difficulties due to cultural background:* Another factor discussed in the sample studies are students' difficulties due to their cultural backgrounds. This is relevant to 18% of the publications, mostly (4) for the higher education level (Cross & Atinde, 2015; Graff et al., 2013; Morales, 2008a, 2010). One further study is relevant to both high schools and higher education institutions (Casanova, 2012). Graff and colleagues (2013) described, for instance: "The participants in this study were confronted by various factors that challenged their efforts at completing their degrees. Among them were language barriers, the dichotomy between 'traditional' and 'non-traditional' female roles within Latino culture, the pressure of family and work, and the resistance of some educators to believe in their ability to succeed" (p. 342).
- *Criticism of lack:* Some authors in the sample studies claim that cultural considerations should be considered to a greater extent in resilience research in education. This is the case in three studies, two at the high school (Peterson et al., 2009; Sosa, 2012) and one at the higher education level (Gilford & Reynolds, 2011). Sosa (2012) claims, for example, that "other modes of research, particularly interviews of students over time that are sensitive to students' culture, contexts and lives, should be pursued" (p. 44).
- *Value perspective:* Last, the conceived value of education in relation to the students' cultural background is discussed in one higher education study. Séror and colleagues (2005) illustrate that Asian-American students evaluate the importance of education in connection to their cultural backgrounds. They argue that "students in the present study were resilient because they believed strongly in the importance of education" (p. 71) and "that this strong belief was part of their first cultural heritage" (p. 71).

In general, the cultural backgrounds of students are an important topic in the sample studies. Considering the frequently stated lack of cultural aspects in resilience research (Ungar, 2008; Ungar & Liebenberg, 2011), we might not have expected that culture is as widely featured

in the studies as it is. All in all, the sample studies show for the element of culture that academic success seems to be influenced most by the ability of students to adapt to new cultural circumstances, while not neglecting the strengths and potentials of their ‘home cultures’. This has best been demonstrated in the studies by Campa (2013), Casanova (2012), Rana and colleagues (2011), and Séror and colleagues (2005). As Rana and colleagues (2011) state: “Five of the youth mentioned that they were able to succeed in the United States because they did not forget where they came from and what their goals were when they came to their new homeland” (p. 2098). Furthermore, the data point to the importance to foster awareness about students’ cultural differences in high schools and higher education institutions. A notable recommendation to do so is brought forward by Carter Andrews (2012), who argues that knowledge about different cultures should be an integral part of the training of teaching students and pre-service teachers. Other authors underline the essential role of teachers, when they describe them as “cultural brokers” (Hersi, 2011, p. 198), “cultural glue” (Morales, 2014, p. 100), or “cultural translators” (Morales, 2010, p. 168) for immigrant and minority students.

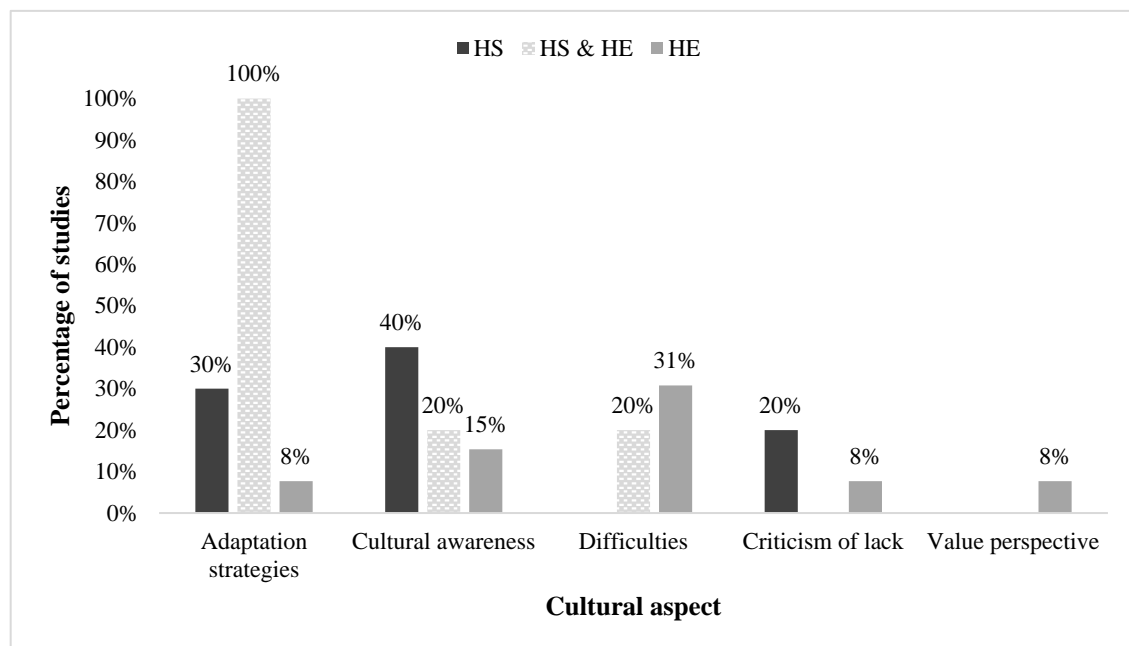


Figure 66. Cultural aspects in high school, higher education, and the transition
(HE: $n = 13$ studies, HS: $n = 10$ studies, HS & HE: $n = 5$ studies)
(Multiple entries possible per study)

The comparison of the two education levels (see Figure 66) shows, for one, that the aspects of adaptation strategies, cultural awareness, and the criticism of a lack of cultural research are more important at the high school level than at the higher education level. In

the case of cultural awareness, a possible explanation could be the intention of authors to foster this aspect early rather than late. Hence, scholars at the high school level might emphasize this aspect more than those at the higher education level. Similarly, this might be the case for criticizing a lack of discussing cultural aspects. In the case of adaptation strategies, however, the reason is likely related to the composition of the sample. There seems to be no obvious reason as to why the students' adaptation strategies should be more prevalent in high schools compared to higher education institutions. Second, regarding the students' difficulties they might experience because of their cultural backgrounds, most information (31%) is available for higher education, while such issues do not play a role for high school students in the sample. This might be due to fewer support offers in higher education. It has been shown in various studies that university students are facing difficulties when trying to adapt to new cultural environments and that they do not receive enough support from teachers and staff in many cases (Cabrera & Padilla, 2004; Campa, 2013; Graff et al., 2013). Last, the analysis reveals that adaptation strategies are discussed in all studies relevant to both education levels. Using different strategies to cope with new cultural environments seems to be a substantial aspect for the successful transitions from one education level to the next. In particular, this is expressed in studies about the life experiences of immigrant students in the sample (Casanova, 2012; Rana et al., 2011; Séror et al., 2005).

In conclusion, the connection of the element of culture with other elements of the conceptual framework of resilience should be stressed. This is illustrated via three elements here: risk preconditions, positive outcomes, and the social environment: Foremost, a close link of cultural aspects to the risk preconditions of students is to be considered (see Section 6.1.1). It has been shown, for instance, that in studies about immigrant students, culture plays a major role (Casanova, 2012; Rana et al., 2011; Séror et al., 2005), both concerning the culture of the origin as well as the host countries. Conversely, studies about students with learning disabilities are less likely to discuss cultural aspects (Freeman et al., 2004; Orr & Goodman, 2010). A second point illustrated in the sample is the influence of the students' cultural backgrounds on their definition of positive outcomes (see Section 6.2.1). Campa (2013), for instance, illustrates for a group of Mexican American students that they are likely to have different perceptions of what success means than other students at community colleges. The author argues that "by using traditional standards and measurements to assess student progress and success without understanding the nuances of Mexican-American resilience, community colleges will continue to hold this population back rather than help

them move forward” (p. 449). Last, the element of culture is frequently discussed in relation to potential negative and/or positive influences of the students’ social environment on their academic success (see Section 6.3.2). For example, this has been shown through the negative impact fathers might have on female students with Mexican American backgrounds (Morales, 2008a; Sosa, 2012).

7. Conclusion and Recommendations

This publication investigated empirical research available in the ERIC database till the year 2015 on the connection of resilience and academic success on the high school and higher education levels. The following review question was addressed in the systematic review and synthesis at hand:

How does the resilience concept impact empirical research on the academic success of students in high schools and higher education institutions?

To answer this question, two aspects were addressed by the author. First, at the mapping stage, the author outlined what kind of empirical research is carried out, i.e. how empirical research studies examine the connection of resilience and academic success for high school and higher education students. The results of the mapping stage are discussed in Chapter 4 and summarized in Subchapter 7.1 in this chapter. Second, the author carried out a framework synthesis with a subset of the mapped studies to determine how the elements of the conceptual framework of resilience (see Figure 67 below) are addressed in empirical research on resilience and academic success. Chapter 6 describes the synthesis for each framework element in detail, and the core results are presented in Subchapter 7.2. Furthermore, in this chapter, Subchapter 7.3 discloses three major methodological limitations of the systematic review at hand. Subchapter 7.4 then outlines the contributions of this publication in relation to what it set out to accomplish as well as future research opportunities based on the provided analyses. Last, in Subchapter 7.5, the author presents five recommendations for practitioners in high schools and higher education institutions.

7.1 Results of the Map

In a first step to answer the review question, the author created a map of the research landscape to gather information on the state of research about the subject. A total of 75 studies were included at the mapping stage of this publication (see Chapter 4), which have been shown to be relevant in terms of the inclusion criteria defined to determine the studies applicable to answering the review question (see Chapter 3). The map provides the first part of the answer to the review question by showing how the connection between resilience and academic success is examined in empirical research studies on the high school and higher education levels. A second purpose of the map was preparation for the next two steps in this

systematic review. It defined the studies entering quality appraisal (see Chapter 5) and the synthesis stage (see Chapter 6) of this publication. Third, the map was designed to inspire and prepare future research endeavors on the topic. The author hopes to have facilitated further research on academic resilience in high schools and higher education institutions by establishing three different study sets in this map to work with and/or expand on in the future. The three sets have been described in detail in Subchapter 4.2, and the main points are presented next.

The core result of the map in this systematic review is that resilience studies at the education levels of high school and higher education can be grouped into three types. This typology is based on the position of the resilience concept in the research designs of the empirical research in the sample used for the map. The following three types have been defined:

- *Type 1 – Resilience as an independent variable:* The sample studies at the mapping stage contain 13 Type 1 studies. In these studies, the resilience concept is understood as a personality characteristic of the students. They attempt to answer whether resilience exerts an influence on academic success and whether this influence can be considered positive, negative or neutral. The methodological starting point in Type 1 studies is often the measurement of resilience, which is mostly carried out with specific resilience scales (see Subchapter 4.1). Quantitative data is thus used in all of the publications, so that the trait of resilience can be measured and its correlation to the students' academic success can be evaluated. A closer examination of this type yielded three distinct research designs: the 'univariate model' (Type 1.1), in which resilience serves as the sole independent variable (relevant to 5 studies), the 'unordered multivariate model' (Type 1.2), in which the connection between resilience and academic success is not the only relation tested in the research design (relevant to 5 studies), and the 'ordered multivariate model' (Type 1.3), in which the resilience concept is assigned a definite place among additional independent variables in the studies (relevant to 3 studies).
- *Type 2 – Resilience as a dependent variable:* The sample studies at the mapping stage comprise 55 Type 2 studies.¹⁹ These studies examine the impact of various personality characteristics (intrapersonal factors) and factors in the social and institutional environment (interpersonal factors) on the academic success of students in high school

¹⁹ One of the studies (Garza et al., 2014) is relevant both to the quantitative portion of the Type 2.1 studies as well as to the qualitative Type 2.2 studies.

and higher education. The author defined two sub-types of Type 2 studies: First, there are 28 ‘hypothesis-driven’ studies (Type 2.1) in the sample. They assess the influence of pre-determined intrapersonal and interpersonal factors on students’ academic outcomes. Most of these studies use factor combinations (15 of 28). 13 of the Type 2.1 publications employ quantitative data (incl. the quantitative portion of one mixed methods design) and 15 use qualitative data. Second, 28 ‘explorative’ studies (Type 2.2) were defined. Studies of this type do not use pre-defined factors in their research designs. Instead, they aim to identify which intra- and interpersonal factors impact the academic success of students. 26 Type 2.2 studies use qualitative data only. In addition, the qualitative portions of two mixed methods designs were considered for this type.

- *Type 3 – Intervention studies:* The sample studies at the mapping stage include seven Type 3 studies. This third study type groups together the studies in the sample that use intervention designs. They examine the impact of supportive institutional measures on the academic success of high school and higher education students, with the underlying intention to determine best practice examples of how to foster at-risk students’ progress in their educational pathways. Type 3 includes three qualitative studies, three mixed methods studies, and one quantitative study. Three specific intervention designs are available: Five publications discuss the influence of supportive education programs, one study addresses the effects of a special high school for at-risk students, and one publication describes the impact of a specific education program for Aboriginal students at university.

All in all, it was one of the author’s earliest insights about resilience research that the resilience concept can be integrated in different ways in the research designs of empirical studies (see figures in Subchapter 4.2). The described typology attempts to summarize the main research designs for studies concerned with the connection of resilience and academic success in high school and higher education. At the same time, the three types address the review question of this publication by outlining the empirical research landscape on the topic. In a next step, the analysis provided further detail by using a part of the empirical research studies of the map to examine the elements of the resilience framework in research on academic success in a framework synthesis.

The framework synthesis was conducted with the 28 Type 2.2 studies identified at the mapping stage (see Chapter 6). There are three reasons for choosing Type 2.2 studies. They are linked to the studies’ viewpoint, the methodology of systematic reviewing, and the

overall purpose of this publication. First, regarding the studies' viewpoint, it was deemed most beneficial to synthesize Type 2.2 publications because they emphasize the students' perspectives on their academic success in high school and higher education. The results of these studies outline the intra- and interpersonal resilience factors students acknowledge to be most influential in terms of their academic progress. Such insights are considered particularly valuable for the publication at hand, which aims to provide recommendations for practice (see Subchapter 7.5). Firsthand information by students on how they experience processes of academic resilience might support our endeavors to implement suitable and precise support measures for application in high schools and higher education institutions as well as the transition between the two education levels. Second, concerning methodological requirements of systematic reviewing, it is recommended to choose a homogeneous set of sample studies (Gough & Thomas, 2012; Thomas et al., 2012), particularly when the aggregation of data is planned for the synthesis stage. Type 2.2 studies represent a consistent collection of publications because all of them employ qualitative data and all use a similar research design. Last, regarding the overall purpose of this publication as a doctoral thesis, it was applicable to reduce the scope from 75 studies down to 28 studies to be included in the synthesis. This ensured to keep the systematic review manageable for an individual researcher in terms of time and other resources available (Brunton et al., 2006; Thomas et al., 2003).

7.2 Results of the Synthesis

The purpose of the framework synthesis was to show how the elements of the conceptual framework of resilience (see Figure 67) are addressed in empirical research studies on resilience and academic success of students at the education levels of high school and higher education. Summarizing the synthesis results for every element of the framework starts with the essence of the resilience concept: (1) risks and adversities and (2) positive outcomes. In a next step, the outcomes for the (3) protective factors and processes are presented, focusing on social environments for which an in-depth overview is provided regarding the different groups of individuals in every environment. Subsequently, the three conceptualizations in the sample studies of resilience as (4 a.) a trait, (4 b.) a process, and (4 c.) an outcome are described. Last, the summary presents the results for the three context elements of (5) time, (6) environment, and (7) culture. All in all, the synthesis shows that the elements of the resilience concept entail many dimensions to consider. Based on the main results discovered in Chapter 6, the archetypical student examined can be summarized as: a minority student

who is academically resilient due to his/her high motivation, strong family support, and well-functioning cultural adaptation strategies. The student's educational pathway is researched using a process perspective on resilience and a cross-sectional methodological approach. Recommendations to enhance the student's circumstances are provided for teaching personnel. Neither the institution type nor subjects play an important role in the analysis.

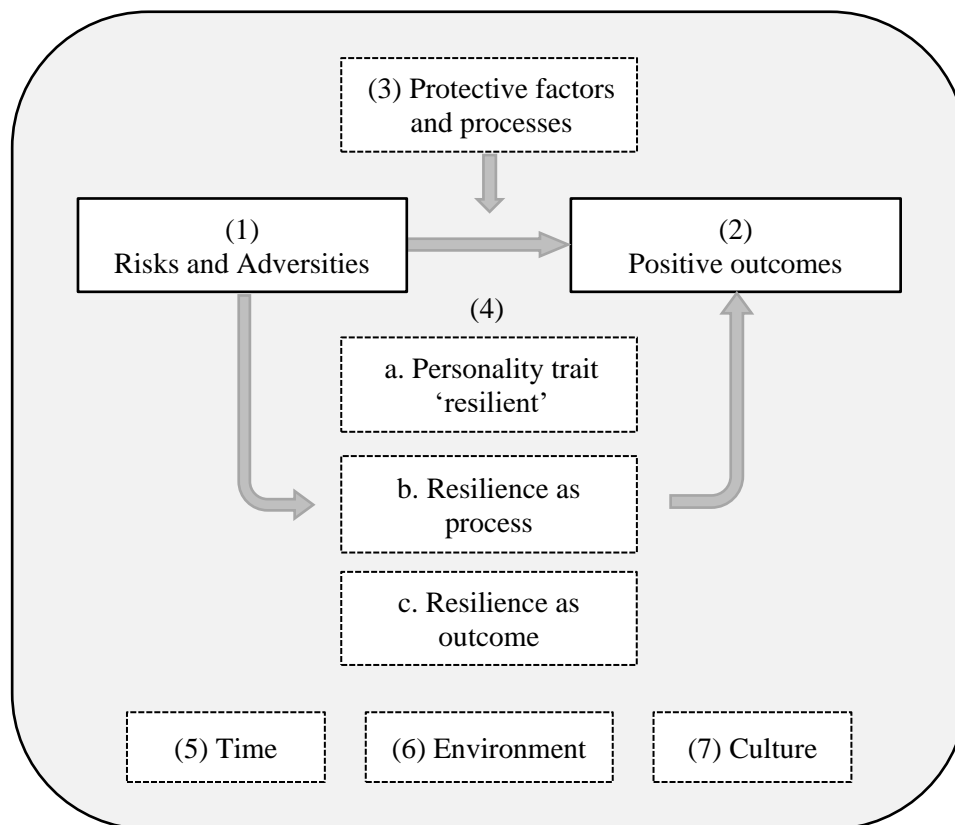


Figure 67. *Conceptual framework of resilience*
(Created by the author)

Risks and adversities represent the first element of the conceptual framework of resilience:

- *Risk preconditions*: Screening for risk preconditions of the high school and higher education students in the sample studies showed that the majority of the studies define an at-risk student group (89%). Over half of them (57%) are concerned with minority students, for instance, with African-American or Hispanic-American backgrounds (see Table 11). Other student groups discussed are immigrant students (18%), students with a learning disability (7%), gifted students (4%), and foster care students (4%). The comparison by education levels does not reveal major differences between high schools

and higher education institutions. Minority students are discussed most frequently at each level.

- *No risk precondition:* A small share of the sample studies (11%) do not refer to an at-risk student group (see Table 11).
- *Degrees of adversity:* Adversities are addressed in addition to risk preconditions in the sample studies. The data show that most of the sample studies (89%) do not discuss adversities of immediate and high severity, like they can be caused, for instance, by violence in the community or natural disasters. Such severe adversities apply to 11% of the publications only. The majority of adversities described in the sample can be considered common in relation to the students' education levels and risk preconditions.

Table 11. Risk preconditions and success definitions in the synthesized studies ($N = 28$ studies)

Aspect	Type	All	HS	HS/HE	HE
Risk precondition	Minority students	57%	60%	60%	54%
	Immigrant students	18%	10%	40%	15%
	No risk precondition	11%	10%	-	15%
	Learning disability students	7%	10%	-	8%
	Gifted students	4%	10%	-	-
	Foster care students	4%	-	-	8%
Success definition	Academic resilience	50%	70%	40%	38%
	Academic persistence	29%	10%	20%	46%
	Academic achievement	21%	20%	40%	15%

In the synthesis, it was possible to assign studies to one primary risk group. It should be noted, however, that the cumulative effects of different risk preconditions would have to be considered in practice (Luthar, 2006; Masten, 2001; Sameroff et al., 2003). It is unlikely that one precondition comprises the whole risk spectrum relevant to a student. Instead, in the case of a minority student, for instance, it is reasonable to assume that his or her family might have a low socioeconomic status and/or a burdensome immigration history as well. In addition, the data show that most sample studies do not use statistical data to back up the students' risk preconditions, as it is recommended in the literature (Luthar et al., 2000; Schoon, 2006). While this can be considered a limitation, the risk statuses of student groups are distinctly described in most publications. As for the publications reporting no risk preconditions, the synthesis illustrates that a majority emphasize the negative influences of severe adversities on students' academic success, which is in accordance with the essence of

the resilience concept entailing challenging situations to be overcome. The discussion of adversities in the sample generally indicates that it is advisable to consider differences in the severity of adversities, including the acknowledgement of the concept of academic buoyancy. Moreover, the analysis illustrates a link between adversities and risk preconditions. Most students will experience hardships inside and/or outside the domain of education during their lives, but such hardships will likely have larger impacts on at-risk students.

The second element of the resilience framework pertains to positive outcomes:

- *Resilience and success:* To examine the connection between resilience and success in the sample studies, the systematic review at hand was designed so that every sample study includes academic success as its positive outcome (see Chapter 3). In the synthesis, the author refined this outcome to show the nuances of how academic success is defined in different publications. The data show that half of the sample studies (50%) can be assigned to the outcome of academic resilience (see Table 11), which is defined as the ability of students to persevere against the odds in their educational pathways. Academic persistence (29%) and academic achievement (21%) are two further outcomes to consider – the first framing success as the continuation of education, for instance, after challenging life phases or a highly adverse event, and the second being defined by attestable educational achievement, like graduating from high school or higher education. The comparison by education levels reveals that the outcome of academic resilience was examined the most in studies at the high school level and studies relevant to both education levels. For the latter, academic achievement is relevant in the same dimension. In higher education, most studies report academic persistence as the main outcome.
- *Learning from successful students:* Learning from successful students is portrayed in some of the sample studies. The synthesis focused on studies that compare a successful student group with an unsuccessful one. These publications provide the best value in terms of learning from success, because we can compare characteristics and processes between students who are exposed to similar circumstances. 11% of the sample studies are relevant to this category.
- *Focus on the negatives:* While the second element of the resilience framework addresses positive outcomes, it still proved useful to analyze to which extent negative factors are considered in the sample studies. The analysis reveals that 43% of the studies examine

risk factors in detail. In most of them, risk and protective factors are investigated side by side for one student group. Moreover, some studies present these factors in two separate analyses. This is mostly the case when successful and unsuccessful student groups are compared (see above). In addition, a handful of publications examine risk factors in greater detail than supportive factors.

The synthesis demonstrates that negative factors play a substantial role in the sample studies, but most studies still focus on the examination of assets and supportive factors in the personal characteristics as well as the social environments of students. Nonetheless, success is a highly subjective concept altogether (Kaplan, 2013; Leipold & Greve, 2009). It can be a complex task to define the academic success of students, particularly when the definition should reflect the students' own understanding of being successful. Unfortunately, this topic is poorly demonstrated in the sample, with only three studies discussing the effects of subjective interpretations of success. It is further argued in the synthesis that the students' success should be evaluated in relation to what they are up against. Similar as it has been described for the link between risks and adversities above, it should be considered for positive outcomes that the notion of success might be strongly related to the amount of risks and the severity of adversities in a student's life. In some cases, conventional success definitions might not be enough. Moreover, the synthesis outlines that the best foundation to learn about the success of students is provided by studies in which success is defined by the students themselves. External success ascriptions, for instance, by teacher nomination, are not recommended.

The third element of the resilience framework deals with protective factors and processes:

- *Personality characteristics:* Students' personality characteristics influence their resilience processes in high schools and higher education institutions. 64% of the sample studies discuss the impact of one or more personality characteristics on academic success. As shown in Table 12, motivation is reported to have the largest influence (26%), followed by 18% each for determination and persistence, 15% each for the belief in one's ability, a positive future orientation, and work ethic, 14% for resilience as a personality trait, 8% each for the belief in the importance of education and locus of control as well as a total of 13 different characteristics discussed in one study each. The comparison by education levels illustrates that motivation is emphasized in studies relevant to both high school and higher education. It also plays a more important role in

higher education compared to high school. At the high school level, the characteristics of ‘determination’, ‘belief in one’s ability’, ‘positive future orientation’ and ‘work ethic’ are discussed to the greatest extent. The students’ personality trait of resilience is emphasized in higher education studies.

- *Social environment:* Protective factors and processes are present in the students’ social environments. The positive and/or negative impact of social environments on resilience processes is examined in each of the sample studies. 96% of the studies report positive influences, while 68% address negative ones. As illustrated in Table 12, the students’ family is the social environment addressed the most in the sample (89%), followed by personnel in high schools and higher education institutions (86%), the students’ personal network (71%), and the community (57%). The comparison by education levels illustrates that family is described to have a positive impact in every study at the high school level and in studies relevant to both the high school and the higher education level. The extensive positive influence decreases at the higher education level, however. At this education level, the support by personnel like the teaching faculty gains importance. Regarding negative influences, the impact of the family remains high throughout high school and higher education, but it also drops at the higher education level. Moreover, the data show a high negative impact of high school and higher education personnel in studies relevant to both education levels. The negative impact of personnel is substantial in high schools as well. In addition, at the high school level, a high negative influence of the students’ personal network was demonstrated in the synthesis. The different group of individuals per social environment will be discussed in detail in a separate paragraph below.
- *Institutional support:* The aspect of institutional support is addressed to some extent in the sample studies. Institutional support for students in high schools and higher education institutions is asserted in 39% of the studies. The comparison by education levels shows the highest numbers for publications relevant to both education levels. Notably, 40% of these studies report negative institutional influences.
- *Recommendations and implications for practice:* Recommendations for stakeholders inside and outside the domain of education are presented in a majority of the sample studies. 86% of the sample studies consider this aspect. Most of the recommendations are directed towards teaching personnel (43%), closely followed by 36% for schools and higher education institutions (see Table 12). Other stakeholders mentioned are

counselors (25%), intervention/initiative designers (18%), policymakers (7%) as well as in one study each: teacher educators, resettlement agencies, and parents. The comparison by education levels indicates that teaching personnel and counselors are most often addressed at the high school level. Studies relevant to both education levels provide most recommendations to teaching personnel. In higher education, it is most often discussed what teaching personnel and institutions can do to facilitate academic success.

Table 12. *Personality characteristics, social environments, and recommendations/implications for practice in the synthesized studies (N = 28 studies) (Multiple entries possible per study)*

Aspect	Type	All	HS	HS/HE	HE	
Personality characteristic	Motivation	26%	10%	60%	23%	
	Determination	18%	20%	20%	15%	
	Persistence	18%	-	40%	23%	
	Belief in one's ability	15%	20%	20%	8%	
	Positive future orientation	15%	20%	20%	8%	
	Work ethic	15%	20%	20%	8%	
	Resilience	14%	-	-	31%	
	Belief in importance of education	8%	10%	-	8%	
	Locus of control	8%	10%	-	8%	
	Misc. (1 study each)	25%	20%	40%	23%	
Social environment	+	Family	82%	100%	100%	62%
		HS/HE personnel	79%	90%	80%	69%
		Personal network	57%	60%	60%	54%
		Community	54%	60%	80%	38%
	-	Family	54%	60%	60%	46%
		HS/HE personnel	46%	60%	100%	15%
		Personal network	43%	60%	60%	23%
	Community	11%	10%	40%	-	
Recommendations/ Implications for ...	Teaching personnel	43%	40%	60%	38%	
	Schools & HE institutions	36%	30%	40%	38%	
	Counselors	25%	40%	20%	15%	
	Intervention/Initiative designers	18%	10%	-	31%	
	Policymakers	7%	-	40%	-	
	Misc. (1 study each)	11%	20%	20%	-	

The synthesis of the personality characteristics in the sample studies shows that a large majority of the studies address the effect of more than one personality characteristics on the students' academic success. As for the risk factors discussed above, the accumulation of different factors is important to consider at this point. In addition, it is notable that some traits either play a marginal role or are not addressed in the sample that have been shown to be highly relevant in other resilience research studies. This is the case, for instance, for the factor of self-efficacy (Cavazos et al., 2010; Llamas et al., 2014; Sosa & Gomez, 2012).

Regarding institutional support, the synthesis reveals the importance of considering transitions, particularly when students switch from familiar environments to unfamiliar ones. A significant example would be the transition of an African-American student from an urban high school with a high proportion of minority students to a Predominantly White Institution at the higher education level. Conversely, it has been shown in the data that supportive institutional environments can go a long way for students at important transitions in their lives.

A large share of the studies examine the students' social environments. This includes the positive and/or negative impacts of family, high school/higher education personnel, the students' personal networks as well as their communities:

- *Family:* The family environment is discussed in 89% of the sample studies. 82% report positive impacts, while 54% discuss the negative influences family members can have on the academic success of students (see Table 12). The analysis for each group in this social environment reveals that parents have the highest positive (71%) as well as the highest negative impact (46%) of the family members discussed in the studies, followed by mothers (32% positive, 14% negative), siblings (18% positive, 14% negative), grandparents (11% positive), fathers (7% positive, 25% negative), and the extended family (aunts, uncles, cousins) (7% positive). No negative aspects have been reported for grandparents and the extended family.
- *HS/HE personnel:* 86% of the sample studies address the influences of high school and higher education personnel. A positive influence of the personnel is described in 79% of the studies and a negative influence in 46% (see Table 12). A deeper analysis shows that teaching personnel have both the highest positive (68%) and negative (43%) impacts on the students' academic success. The data also illustrate the influences of administrative personnel (29% positive, 4% negative), counselors (25% positive, 14% negative), mentors (21% positive), tutors (14% positive), and coaches (11% positive). No negative aspects are reported for mentors, tutors, and coaches in the sample.
- *Personal network:* The impacts of friends, peers, boyfriends, and girlfriends are discussed in 71% of the sample studies. Positive influences are shown in 57%, negative influences in 43% of the studies (see Table 12). Friends have the largest positive influence (50% positive, 21% negative) and peers have the highest negative one (36% negative, 36% positive). In addition, the impacts of boyfriends (4% positive, 4%

negative) and girlfriends (4% positive) are discussed in a handful of studies. There was no negative aspect reported for girlfriends.

- *Community*: The role of communities is discussed in 57% of the sample studies. As Table 12 illustrates, this social environment shows the largest contrast between the number of studies reporting a positive impact (54%) and those addressing a negative one (11%). The wider community is described to have the highest positive influence on the students' academic success (43%), followed by the church community (incl. pastors) with 25%, and the students' direct neighborhood with 11%. Regarding negative influences, the synthesis yields the topmost proportions for the neighborhood (11%) and the wider community (7%). There is no negative aspect addressed for the church community.

The students' social environments are substantial for understanding the connection between resilience and academic success. The synthesis emphasizes the link between cultural aspects and social environments. For example, the high negative influence of fathers in the family environment can be traced back to the cultural backgrounds of the students affected (Morales, 2008a). It has been shown that female minority students might not be supported in their educational pathways by their fathers, because the cultural role of women in this specific group is less associated with high academic achievement than, for instance, with familial duties in society. A further takeaway from the synthesis is the potential interplay of various social environments. The social spheres of students cannot be conceived to be strictly separable from each other. Instead, it is recommended to take into account potential combinations of various individuals in different environments which together or compensatory might result in synthesized positive and/or negative influences on academic success for students in high school and higher education.

To address the fourth element of the conceptual framework of resilience – the three conceptualizations of resilience – it was determined to which extent the three perspectives on the resilience concept as a trait, an outcome, or a process were represented in the sample studies (see Table 13). The process perspective is the dominant conceptualization in 50% of the studies. 29% conceptualize resilience as a personality trait, and 21% view it as an outcome. The comparison by education levels illustrates that the process view is most popular in high school studies as well as in studies relevant to both high schools and higher education institutions. At the higher education level, more than half of the studies use the personality trait perspective. The latter can be conceived as a surprising result of the

synthesis, because the literature on resilience advises against the trait perspective today (O'Dougherty Wright et al., 2013; Riley & Masten, 2005; Toland & Carrigan, 2011). A substantial argument against the trait view is the danger of stereotyping students as either 'resilient' or 'non-resilient'. Once such permanent labels are ascribed to students as part of their personality characteristics, it can be very difficult to change them. An alleged positive ascription as a 'resilient student' might then lead to a lack of supporting measures, since the student has proven to be able to succeed at one point (Peterson et al., 2009). A label of 'non-resilient', conversely, might lead to blaming the victim, in the sense that the student just is not good enough to succeed (Luthar et al., 2000). Both versions are detrimental to fostering the academic success of at-risk students, and various authors in the sample studies emphasize the dangers of and the necessity to avoid stereotyping in resilience research (Carter Andrews, 2012; Morales, 2010). It is repeatedly claimed to adapt a view of resilience as a dynamic process instead. Elaborate resilience models consider the malleability of resilience, and they do so in relation to the students' ability to reflect on their circumstances as well as their development stages and the environments and cultural settings they are in.

Table 13. Resilience perspectives in the synthesized studies ($N = 28$ studies)

Resilience perspective	All	HS	HS/HE	HE
Trait	29%	10%	-	54%
Outcome	21%	40%	20%	8%
Process	50%	50%	80%	38%

The fifth element of the conceptual framework of resilience involves the factor time:

- *Timeframes of studies:* In regard to the major timeframes used in the sample studies, it is shown that most studies use a cross-sectional design (46%), 39% adapt a retrospective approach, and 25% can be categorized as longitudinal studies (see Table 14). The comparison by education levels illustrates that cross-sectional studies are most prevalent at the higher education level. Retrospective studies are predominantly discussed in studies at the high school level and in those relevant to both education levels. A longitudinal approach is used to approximately the same extent at all three levels.
- *Life-courses and transitions:* Aspects of the students' life-courses and transitions are incorporated in the sample studies to variable extents. A life-course perspective is relevant to 14% of the studies, in which various stages in the students' lives are observed

and analyzed, often starting from early childhood and ending with adulthood. Transitions, both between education levels and from one institution to another at the same education level, are addressed in half of the sample studies.

- *Prior experiences:* Several studies deal with the impacts of prior experiences on the resilience processes of students in high school and higher education. This aspect applies to 64% of the sample studies. Almost half (46%) emphasize the positive impacts of prior experiences on the students' current or retrospective academic success. Conversely, 18% report negative influences of past experiences.

The synthesis outlined that most of the sample studies use a cross-sectional approach. This approach focuses on the connection between resilience and academic success at one point in time in the students' lives. While these publications provide valuable information on resilience factors and processes in education, it should be emphasized that longitudinal studies can be considered yielding the greatest insights on academic resilience, because they are time-sensitive. Examining the challenges and progress of students over longer periods of time enables us, for instance, to identify life turning points, which are considered a highly important concept in resilience research (Masten & Reed, 2002; Rutter, 1987). The literature indicates that individuals are able to overcome difficult situations and improve their outcomes at specific points in their lives, often with the support of key individuals in their social environments. It was demonstrated in the synthesis that turning points are particularly relevant for transitions, for example, from secondary to tertiary education, and that the studies presenting a life-course perspective are best suited for examining turning points in the students' lives (Lessard et al., 2014). In relation to this aspect, the question was addressed whether it is too late to assess academic resilience at the high school and higher education levels. The author argues in the synthesis that resilience research should not be detached from the students' experiences inside and outside the education system. Nonetheless, even if these experiences have been traumatic in some cases, the resilience concept illustrates that resilience is a dynamic process and that individuals can persevere and even turn their lives around at later life stages (Bonanno, 2004; Bonanno et al., 2007). It should thus not be too late to address the connection between resilience and academic success at advanced education levels.

Table 14. Timeframes, institution types, subjects, and cultural aspects in the synthesized studies (N = 28 studies)

Aspect	Type	All	HS	HS/HE	HE
Timeframe	Cross-sectional	46%	30%	20%	69%
	Retrospective	39%	60%	80%	8%
	Longitudinal	25%	30%	20%	23%
Institution type	No specific institution	54%	10%	80%	77%
	Urban school	18%	50%	-	-
	Predominantly White Institution	14%	10%	-	23%
	Special school	11%	30%	-	-
	Community college	4%	-	20%	-
Subject	As required	29%	80%	-	-
	Not specified	29%	-	-	62%
	Misc. (1 study each)	29%	-	100%	23%
	Education	14%	-	-	31%
	Mathematics	11%	20%	20%	-
	Biology	7%	-	20%	8%
	Psychology	7%	-	20%	8%
Cultural aspect	Adaptation strategies	32%	30%	100%	8%
	Cultural awareness	25%	40%	20%	15%
	Difficulties	18%	-	20%	31%
	Criticism of lack	11%	20%	-	8%
	Value perspective	4%	-	-	8%

The sixth element of the conceptual framework of resilience involves the environment:

- *Institution types:* Institution types are relevant to nearly half of the sample studies. 46% of the studies refer to a specific institution type. Urban schools (18%) are addressed most often (see Table 14), followed by Predominantly White Institutions (14%), special schools (11%), and community colleges (4%). The comparison by education levels shows that studies relevant to both education levels and to higher education mostly do not refer to specific institutions, except in the cases of Predominantly White Institutions and community colleges. Half of the studies at the high school level discussed urban schools.
- *Subjects:* All in all, subjects play a minor role in the sample studies (see Table 14). More than half of the studies (58%) do not discuss specific subjects, because they are not specified by the authors (29%) or – as it is the case for most high school studies – the subjects required at the education level are assumed (29%). When subjects are discussed, it is most often the case for education (14%), followed by Mathematics (11%), Biology (7%), Psychology (7%) as well as 21 other subjects which have each been mentioned once only in the sample. The comparison by education levels illustrates that subjects are

most often specified in studies relevant to higher education and to both high school and higher education.

The synthesis reveals that subjects are not discussed in relation to the academic success of students in all but two of the sample studies. The only two examples are provided for mathematics, which has been described as a potential hindrance for students in their educational pathways (Hersi, 2011; Lessard et al., 2014). Moreover, the author discussed the aspect of ‘faculty cultures’ [Fachkulturen] and their influence on the students’ outcomes (Huber, 1991; Lojewski, 2011; Multrus, 2004). It is proposed that various subjects, particularly in higher education, might provide specific environments that can either foster or prevent resilience factors and/or processes of students. Regarding the importance of social interactions for academic resilience, for instance, the degree to which certain subjects foster social connections between students might be interesting to consider. Examples for subjects doing so are mathematics or engineering, in which students often have to work in groups to solve problems together. All in all, it seems unfortunate that the impact of different subjects on resilience and academic success is not considered to a higher extent in the sample studies.

The seventh element of the conceptual framework of resilience features culture. The data show that most of the sample studies (71%) examine the role of cultural aspects regarding the academic success of high school and higher education students. Most publications (32%) discuss students’ adaptation strategies in education, i.e. their ability to adjust to new cultural environments and retaining and using the strengths of their ‘home cultures’ in the process (see Table 14). The studies also address the necessity for increasing cultural awareness in educational institutions (25%) as well as difficulties arising for students due to their cultural backgrounds (18%) and the criticism voiced by various authors that a cultural perspective is not considered often enough in the research on academic resilience (11%). In addition, one study in higher education (4%) focuses on the value placed on education due to the students’ cultural background and the influences of this on their academic success. The comparison by education levels indicates a high importance of adaptation strategies for students in transition between high school and higher education. It is also shown that students experience most culture-related difficulties at the higher education level, and demand for cultural awareness is expressed to be most prevalent in high schools. The synthesis further underlines the connection between culture and other elements of the conceptual framework of resilience, notably risk preconditions, positive outcomes, and the students’ social environments. It is shown in the sample studies, for instance, that the risk group of immigration students can be affected by difficulties caused by the transition to a new cultural

environment (Casanova, 2012; Rana et al., 2011; Séror et al., 2005). Moreover, the definitions of positive outcomes might vary depending on the cultural context (Campa, 2013) as well as the support provided by members of the students' social environments, particularly regarding family support (Morales, 2008a).

7.3 Limitations

While the author undertook great efforts to design a review process that adheres to the rigorous quality standards of the systematic review method, some shortcomings could not be prevented. In this chapter, the main limitations of this publication will be discussed. First, the author was working alone, which can be considered one of the main limitations when carrying out a systematic review in a doctoral thesis. The methodological literature on systematic reviewing recommends working in teams (Dundar & Fleeman, 2014; Harden & Gough, 2012; Oliver et al., 2012). Some argue this can enhance the reliability of different review steps, i.e. "the degree of consistency with which instances are assigned to the same category by different observers or by the same observer on different occasions" (Hammersley, 1992, p. 67). One of the main concerns is identified regarding the coding steps, as they are carried out at the selecting stage, for the map, the quality appraisal, and the synthesis. It is not possible to check for inter-coder-reliability, for instance, when working alone. The author aims to diminish this limitation by making the review process as transparent as possible. As Silverman (2013) claims, "it is incumbent on the scientific investigator to document his or her procedures and to demonstrate that categories have been used consistently" (part 3, chapter 15, subchapter 15.4, box 1). Every step of the review is described in detail both in the text as well as with the support of figures and tables throughout this publication and in the appendices. The author is confident that the measures taken to enhance reliability suffice to ensure the trust of the reader in the analyses and results presented.

The second limitation lies in the review's scale, which is relatively small, because the search for relevant publications was carried out in one database only. Searching was limited to the ERIC database in the systematic review at hand. The employed search strategy can thus not be considered comprehensive or exhaustive. Instead, as described in Subchapter 3.2, the author opted for a 'reasonable' search strategy, which entails the collection of a sufficient number of relevant publications, with a sufficient number of concepts relevant to answering the review question, while paying attention to the resources available in the process (Brunton et al., 2012; Dundar & Fleeman, 2014). Similar to the first limitation described above, the

choice of reducing the scale of the review is connected to the restraints of a doctoral thesis. Gough et al. (2012a) state, for instance, that “resource constraints” (section 4, para. 5) are a major challenge for systematic reviewers. They claim that “reviews are major pieces of research and require time and other resources” (section 4, para. 5) to a large extent. A more extensive search strategy, for example, spanning different bibliographical databases, could have been conceivable for the topic of the review at hand, but given the time available for completing the thesis, this would likely have had negative consequences on the subsequent review and synthesis steps. In addition, aiming to provide current results, it was important to achieve a reasonable timeframe between data collection, data analysis, and publication of the thesis. All in all, it is argued here that a reduced scale can be feasible when carrying out a systematic review as an individual researcher, without the support of a team. As Gough and colleagues (2012a) claim, “the resources available will impact on the type of review that can be undertaken” (section 4, para. 5). The extent of work must be kept manageable to undertake a manageable review project while still ensuring the best outcomes.

The third limitation to be discussed in this subchapter is the strong emphasis on one cultural background. The findings of this systematic review cannot be generalized across cultures. As has been shown above (see Subchapter 4.1), publications from Anglo-Saxon countries mark the majority of the studies used for mapping, quality appraisal, and synthesis. In fact, 69% of these studies were published in the United States, 8% each in Australia and Canada, and 5% in the United Kingdom. Various scholars have criticized that cultural aspects are often neglected in resilience research and that the cultural backgrounds of researches often provide the only lens through which results are interpreted (O’Dougherty Wright et al., 2013; Ungar & Liebenberg, 2011). The latter has been summarized as Western bias (Ungar, 2008). Consequently, it is not recommended to transfer and generalize the results of this publications to other cultural contexts without considering the limitations in doing so first. In the case of this systematic review, for instance, the author proposes that the results might be ‘translatable’ to the German high school and higher education system. The cultural divide between the United States, Australia, Canada, and the United Kingdom does not seem to be as striking as it might be the case for other comparisons. Moreover, it might be possible to ‘translate’ specific aspects to the situation in Germany. For instance, the composition of minority student groups in the U.S. might differ from that in Germany, but the issue remains similar in that minority students are likely to be more at risk in their educational pathways than other students. As a result, it is conceivable that similar resilience processes can be of interest for both cultural contexts.

7.4 Contributions and Future Research

The author hopes to have provided interesting and useful contributions to the research field in this publication, and – considering the boundaries of a doctoral thesis in terms of time and other resources (see Subchapter 7.3 above) – to have added new insights to the discussion of the connection between resilience and academic success in high school and higher education. Contributions in three areas can be reported: theoretical, practical, and methodological.

- *Theoretical contributions:* The publication provides a concise and compact conceptual framework of resilience and shows how the elements of this framework are connected to the academic success of high school and higher education students in empirical research studies. Focusing on high school and higher education can be considered in response to the ongoing claims in the literature for more resilience research on students at these education levels (Dole, 2014; Martin & Marsh, 2006; Martin & Marsh, 2009). In general, far less academic work is concerned with the study of resilience processes at later life stages (Bonanno, 2004; Bonanno et al., 2007). The research tradition and the majority of current work on resilience apply to the psychological resilience of children. This publication contributes to the knowledge available on the lives of adolescents and young adults as well as their academic resilience in the domain of education.
- *Methodological contributions:* The publication provides methodological insights concerning two aspects: For one, the author underlines the value of the systematic review method for the investigation of resilience research in high school and higher education. Here, he carried out a synthesis of qualitative research. Compared to quantitative data, which is often synthesized in statistical meta-analyses (Blundell, 2014; Thomas et al., 2012), the synthesis of qualitative data is less common in the literature, but it is still applied in many successful examples (Attree & Milton, 2006; Sutcliffe, 2010; Thomas et al., 2003). Second, the publication yields methodological contributions regarding the use of online databases for systematic reviewing, for instance, in relation to the usefulness of controlled vocabulary at the selecting stage (see Subchapter 3.3). It was shown at this stage that descriptors and standardized tags can be very useful for choosing appropriate studies for further analyses. This is particularly true for search queries in PDF documents. Using the controlled vocabulary in the ERIC database, however, yielded mixed outcomes: While the thesaurus of publication keywords in ERIC was highly useful at several points in the systematic review, for example, when applying the inclusion criteria for the domain of education (Criterion 4) and the outcome of academic

success (Criterion 5), it was also demonstrated that we cannot rely on this feature for other inclusion criteria. For example, when applying Criterion 1, the controlled vocabulary in ERIC that is provided to identify publications related to the resilience concept is not reliable enough to determine the actual relevance of a publication, i.e. whether resilience is used as a theoretical framework as required for the systematic review at hand. In summary, despite the convenience externally provided descriptors offer concerning various steps in the review process, systematic reviewers are advised to proceed with caution. Controlled vocabulary and standardization are helpful to some degree only. They can be a good start, but they cannot replace the in-depth analysis of publications in most cases.

- *Practical contributions:* The publication offers contributions in terms of how practitioners in high schools and higher education institutions can use insights on the connection between resilience and academic success in their day-to-day practice. It is one of the main objectives to transfer the knowledge gathered in this systematic review and synthesis to practice. As a practitioner in the field of strategic planning in higher education, the author is highly interested to learn about opportunities to improve the academic success of students, in particular regarding how we can support student groups at risk in terms of their representation and/or performance in the education system. Consequently, five recommendations for practitioners are presented at the end of this doctoral thesis (see Subchapter 7.5).

Along with these contributions, the publication aims to enhance the scholarly discussion on academic resilience and support future research efforts in the field. The main opportunities for future research endeavors are presented next.

This publication offers various starting points for future research. At the searching stage, it would be possible to choose studies relevant to other education levels than high school and higher education for further steps in the systematic review (see Section 3.2.3). For instance, the analysis of studies exploring academic resilience in elementary education or in middle school could be of interest. Second, at the selecting stage, it could be an option to change the inclusion criteria, respectively, to stop earlier in the application of the criteria, to examine the outcomes for other criteria than Criterion 5. It could be possible, for example, to include other groups of individuals in the analysis (Criterion 3) like pre-service teachers or faculty members. In addition, one could examine different outcome domains (Criterion 4), like the mental or physical health of students, or different forms of positive outcomes (Criterion 5),

like the students' adjustment to new educational environments. Last, in terms of synthesizing, future research could focus on different or a combination of the three study types identified at the mapping stage (see Subchapter 4.2). Type 1 publications could be analyzed with quantitative methods of meta-analysis and Type 3 studies might provide important insights about interventions in high schools and higher education institutions in a new synthesis, for instance. Moreover, concerning ideas for future syntheses, one could go into more detail for specific elements of the conceptual framework of resilience. It would be possible to base the synthesis on one element only, for example, the students' risk preconditions (see Subchapter 6.1) or relevant cultural aspects for their academic success (see Subchapter 6.7).

The author set out to gain a better understanding of the connection between resilience and academic success in high schools, higher education institutions, and at the transition between these two education levels, in particular concerning at-risk students for whom the odds of succeeding are often constricted. From the start of the research process on, it was fascinating to work with a concept that promotes a positive view on the capabilities of students, thoroughly detached from deficit views that can often be found in discussions about academic success. The author is convinced that there lies great potential in focusing on the students' strengths instead of barriers and difficulties in their educational pathways. The resilience framework allows us to adapt a suitable frame of mind to do so. From a methodological perspective, using a systematic review and a framework synthesis to collect and analyze information enables a good overview of what is possible in the research field and facilitates future research projects. All things considered, the practical value of the publication at hand should be emphasized. The author's choice of framework and method is rooted in a genuine interest about the mechanisms of academic success and usability of the results in the context of educational pathways at advanced education levels. Resilience research in education is not only applicable for the theoretical discussion of academic success but offers ample opportunity for application in practical settings.

7.5 Recommendations for Practitioners

The synthesis results demonstrate that it is common in studies exploring the connection between resilience and academic success to provide recommendations and implications for stakeholders in the field (see Section 6.3.4). The publication at hand follows the examples from the literature. Five recommendations for practitioners in high schools and higher

education institutions are provided. They derive from the results gathered in the framework synthesis of the elements of the conceptual framework of resilience.

(1) Fostering social connections

Educational institutions should aim to facilitate and even foster the social connections of students. The synthesis findings stress that various social environments can have a high positive impact on students' academic success (see sections 6.3.2 and 6.3.3). They can be crucial protective resources to overcome risks and adversities. Next, two specific courses of actions for practitioners in high schools and higher education institutions are outlined:

- *Providing opportunities:* For one, practitioners should pay attention to opportunities for students to form social connections. It seems advisable to stress early on, when students start their first high school year or higher education semester, that constructive social contacts with peers are valuable resources to have in education because they can be important regarding academic success. Opportunities for the students to work together in groups should, for instance, be promoted by teachers and faculty.
- *Sharing techniques between faculty cultures:* Second, practitioners particularly in higher education should be aware of this issue, because different faculty cultures commonly provide different opportunities for students to form social connections (see Section 6.6.2). In subjects like engineering or mathematics, it is commonly required to a larger extent to work together in study groups and interact with fellow students. Other subjects, conversely, do not foster social interactions the same way. Instead, it is the responsibility of the students there to build social contacts which can be difficult in some cases, for instance, for introverted individuals. It is thus recommendable to learn from faculty cultures in which cooperative problem solving in groups is encouraged, making social connections less coincidental or even less 'voluntary' for students.

Social and institutional environments in high school and higher education are highly important for students, considering the time they spend in the education system, in particular when they opt to graduate from university. Supportive social connections formed during this time might accompany students for their whole lives in academia and beyond. Nonetheless, while it is possible to foster social processes in institutions, there are limits to such approaches, for example, concerning the possibilities to influence social connections outside the domain of education like the family or the community, which the synthesis has shown to have a high impact on academic success. Moreover, it is worthwhile to consider that some

social interactions might be non-supportive or even contra-productive, which has also been outlined in the synthesis results of this publication.

(2) Getting to know the students' backgrounds

An examination of the students' backgrounds might be vital for understanding the effects of resilience processes on academic success in high schools and higher education institutions. Judging from the synthesis results, it seems crucial for practitioners to know about the risk preconditions of students, i.e. which subset of students is at risk for academic failure and why. Precise information about at-risk statuses and the risk factors students might be affected by can be central for considerations about measures to deal with risk, for instance, when developing suitable interventions (see Section 6.3.4). This includes the students' cultural backgrounds and their potential effects on academic resilience and success (see Subchapter 6.7). There are four specific aspects to consider:

- *Using statistical data:* It will be possible to infer the risk preconditions of students from existing statistics about the academic progress of specific student groups (Section 6.1.1). For instance, when students have a minority background, practitioners can consult statistical data to learn about the likelihood of this group for being at risk of academic failure in high school and higher education. This could enable them to consider and implement supportive measures early on. Nonetheless, as has been demonstrated in the synthesis, it is crucial to be aware of the dangers of applying stereotypes to specific student groups (see Subchapter 6.4).
- *Taking into account prior experiences:* When considering the students' backgrounds, it is recommendable to be aware that students are not 'clean slates' when entering high schools or higher education institutions. Instead, they carry prior experiences of their personal and academic lives. The influence of these experiences should be considered by practitioners in the field (see Section 6.5.3).
- *Supporting students without risk preconditions:* Practitioners should be prepared to address the needs of students who are not classified to be at risk (see Section 6.1.2). Because of the prevalence of providing supportive measures to at-risk students, it is possible to neglect 'normal' student groups, a fact that has been described as positive stereotyping (Peterson et al., 2009). Resilience research demonstrates, however, that adverse situations are likely to be relevant to every student at advanced education levels. At the same time, it is advisable to be aware that severe adversities are more difficult to

overcome by at-risk students, since they often face more precarious circumstances often in multiple domains of their lives. The concept of academic buoyancy might thus be useful for less severe adversities and students without risk preconditions (see Section 6.1.3).

- *Acknowledging counterintuitive interpretations of success:* Enhancing their knowledge about the students' backgrounds might also support practitioners in conceiving success in a more diverse way (see sections 6.2.1 and 6.2.3). For instance, finishing a study program cannot automatically be equated with the right choice of degree in every case. In fact, it is conceivable that academic success results from the pride of some students. They might be too proud to drop out despite the program they are attending not matching their academic or professional interests. In addition, financial assistance programs might impede students from switching programs. On the contrary, students withdrawing from high school or higher education does not always point to a lack of academic resilience (Bartelt, 1994; Campa, 2013; Kaplan, 2013). As a matter of fact, resilience processes might play a role in supporting students in their decision to drop out and begin another endeavor that might be more aligned with their interests. Nonetheless, in most education systems, considerations of this kind might be controversial. It is a common aim of education institutions to lead as many students to graduation as possible.

All in all, the synthesis results indicate that it seems worthwhile for practitioners to consider the students' social, academic, and cultural backgrounds. This can often be a difficult endeavor, but one that is well worth the invested efforts.

(3) Learning from students

Learning from students who overcame risks and adversities can be considered a viable approach to enhance the chances of success of at-risk students in high schools and higher education institutions. It was shown in the synthesis that we can benefit from understanding the resilience processes and strategies applied by high-achieving students, in particular compared to the circumstances and actions observable for unsuccessful students (see Section 6.2.2). Two ways to do so are listed next:

- *Sharing the know-how of successful students:* For one, practitioners could seek opportunities to learn about resilience processes and strategies applied by successful students and to make them accessible to struggling students.

- *Pairing successful with unsuccessful students:* Second, peer-to-peer learning could be fostered where successful students are paired with less successful students in study groups. Compared to teachers providing the information, this approach can have the advantage of having a low-threshold quality which might facilitate the students' acceptance of the measure. Bringing students with different levels of knowledge and skill-sets together in learning contexts is likely to improve the progress of at-risk students, and it can be expected a welcome addition to the learning processes of successful students in terms of their ability to 'teach' their peers and, thereby, assuring their knowledge and expanding their social competences. In general, peer-to-peer learning is expected to enhance the motivation of both student groups. Motivation was shown to be the most important personality characteristic of successful students in the synthesis (see Section 6.3.1).

In summary, it might be possible to use the heterogeneity of students in high school and higher education in a positive and productive way. Besides the usefulness of peer-to-peer learning in terms of the students' learning outcomes, it can also be expected to be favorable regarding their social connections in education.

(4) Focusing on transitions and life turning points

The support of students' transitions as well as their opportunities to experience life turning points are crucial aspects to consider for practitioners in high schools and higher education institutions. Both aspects were shown to be highly relevant to the discussion of academic resilience and success in the synthesis (see Section 6.5.2). It seems of particular importance to support students in overcoming difficulties present at transition points between two education levels, for instance, in the transition from middle school to high school or from high school to higher education. Moreover, practitioners should be aware of the ability of students affected by risks and adversities to improve their circumstances at specific times in their lives, often with the support of key individuals. Two points are to be underlined:

- *Early support:* It seems vital to support students early in transitions. Early support enables practitioners to reach at-risk students before more and more risk factors and adversities accumulate at critical transitional points in the students' educational pathways. The concept of cumulative risk has been shown to have detrimental effects for transition periods (see Section 6.1.1). For both high school and higher education, it could thus be recommendable to focus on supportive measures provided before the first

school year or semester begins, like specific tutorials or preparatory courses. For higher education, this includes student counseling, courses provided by student advisory services, and cooperation with high schools.

- *Enhancing the likelihood for life turning points:* The second point to emphasize is linked to life turning points. Practitioners in high schools and higher education institutions should aim to provide opportunities for students to reach life turning points, for instance, by providing key contacts with mentors, counselors, and other supportive personnel. It was discussed in the synthesis that mentors in the domain of education, who provide regular support to students over longer stretches of time, can have a highly positive influence on academic success (see Section 6.3.2). In addition, it seems advisable to identify timeframes in which life turning points commonly occur, by introducing measures to observe and analyze the educational pathways of students over time. Monitoring student life-cycles provides similar advantages as described for the longitudinal perspective of resilience studies in the synthesis (see Section 6.5.1).

The insight that supportive individuals are important for successful transitions from one education level to another is central for practitioners in education. For both high schools and higher education institutions, it appears central to focus on the question of how to enhance the students' transitions. The transition to higher education can be considered of particular relevance both concerning educational pathways and life in general.

(5) Teaching resilience

The last recommendation proposed in this subchapter is that the resilience framework should be made increasingly known and accessible in high schools and higher education institutions. Know-how about resilience provides advantages to educational institutions. When its members – both students and personnel – are aware of the main elements of the concept like risk factors and protective factors as well as their potential relations to academic success, an enhanced ability to tackle the growing challenges that at-risk student face and bring to the classrooms and lecture halls can be expected. Three aspects about teaching resilience should be stressed:

- *Integrating resilience in the curriculum:* First, high schools and higher education institutions should strive to teach students about the resilience concept. This knowledge might provide the students with a useful toolset they can use inside as well as outside of

the academic world. It can be of particular importance in subjects like mathematics, where resilience processes are shown to be of great supportive value (see Section 6.6.2).

- *Using ‘valuable shock effects’*: Second, an indirect measure to teach students about resilience processes might be achievable when practitioners introduce the phenomenon of ‘valuable shock effects’ to them. At the higher education level, for example, it seems conceivable that some degree of ‘university shock’ might be appropriate for students. Challenges posed at the entry-level can have a motivating effect on them. Therefore, when considering the positive impact challenging situation in academia might have in the context of the resilience concept, it seems worthwhile to examine whether it could be a good strategy to discuss such favorable influences or even introduce moderate adversities in the students’ educational pathways. Measures deriving from this should focus on improvements over time and other positive aspects.
- *Informing teachers, faculty, and staff*: Third, it seems vital not to focus on students only. The resilience concept can be highly suitable to help teachers in high schools and faculty in higher education institutions to better understand the needs of their students. Special training for teachers, faculty, and staff could be provided.

In conclusion, it appears advisable to enhance communication about the resilience concept in high schools and higher education institutions. However, practitioners should be aware of the obstacle that certain groups of individuals are highly difficult to reach with teaching measures, trainings, and counseling. In this respect, finding the right time for approaching students and personnel might be crucial to success.

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Appendices

Appendix 1: Journals and Research Fields at the Mapping Stage

Table 15. Journals, number of studies per journal, and SJR research fields at the mapping stage (N = 75 studies)

#	Journal	Studies	in SJR ²⁰	SJR research field/s
1	Alberta Journal of Educational Research	1	yes	Education
2	American Educational Research Journal	1	yes	Education
3	Anatomical Sciences Education	1	yes	Anatomy; Embryology; Histology
4	Anthropology and Education Quarterly	1	yes	Anthropology; Education
5	Association of Mexican American Educators Journal	1	no	-
6	British Educational Research Journal	2	yes	Education
7	British Journal of Educational Psychology	2	yes	Developmental and Educational Psychology; Education
8	British Journal of Guidance and Counselling	1	yes	Applied Psychology
9	Canadian Journal of Education	1	yes	Education
10	Child Welfare	1	yes	Life-span and Life-course Studies; Social Sciences (miscellaneous); Social Work
11	Community College Journal of Research and Practice	1	yes	Education
12	Contemporary School Psychology	1	no	-
13	Cultural Studies of Science Education	1	yes	Cultural Studies
14	Educational Psychology	1	yes	Developmental and Educational Psychology; Experimental and Cognitive Psychology; Education
15	Educational Research and Reviews	1	yes	Education
16	Gifted Child Quarterly	1	yes	Developmental and Educational Psychology; Education

²⁰ SCImago Journal & Country Rank (<http://www.scimagojr.com>)

Appendices

17	Globalisation, Societies and Education	1	yes	Education
18	High School Journal	1	no	-
19	Higher Education Research and Development	1	yes	Education
20	Hispanic Journal of Behavioral Sciences	4	yes	Language and Linguistics; Social Psychology; Anthropology; Cultural Studies
21	Innovative Higher Education	1	yes	Education
22	Intercultural Education	1	yes	Cultural Studies; Education
23	International Journal of Higher Education	1	no	-
24	Journal for Research in Mathematics Education	1	yes	Mathematics (miscellaneous); Education
25	Journal of American College Health	1	yes	Public Health, Environmental and Occupational Health
26	Journal of American Indian Education	1	no	-
27	Journal of Black Psychology	1	yes	Applied Psychology; Anthropology
28	Journal of College Student Development	1	yes	Education
29	Journal of College Teaching and Learning	1	no	-
30	Journal of Counseling and Development	1	yes	Applied Psychology
31	Journal of Early Adolescence	1	yes	Developmental and Educational Psychology; Life-span and Life-course Studies; Social Sciences (miscellaneous); Sociology and Political Sciences
32	Journal of Education for Students Placed at Risk	1	yes	Education
33	Journal of Educational Research	1	yes	Education
34	Journal of Ethnographic and Qualitative Research	2	no	-
35	Journal of Hispanic Higher Education	3	yes	Education
36	Journal of Latinos and Education	2	yes	Cultural Studies; Education
37	Journal of Learning Disabilities	1	yes	Health Professions (miscellaneous); Education; Health (social science)
38	Journal of Mixed Methods Research	1	yes	Statistics, Probability and Uncertainty; Education; Social Sciences (miscellaneous)
39	Journal of Multicultural Counseling and Development	1	yes	Applied Psychology; Cultural Studies
40	Journal of Open, Flexible and Distance Learning	1	no	-
41	Journal of School Psychology	1	yes	Developmental and Educational Psychology; Education
42	Journal of Special Education	1	yes	Rehabilitation; Education
43	Journal of Student Affairs Research and Practice	1	yes	Education
44	Journal of Urban Learning, Teaching, and Research	1	no	-

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45	NASPA Journal About Women in Higher Education	1	yes	Education; Gender Studies
46	Psychology in the Schools	1	yes	Developmental and Educational Psychology; Education
47	Reclaiming Children and Youth	1	no	-
48	Rehabilitation Counseling Bulletin	1	yes	Public Health, Environmental and Occupational Health; Rehabilitation; Applied Psychology
49	Research in Higher Education Journal	1	no	-
50	Research in Post-Compulsory Education	1	yes	Education
51	Review of Education, Pedagogy, and Cultural Studies	1	yes	Cultural Studies; Education
52	Roeper Review	2	yes	Developmental and Educational Psychology; Education
53	School Psychology International	1	yes	Psychiatry and Mental Health; Developmental and Educational Psychology; Education
54	School Science and Mathematics	1	no	-
55	Sociology of Education	1	yes	Education; Sociology and Political Science
56	Teachers College Record	2	yes	Education
57	TESL Canada Journal	1	no	-
58	The Journal of Negro Education	2	yes	Anthropology; Education
59	The Urban Review	2	yes	Urban Studies
60	Urban Education	1	yes	Education; Urban Studies
61	Youth and Society	2	yes	Social Sciences (miscellaneous); Sociology and Political Science

Appendix 2: Studies by Type at the Mapping Stage

Table 16. Type 1 studies: Resilience as an independent variable (N = 13 studies)

#	Study	Data	Edu. level	Subtype
1	Allan et al., 2014	Quantitative	HE	Type 1.1: Univariate
2	Elizondo-Omaña et al., 2010	Quantitative	HE	Type 1.1: Univariate
3	Sarwar et al., 2010	Quantitative	HS	Type 1.1: Univariate
4	Thornton et al., 2006	Quantitative	HS	Type 1.1: Univariate
5	Yokus, 2015	Quantitative	HE	Type 1.1: Univariate
6	Hartley, 2011	Quantitative	HE	Type 1.2: Multivariate (unordered)
7	Hartley, 2013	Quantitative	HE	Type 1.2: Multivariate (unordered)
8	Martin, 2013	Quantitative	HS	Type 1.2: Multivariate (unordered)
9	Reynolds & Weigand, 2010	Quantitative	HE	Type 1.2: Multivariate (unordered)
10	Stack-Cutler et al., 2015	Quantitative	HE	Type 1.2: Multivariate (unordered)
11	Collie et al., 2015	Quantitative	HS	Type 1.3: Multivariate (ordered)
12	Johnson et al., 2015	Mixed	HE	Type 1.3: Multivariate (ordered)
13	Martin & Marsh, 2006	Quantitative	HS	Type 1.3: Multivariate (ordered)

Table 17. Type 2 studies: Resilience as a dependent variable (N = 55 studies)

#	Study	Data	Edu. level	Subtype
1	Alexakos et al., 2011	Qualitative	HS	Type 2.1: Hypothesis-driven
2	Campa, 2010	Qualitative	HE	Type 2.1: Hypothesis-driven
3	Cavazos et al., 2010	Qualitative	HE	Type 2.1: Hypothesis-driven
4	Cunningham & Swanson, 2010	Quantitative	HS	Type 2.1: Hypothesis-driven
5	Francois et al., 2012	Quantitative	HS	Type 2.1: Hypothesis-driven
6	Fujimoto, 2013	Qualitative	HE	Type 2.1: Hypothesis-driven
7	Hernandez-Martinez & Williams, 2013	Qualitative	HS+HE	Type 2.1: Hypothesis-driven
8	Hyman et al., 2011	Quantitative	HS	Type 2.1: Hypothesis-driven
9	Langenkamp, 2010	Quantitative	HS	Type 2.1: Hypothesis-driven
10	Lee et al., 2015	Quantitative	HS+HE	Type 2.1: Hypothesis-driven
11	Lumby, 2012	Qualitative	HS+HE	Type 2.1: Hypothesis-driven
12	Marsh et al., 2012	Qualitative	HS	Type 2.1: Hypothesis-driven
13	Martin & Marsh, 2008	Quantitative	HS	Type 2.1: Hypothesis-driven
14	Martin et al., 2010	Quantitative	HS	Type 2.1: Hypothesis-driven
15	McGee, 2013	Qualitative	HS	Type 2.1: Hypothesis-driven
16	McGee, 2015	Qualitative	HE	Type 2.1: Hypothesis-driven
17	McGee & Martin, 2011	Qualitative	HE	Type 2.1: Hypothesis-driven
18	Merdinger et al., 2005	Quantitative	HE	Type 2.1: Hypothesis-driven
19	Morales, 2008b	Qualitative	HE	Type 2.1: Hypothesis-driven
20	Perez et al., 2009	Quantitative	HS+HE	Type 2.1: Hypothesis-driven
21	Plunkett et al., 2008	Quantitative	HS	Type 2.1: Hypothesis-driven
22	Samel et al., 2011	Quantitative	HS	Type 2.1: Hypothesis-driven

23	Sinicrope et al., 2015	Quantitative	HE	Type 2.1: Hypothesis-driven
24	Sosa & Gomez, 2012	Qualitative	HS	Type 2.1: Hypothesis-driven
25	Strayhorn, 2011	Qualitative	HE	Type 2.1: Hypothesis-driven
26	Waterman & Lindley, 2013	Qualitative	HE	Type 2.1: Hypothesis-driven
27	Willems, 2012	Qualitative	HE	Type 2.1: Hypothesis-driven
28	Garza et al., 2014	Mixed	HE	Type 2.1 + Type 2.2
29	Ben-Tsur, 2009	Qualitative	HE	Type 2.2: Explorative
30	Cabrera & Padilla, 2004	Qualitative	HS+HE	Type 2.2: Explorative
31	Campa, 2013	Qualitative	HS+HE	Type 2.2: Explorative
32	Carter Andrews, 2012	Qualitative	HS	Type 2.2: Explorative
33	Casanova, 2012	Qualitative	HS+HE	Type 2.2: Explorative
34	Cross & Atinde, 2015	Qualitative	HE	Type 2.2: Explorative
35	Dole, 2014	Qualitative	HS+HE	Type 2.2: Explorative
36	Freeman et al., 2004	Qualitative	HS	Type 2.2: Explorative
37	Gayles, 2005	Qualitative	HS	Type 2.2: Explorative
38	Gilford & Reynolds, 2011	Qualitative	HE	Type 2.2: Explorative
39	Graff et al., 2013	Qualitative	HE	Type 2.2: Explorative
40	Hersi, 2011	Qualitative	HS	Type 2.2: Explorative
41	Lessard et al., 2014	Qualitative	HS	Type 2.2: Explorative
42	Mallon, 2005	Qualitative	HE	Type 2.2: Explorative
43	Morales, 2008a	Qualitative	HE	Type 2.2: Explorative
44	Morales, 2010	Qualitative	HE	Type 2.2: Explorative
45	Morales, 2014	Qualitative	HE	Type 2.2: Explorative
46	Morales et al., 2011	Qualitative	HE	Type 2.2: Explorative
47	Orr & Goodman, 2010	Qualitative	HE	Type 2.2: Explorative
48	Peterson et al., 2009	Mixed	HS	Type 2.2: Explorative
49	Rana et al., 2011	Qualitative	HS+HE	Type 2.2: Explorative
50	Reis et al., 2004	Qualitative	HS	Type 2.2: Explorative
51	Richardson et al., 2015	Qualitative	HE	Type 2.2: Explorative
52	Séror et al., 2005	Qualitative	HE	Type 2.2: Explorative
53	Sosa, 2012	Qualitative	HS	Type 2.2: Explorative
54	Williams & Bryan, 2013	Qualitative	HS	Type 2.2: Explorative
55	Williams & Portman, 2014	Qualitative	HS	Type 2.2: Explorative

Table 18. Type 3 studies: Interventions (N = 7 studies)

#	Study	Data	Edu. level	Subtype
1	Bethea & Robsinson, 2007	Qualitative	HS	Program at high school level
2	Knaggs et al., 2015	Mixed	HS+HE	Program at high school level
3	Llamas et al., 2014	Mixed	HS	Program at high school level
4	Shepard et al., 2012	Qualitative	HS	Program at high school level
5	Wendt et al., 2015	Quantitative	HS	Program at high school level
6	Rawana et al., 2015	Mixed	HE	Program at higher education level
7	Borrero et al., 2013	Qualitative	HS	Special high school

Appendix 3: Overview of the Synthesized Studies

Table 19. Objectives, methodologies, sample characteristics, and quality scores of the synthesized studies (N = 28 studies)
(Table format adapted from Brunton et al., 2006)

#	Study	Objectives and methodologies	Sample characteristics	Quality scores
1	Ben-Tsur, 2009	<p>Objective: “This paper explores the impact of violent conflict on undergraduate students.” It “identifies specific difficulties that students experience during ongoing conflict.” (p. 457)</p> <p>Methodology: The study is “based on a case study of students in Israel” (p. 457). “Data was gathered through informal, lightly structured interviews” (p. 461).</p>	<ul style="list-style-type: none"> ▪ Country: Israel ▪ Education level: HE ▪ Participant number: 32 ▪ Sex: 14 m + 18 f ▪ Age: 21-29 ▪ Ethnicity: Not stated 	<ol style="list-style-type: none"> 1. Sampling Frame: 0.5 2. Sampling: 1 3. Number participants: 1 4. Age participants: 1 5. Sex participants: 1 6. Appropriate data collection: 1 7. Valid data collection: 0 8. Reliable data collection: 0 9. Data analysis description: 0 10. Data analysis quality: 0 <p>Sum: 5.5</p>
2	Cabrera & Padilla, 2004	<p>Objective: “The academic resilience of two individuals of Mexican heritage who graduated from Stanford University is described.” The study discusses “the challenges the two respondents faced in school beginning in kindergarten and continuing through their graduation from Stanford.” (p. 152)</p> <p>Methodology: In-depth interviews were carried out retrospectively.</p>	<ul style="list-style-type: none"> ▪ Country: United States ▪ Education level: HS + HE ▪ Participant number: 2 ▪ Sex: 1 m + 1 f ▪ Age: 21 + 22 ▪ Ethnicity: Mexican-American 	<ol style="list-style-type: none"> 1. Sampling Frame: 0.5 2. Sampling: 1 3. Number participants: 1 4. Age participants: 1 5. Sex participants: 1 6. Appropriate data collection: 0 7. Valid data collection: 1 8. Reliable data collection: 0.5 9. Data analysis description: 0 10. Data analysis quality: 0 <p>Sum: 6</p>

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3	Campa, 2013	<p>Objective: The study “shows how five Mexican-American community college students use their ‘pedagogies of survival’ to build resistance and navigate through the barriers of community colleges” (p. 433).</p> <p>Methodology: “Semistructured interviews were conducted to gain a deeper understanding of the participants’ perspectives.” “After the interviews were completed, classroom observations took place.” “The last data collecting technique consisted of focus groups.” (p. 437)</p>	<ul style="list-style-type: none"> ▪ Country: United States ▪ Education level: HS + HE ▪ Participant number: 5 ▪ Sex: 2 m + 3 f ▪ Age: 19-41 ▪ Ethnicity: Mexican-American 	<ol style="list-style-type: none"> 1. Sampling Frame: 0.5 2. Sampling: 1 3. Number participants: 1 4. Age participants: 1 5. Sex participants: 1 6. Appropriate data collection: 1 7. Valid data collection: 1 8. Reliable data collection: 0.5 9. Data analysis description: 0 10. Data analysis quality: 0 <p>Sum: 7</p>
4	Carter Andrews, 2012	<p>Objective: “The purpose of this study was to understand the adaptive behaviors that high-achieving Black students employed in a predominantly White high school to maintain school success and a positive racial self-definition” (p. 1).</p> <p>Methodology: “The article includes data from a yearlong qualitative investigation.” “The author analyzed interview data, participant observations, and field notes.” (p. 1)</p>	<ul style="list-style-type: none"> ▪ Country: United States ▪ Education level: HS ▪ Participant number: 9 ▪ Sex: 4 m + 5 f ▪ Age: 15-18 ▪ Ethnicity: African-American 	<ol style="list-style-type: none"> 1. Sampling Frame: 1 2. Sampling: 1 3. Number participants: 1 4. Age participants: 1 5. Sex participants: 1 6. Appropriate data collection: 1 7. Valid data collection: 1 8. Reliable data collection: 0.5 9. Data analysis description: 1 10. Data analysis quality: 0 <p>Sum: 8.5</p>
5	Casanova, 2012	<p>Objective: The author examines “the difficult pathways of success for an immigrant student who faced daily adversities due to stigmatizing labels” (p. 378).</p> <p>Methodology: “This [longitudinal] case study examines the autobiographical writing and interviews of Lupe, an Indigenous Mexican immigrant, at multiple times in her life” (p. 375).</p>	<ul style="list-style-type: none"> ▪ Country: United States ▪ Education level: HS + HE ▪ Participant number: 1 ▪ Sex: 1 f ▪ Age: Not stated ▪ Ethnicity: Mexican-American 	<ol style="list-style-type: none"> 1. Sampling Frame: 0 2. Sampling: 0 3. Number participants: 1 4. Age participants: 0 5. Sex participants: 1 6. Appropriate data collection: 1 7. Valid data collection: 1 8. Reliable data collection: 0.5 9. Data analysis description: 0 10. Data analysis quality: 0 <p>Sum: 4.5</p>

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6	Cross & Atinde, 2015	<p>Objective: “This article explores how successful undergraduate students from marginalized communities or historically disadvantaged backgrounds negotiate their performance within a university environment” (p. 308).</p> <p>Methodology: “The article is based on in-depth interviews using a life history approach.” “The interviews are rooted in the tradition of narrative inquiry.” (p. 310)</p>	<ul style="list-style-type: none"> ▪ Country: South Africa ▪ Education level: HE ▪ Participant number: 8 ▪ Sex: Not stated ▪ Age: Not stated ▪ Ethnicity: African 	<ol style="list-style-type: none"> 1. Sampling Frame: 0.5 2. Sampling: 1 3. Number participants: 1 4. Age participants: 0 5. Sex participants: 0 6. Appropriate data collection: 1 7. Valid data collection: 0 8. Reliable data collection: 0.5 9. Data analysis description: 1 10. Data analysis quality: 0 <p>Sum: 5</p>
7	Dole, 2014	<p>Objective: “The present study examined the protective factors affecting the academic success of 24 Jamaican women in a graduate cohort in educational administration” (p. 144).</p> <p>Methodology: Narrative inquiry. The students wrote “personal narratives in which they describe their cultural identities and reflect about the impact those identities had in shaping who they are as individuals” (p. 146).</p>	<ul style="list-style-type: none"> ▪ Country: Jamaica ▪ Education level: HS + HE ▪ Participant number: 24 ▪ Sex: 24 f ▪ Age: 28-58 ▪ Ethnicity: Afro-Jamaican 	<ol style="list-style-type: none"> 1. Sampling Frame: 0.5 2. Sampling: 1 3. Number participants: 1 4. Age participants: 1 5. Sex participants: 1 6. Appropriate data collection: 1 7. Valid data collection: 0 8. Reliable data collection: 0.5 9. Data analysis description: 1 10. Data analysis quality: 0.5 <p>Sum: 7.5</p>
8	Freeman et al., 2004	<p>Objective: “The purpose of the study was to examine the high school experiences of (...) adults [with learning difficulties] (...) to understand possible factors that contributed to one group staying in school and the other group leaving school early” (p. 5).</p> <p>Methodology: “Two sets of retrospective interviews” were conducted. First set: “with adults who had returned to complete high school at an adult learning center (the late successful group).” Second set: with “adults who had completed high school during adolescence.” (p. 5)</p>	<ul style="list-style-type: none"> ▪ Country: Canada ▪ Education level: HS ▪ Participant number: 16 ▪ Sex: 10 m + 6 f ▪ Age: 19-43 ▪ Ethnicity: Not stated 	<ol style="list-style-type: none"> 1. Sampling Frame: 0.5 2. Sampling: 0 3. Number participants: 1 4. Age participants: 1 5. Sex participants: 1 6. Appropriate data collection: 1 7. Valid data collection: 0 8. Reliable data collection: 1 9. Data analysis description: 1 10. Data analysis quality: 0.5 <p>Sum: 7</p>

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9	Garza et al., 2014	<p>Objective: The study examines “the relationship between resiliency, self-efficacy, and persistence of college seniors with an emphasis on first- and continued-generation Hispanic students” (p. 1).</p> <p>Methodology: “The researcher utilized a demographic questionnaire, the Connor-Davidson Resilience Scale (CD-RISC), New General Self-Efficacy Scale (NGSE), and the Proactive Attitude Scale” (p. 6). “An examination of how retention factors have supported Hispanic college seniors was explored through qualitative interviews” (p. 1).</p>	<ul style="list-style-type: none"> ▪ Country: United States ▪ Education level: HE ▪ Participant number: 8 ▪ Sex: 3 m + 5 f ▪ Age: Not stated ▪ Ethnicity: Hispanic-American 	<ol style="list-style-type: none"> 1. Sampling Frame: 1 2. Sampling: 1 3. Number participants: 1 4. Age participants: 0 5. Sex participants: 1 6. Appropriate data collection: 1 7. Valid data collection: 0 8. Reliable data collection: 0.5 9. Data analysis description: 0 10. Data analysis quality: 0 <p>Sum: 5.5</p>
10	Gayles, 2005	<p>Objective: “This article examines themes of academic resilience in the descriptions of academic achievement by three students at Benjamin High School, one of the least affluent high schools in Bayside, Florida” (p. 250).</p> <p>Methodology: “Through ethnographically informed interviews conducted during their senior year, coherent themes emerge that provide insight into these students’ resilience” (p. 250).</p>	<ul style="list-style-type: none"> ▪ Country: United States ▪ Education level: HS ▪ Participant number: 3 ▪ Sex: 3 m ▪ Age: Not stated ▪ Ethnicity: African-American 	<ol style="list-style-type: none"> 1. Sampling Frame: 0.5 2. Sampling: 1 3. Number participants: 1 4. Age participants: 0 5. Sex participants: 1 6. Appropriate data collection: 1 7. Valid data collection: 1 8. Reliable data collection: 0.5 9. Data analysis description: 1 10. Data analysis quality: 0 <p>Sum: 7</p>
11	Gilford & Reynolds, 2011	<p>Objective: The study “examined the parentification of eight Black American college females and its impact on their college experiences” (p. 55).</p> <p>Methodology: “Two 90-minute focus groups were conducted in order to gain insight about how these women overcame personal and family challenges” (p. 55). “Participants completed a demographic questionnaire” (p. 62).</p>	<ul style="list-style-type: none"> ▪ Country: United States ▪ Education level: HE ▪ Participant number: 8 ▪ Sex: 8 f ▪ Age: 21-45 ▪ Ethnicity: African-American 	<ol style="list-style-type: none"> 1. Sampling Frame: 1 2. Sampling: 1 3. Number participants: 1 4. Age participants: 1 5. Sex participants: 1 6. Appropriate data collection: 1 7. Valid data collection: 0.5 8. Reliable data collection: 1 9. Data analysis description: 1 10. Data analysis quality: 0.5 <p>Sum: 9</p>

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12	Graff et al., 2013	<p>Objective: “Five married Latina women with children and seasonal farmworker backgrounds are the focus of this study.” It aims “to understand factors contributing to their academic resilience.” (p. 334)</p> <p>Methodology: In focus group interviews, “variables connected to academic success are explored and include supportive familial networks, self-efficacy, and participants’ desires to instill the value of education in their children” (p. 334).</p>	<ul style="list-style-type: none"> ▪ Country: United States ▪ Education level: HE ▪ Participant number: 5 ▪ Sex: 5 f ▪ Age: 20-45 ▪ Ethnicity: Mexican-American and Hispanic-American 	<ol style="list-style-type: none"> 1. Sampling Frame: 1 2. Sampling: 1 3. Number participants: 1 4. Age participants: 1 5. Sex participants: 1 6. Appropriate data collection: 0 7. Valid data collection: 0.5 8. Reliable data collection: 0.5 9. Data analysis description: 1 10. Data analysis quality: 0.5 <p>Sum: 7.5</p>
13	Hersi, 2011	<p>Objective: “This article explores the complex factors, both individual and social, that contribute to the resiliency and academic achievement of six adolescent African immigrant students from Cape Verde and Ethiopia” (p. 189).</p> <p>Methodology: “The primary data sources included semi-structured interviews, field notes from participant observations, and day-long shadowing of each student during a school day” (p. 193).</p>	<ul style="list-style-type: none"> ▪ Country: United States ▪ Education level: HS ▪ Participant number: 6 ▪ Sex: 3 m + 3 f ▪ Age: 16-22 ▪ Ethnicity: African 	<ol style="list-style-type: none"> 1. Sampling Frame: 0.5 2. Sampling: 1 3. Number participants: 1 4. Age participants: 1 5. Sex participants: 1 6. Appropriate data collection: 0 7. Valid data collection: 1 8. Reliable data collection: 0.5 9. Data analysis description: 1 10. Data analysis quality: 0.5 <p>Sum: 7.5</p>
14	Lessard et al., 2014	<p>Objective: “The authors focused on high school students who were at risk of dropping out and examined why some of these students persevered and graduated while others ended up dropping out of school” (p. 103).</p> <p>Methodology: “Data were collected through semistructured, individual, face-to-face, audiotaped interviews” (p. 104).</p>	<ul style="list-style-type: none"> ▪ Country: Canada ▪ Education level: HS ▪ Participant number: 140 ▪ Sex: 68 m + 72 f ▪ Age: 19-22 ▪ Ethnicity: French-Canadian 	<ol style="list-style-type: none"> 1. Sampling Frame: 0.5 2. Sampling: 1 3. Number participants: 1 4. Age participants: 1 5. Sex participants: 1 6. Appropriate data collection: 0 7. Valid data collection: 0.5 8. Reliable data collection: 0.5 9. Data analysis description: 1 10. Data analysis quality: 0.5 <p>Sum: 7</p>

15	Mallon, 2005	<p>Objective: “This article discusses the effects of a range of risk factors applying to two groups of participants in a wider study, and seeks to identify protective factors that mediate the risk factors, thereby leading to resilience and academic success” of students “who have been looked after in Local Authority Care” in the United Kingdom.” (p. 83)</p> <p>Methodology: “The main method of inquiry used was deep unstructured interviews” (p. 88).</p>	<ul style="list-style-type: none"> ▪ Country: United Kingdom ▪ Education level: HE ▪ Participant number: 18 ▪ Sex: 7 m + 11 f ▪ Age: 26-69 ▪ Ethnicity: Not stated 	<ol style="list-style-type: none"> 1. Sampling Frame: 0.5 2. Sampling: 1 3. Number participants: 1 4. Age participants: 1 5. Sex participants: 1 6. Appropriate data collection: 1 7. Valid data collection: 1 8. Reliable data collection: 0.5 9. Data analysis description: 1 10. Data analysis quality: 0 <p>Sum: 8</p>
16	Morales, 2008a	<p>Objective: The study asks: “What significant differences, if any, exist in the academic resilience processes of high achieving low socioeconomic male and female college students of color; and as a result, what can be concluded about perspectives and processes that are unique to females” (p. 200)?</p> <p>Methodology: “Topical, semi-structured, long interviews were conducted” (p. 202).</p>	<ul style="list-style-type: none"> ▪ Country: United States ▪ Education level: HE ▪ Participant number: 50 ▪ Sex: 19 m + 31 f ▪ Age: Not stated ▪ Ethnicity: African American and Hispanic-American 	<ol style="list-style-type: none"> 1. Sampling Frame: 1 2. Sampling: 1 3. Number participants: 1 4. Age participants: 0 5. Sex participants: 1 6. Appropriate data collection: 1 7. Valid data collection: 1 8. Reliable data collection: 1 9. Data analysis description: 1 10. Data analysis quality: 1 <p>Sum: 9</p>
17	Morales, 2010	<p>Objective: The study provides “a detailed examination of how (...) protective factors mitigated the potential effects of risk factors, thus contributing to the process of academic resilience” of “50 high-achieving low-socioeconomic students of color.” (p. 164)</p> <p>Methodology: “This research study consisted solely of qualitative interviewing” (p. 166).</p>	<ul style="list-style-type: none"> ▪ Country: United States ▪ Education level: HE ▪ Participant number: 50 ▪ Sex: 19 m + 31 f ▪ Age: Not stated ▪ Ethnicity: African American and Hispanic-American 	<ol style="list-style-type: none"> 1. Sampling Frame: 1 2. Sampling: 1 3. Number participants: 1 4. Age participants: 0 5. Sex participants: 1 6. Appropriate data collection: 1 7. Valid data collection: 1 8. Reliable data collection: 1 9. Data analysis description: 1 10. Data analysis quality: 1 <p>Sum: 9</p>

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18	Morales, 2014	<p>Objective: “This article presents specific objectives and values institutions of higher learning can adopt and emphasize to increase the retention and graduation of their most statistically at-risk students” (p. 92).</p> <p>Methodology: “Topical semi-structured interviews were conducted” (p. 94). “During and after each interview supplementary notes were recorded” (p. 95).</p>	<ul style="list-style-type: none"> ▪ Country: United States ▪ Education level: HE ▪ Participant number: 50 ▪ Sex: 19 m + 31 f ▪ Age: Not stated ▪ Ethnicity: African American and Hispanic-American 	<ol style="list-style-type: none"> 1. Sampling Frame: 0.5 2. Sampling: 1 3. Number participants: 1 4. Age participants: 0 5. Sex participants: 1 6. Appropriate data collection: 1 7. Valid data collection: 1 8. Reliable data collection: 0.5 9. Data analysis description: 1 10. Data analysis quality: 1 <p>Sum: 8</p>
19	Morales et al., 2011	<p>Objective: The study “examines the psychological and sociological impacts of the proposed Development, Relief, and Education for Alien Minors (DREAM) Act and in-state tuition legislation on DREAM-eligible students” (p. 266).</p> <p>Methodology: “Data for this case study were collected using (a) open-ended surveys (...), (b) participant observation (...), (c) semistructured, individual, follow-up interviews (...), and (d) reviews of documents that established the context of the study” (p. 272).</p>	<ul style="list-style-type: none"> ▪ Country: United States ▪ Education level: HE ▪ Participant number: 15 ▪ Sex: Not stated ▪ Age: 18-22 ▪ Ethnicity: Hispanic-American 	<ol style="list-style-type: none"> 1. Sampling Frame: 1 2. Sampling: 1 3. Number participants: 1 4. Age participants: 1 5. Sex participants: 0 6. Appropriate data collection: 1 7. Valid data collection: 1 8. Reliable data collection: 1 9. Data analysis description: 1 10. Data analysis quality: 0.5 <p>Sum: 8.5</p>
20	Orr & Goodman, 2010	<p>Objective: “This study explored the past and present experiences of 14 postsecondary students with learning disabilities” (p. 213). The authors ask, for instance: “How might knowledge of (...) common threads be of use to faculty as they teach and mentor” (p. 215) the students?”</p> <p>Methodology: The authors “conducted audio-recorded, semi-structured interviews” (p. 215).</p>	<ul style="list-style-type: none"> ▪ Country: United States ▪ Education level: HE ▪ Participant number: 14 ▪ Sex: 8 m + 6 f ▪ Age: Not stated ▪ Ethnicity: American and African-American 	<ol style="list-style-type: none"> 1. Sampling Frame: 1 2. Sampling: 1 3. Number participants: 1 4. Age participants: 0 5. Sex participants: 1 6. Appropriate data collection: 1 7. Valid data collection: 0.5 8. Reliable data collection: 0.5 9. Data analysis description: 1 10. Data analysis quality: 1 <p>Sum: 8</p>

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21	Peterson et al., 2009	<p>Objective: The study “looked at life events, school data, and [gifted] students’ perceptions of challenges, supports, and hindrances during the school years” (p. 46).</p> <p>Methodology: “Parents annually identified negative life events experienced by child and family, and, at graduation, students completed an open-ended retrospective questionnaire” (p. 34). “The school district provided school data for students” (p. 38).</p>	<ul style="list-style-type: none"> ▪ Country: United States ▪ Education level: HS ▪ Participant number: 48 ▪ Sex: 21 m + 27 f ▪ Age: Not stated ▪ Ethnicity: American and Asian-American 	<ol style="list-style-type: none"> 1. Sampling Frame: 1 2. Sampling: 1 3. Number participants: 1 4. Age participants: 0 5. Sex participants: 1 6. Appropriate data collection: 1 7. Valid data collection: 0 8. Reliable data collection: 1 9. Data analysis description: 1 10. Data analysis quality: 1 <p>Sum: 8</p>
22	Rana et al., 2011	<p>Objective: “This qualitative study explores the factors associated with educational resilience among unaccompanied Sudanese refugee youth who experienced extreme trauma and chronic adversity” (p. 2080).</p> <p>Methodology: “The study used a qualitative research design by using open ended semistructured interviews” (p. 2080).</p>	<ul style="list-style-type: none"> ▪ Country: United States ▪ Education level: HS + HE ▪ Participant number: 19 ▪ Sex: 17 m + 2 f ▪ Age: 18-26 ▪ Ethnicity: African 	<ol style="list-style-type: none"> 1. Sampling Frame: 1 2. Sampling: 1 3. Number participants: 1 4. Age participants: 1 5. Sex participants: 1 6. Appropriate data collection: 0 7. Valid data collection: 0.5 8. Reliable data collection: 1 9. Data analysis description: 1 10. Data analysis quality: 1 <p>Sum: 8.5</p>
23	Reis et al., 2004	<p>Objective: “This article summarizes findings from a 3-year study of 35 economically disadvantaged, ethnically diverse, academically talented high school students who either achieved or underachieved” (p. 110).</p> <p>Methodology: “Comparative case study and ethnographic methods were used” (p. 110). “Observation and interview data were collected from the students’ home, social, athletic, and academic settings” (p. 112). In addition, documents (e.g. school records) were reviewed.</p>	<ul style="list-style-type: none"> ▪ Country: United States ▪ Education level: HS ▪ Participant number: 35 ▪ Sex: Not stated ▪ Age: Not stated ▪ Ethnicity: Not stated 	<ol style="list-style-type: none"> 1. Sampling Frame: 1 2. Sampling: 1 3. Number participants: 1 4. Age participants: 0 5. Sex participants: 0 6. Appropriate data collection: 1 7. Valid data collection: 1 8. Reliable data collection: 1 9. Data analysis description: 1 10. Data analysis quality: 1 <p>Sum: 8</p>

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24	Richardson et al., 2015	<p>Objective: “This paper explores the impact of the 2010 Canterbury earthquakes on the continued education of a group of New Zealand (NZ) nursing students, with a view to identifying factors that contributed to their retention in courses” (p. 986).</p> <p>Methodology: “A specific survey tool for use with health professionals was developed within the research collaboration, designed to collect both qualitative and quantitative data, utilising an online survey approach” (p. 989).</p>	<ul style="list-style-type: none"> ▪ Country: New Zealand ▪ Education level: HE ▪ Participant number: 291 ▪ Sex: Not stated ▪ Age: Not stated ▪ Ethnicity: Not stated 	<ol style="list-style-type: none"> 1. Sampling Frame: 1 2. Sampling: 0 3. Number participants: 1 4. Age participants: 0 5. Sex participants: 0 6. Appropriate data collection: 1 7. Valid data collection: 0 8. Reliable data collection: 0.5 9. Data analysis description: 1 10. Data analysis quality: 0.5 <p>Sum: 5</p>
25	Séror et al., 2005	<p>Objective: The study examined “resilience issues with immigrant students enrolled in university” (p. 55).</p> <p>Methodology: “A semistructured interview protocol was developed that included 17 items exploring students’ backgrounds and their perceptions of their lives as immigrant students” (p. 58).</p>	<ul style="list-style-type: none"> ▪ Country: Canada ▪ Education level: HE ▪ Participant number: 15 ▪ Sex: 5 m + 10 f ▪ Age: Not stated ▪ Ethnicity: Not stated 	<ol style="list-style-type: none"> 1. Sampling Frame: 1 2. Sampling: 1 3. Number participants: 1 4. Age participants: 0 5. Sex participants: 1 6. Appropriate data collection: 0 7. Valid data collection: 1 8. Reliable data collection: 1 9. Data analysis description: 1 10. Data analysis quality: 0.5 <p>Sum: 7.5</p>
26	Sosa, 2012	<p>Objective: “This paper examines the ways in which 12 high school students of Mexican descent remain resilient amid difficult and stressful realities” (p. 32).</p> <p>Methodology: “Semistructured interview questions were designed to explore students’ accounts of the challenges related to school and ways of coping with such challenges (i.e., protective processes)” (p. 35).</p>	<ul style="list-style-type: none"> ▪ Country: United States ▪ Education level: HS ▪ Participant number: 12 ▪ Sex: Not stated ▪ Age: Not stated ▪ Ethnicity: Mexican-American 	<ol style="list-style-type: none"> 1. Sampling Frame: 0.5 2. Sampling: 0 3. Number participants: 1 4. Age participants: 0 5. Sex participants: 0 6. Appropriate data collection: 1 7. Valid data collection: 0.5 8. Reliable data collection: 1 9. Data analysis description: 1 10. Data analysis quality: 0 <p>Sum: 5</p>

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27	Williams & Bryan, 2013	<p>Objective: The study “identified the home, school, and community factors and processes that contributed to the academic success of 8 urban, African American high school graduates from low-income, single-parent families” (p. 291).</p> <p>Methodology: “Two separate meeting times were scheduled [with the participants]: The first meeting was a 1-hour individual interview, and the second meeting was a 1-hour focus group interview” (p. 292).</p>	<ul style="list-style-type: none"> ▪ Country: United States ▪ Education level: HS ▪ Participant number: 8 ▪ Sex: 4 m + 4 f ▪ Age: 18-21 ▪ Ethnicity: African-American 	<ol style="list-style-type: none"> 1. Sampling Frame: 1 2. Sampling: 1 3. Number participants: 1 4. Age participants: 1 5. Sex participants: 1 6. Appropriate data collection: 1 7. Valid data collection: 1 8. Reliable data collection: 1 9. Data analysis description: 1 10. Data analysis quality: 1 <p>Sum: 10</p>
28	Williams & Portman, 2014	<p>Objective: “This qualitative study examined high-achieving urban African American high school graduates’ (N = 5) retrospective appraisal of what K-12 students from high-risk urban areas need to succeed academically despite seemingly insurmountable social, financial, and educational barriers” (p. 13).</p> <p>Methodology: “Two separate meeting times were scheduled [with the participants]: The first meeting was for a 1-hour individual interview, and the second meeting was for a 1.5-hour-long focus group interview facilitated by the moderator” (p. 18).</p>	<ul style="list-style-type: none"> ▪ Country: United States ▪ Education level: HS ▪ Participant number: 5 ▪ Sex: 1 m + 4 f ▪ Age: 18-20 ▪ Ethnicity: African-American 	<ol style="list-style-type: none"> 1. Sampling Frame: 1 2. Sampling: 1 3. Number participants: 1 4. Age participants: 1 5. Sex participants: 1 6. Appropriate data collection: 1 7. Valid data collection: 1 8. Reliable data collection: 1 9. Data analysis description: 1 10. Data analysis quality: 1 <p>Sum: 10</p>

Appendix 4: Quality Scores of the Synthesized Studies

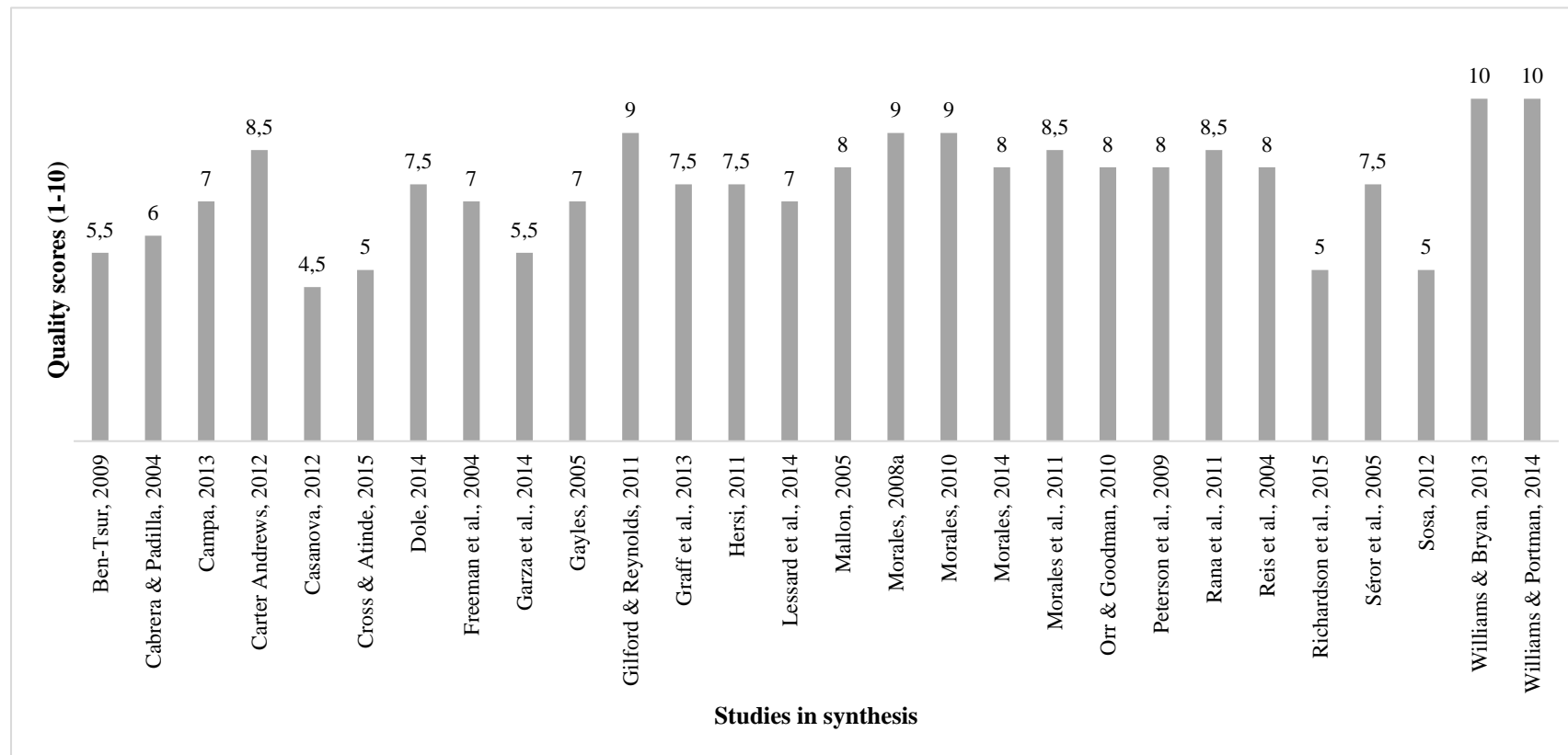


Figure 68. Quality scores of the synthesized studies (N = 28 studies)
 (Adapted from Brunton et al., 2006)

Appendix 5: Synthesis Example

Table 20. Synthesis of the conceptual framework element 'Culture' (N = 28 studies)

#	Study	Ethnicity	Text example/s in the studies	Cultural aspect
1	Ben-Tsur, 2009	Not stated	n.a.	-
2	Cabrera & Padilla, 2004	Mexican-American	“The two individuals whose stories are reported here, in their respective ways, took advantage of social networks to enter into the culture of college and used familial support to keep themselves grounded in their values and culture” (p. 168).	Adaptation strategies
3	Campa, 2013	Mexican-American	Description of “cultural resources” (p. 439) of students. “These pedagogies of survival have drawn heavily from their Mexican and Mexican-American culture, their close ties to family members, and their understanding that struggles and setbacks can be a pathway to educational success” (p. 449).	Adaptation strategies
4	Carter Andrews, 2012	African-American	[Adaptation strategies]: “Although different in their nature, silencing and challenging represent two resistance strategies that Black students employ to manage being racially foregrounded in the classroom; the former represents a form of survival, a way of avoiding personal harm and maintaining cultural integrity, whereas the latter illustrates a more assertive form of resistance and represents a refusal to be overtly racialized” (p. 18). [Cultural awareness]: “The findings from this study have implications for teacher education and creating culturally inclusive school and classroom environments. Schools must create and nurture cultures of achievement in which academic success is not viewed as White property” (p. 38).	Adaptation strategies; Cultural awareness

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5	Casanova, 2012	Mexican-American	<p>[Difficulties]: “When immigrants like Lupe enter an American school they have a harder time adjusting to the ‘teen culture,’ especially when seen as an outsider by their peers. For Lupe it was difficult to define herself with her peers” (p. 385).</p> <p>[Adaptation strategies]: Notion of adapting “multiple cultures and identities” (p. 395). “(...) to develop bicultural strategies, which Lupe also competently achieved, as she became an adult” (p. 397).</p>	Difficulties; Adaptation strategies
6	Cross & Atinde, 2015	African	<p>Difficulties of students to adapt, “since there is a much greater gap between their sociocultural practices and those of the institution, than is the case for the traditional student population in universities” (p. 322). “(...) this could mean that students from poor or disadvantaged backgrounds, who in Bourdieu’s terms do not possess the required forms of capital (social, cultural, or symbolic) and whose habitus appears misaligned from the university environment, are generally condemned to fail” (p. 313).</p>	Difficulties
7	Dole, 2014	Afro-Jamaican	<p>“Cultural patterns found in Jamaica that served as contributing factors to both risk and resilience were interlaced in the narratives of the women in the present study” (p. 153). “In summary, culture plays an essential role in the development of protective factors in various ways. Certain aspects of a culture, such as spirituality and extended family relationships, can ameliorate poverty, which is a clear risk factor in any culture” (p. 154).</p>	Adaptation strategies
8	Freeman et al., 2004	Not stated	n.a.	-
9	Garza et al., 2014	Hispanic-American	n.a.	-
10	Gayles, 2005	African-American	<p>The author introduces the concept of “cultural integrity” (p. 258). “Baldwin, Lonnie, and Ronald achieved in school because they believed in the power of their school achievement to transform their future lives. This is the utilitarian value of schooling these youths clearly describe” (p. 259).</p>	Adaptation strategies

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11	Gilford & Reynolds, 2011	African-American	“If parentification occurs in all racial groups, what are its unique cultural manifestations? Future studies need to examine the effects of parentification on non-Black students. A multiracial/multiethnic study would help further understand the universal and culture-specific realities of parentification” (p. 75).	Criticism of lack
12	Graff et al., 2013	Mexican-American and Hispanic-American	“The participants in this study were confronted by various factors that challenged their efforts at completing their degrees. Among them were language barriers, the dichotomy between ‘traditional’ and ‘nontraditional’ female roles within Latino culture, the pressure of family and work, and the resistance of some educators to believe in their ability to succeed” (p. 342).	Difficulties
13	Hersi, 2011	African	“(…) some teachers served as cultural brokers because they spoke the language of the students. All of the Cape Verdean participants expressed positive feelings toward two teachers because of their knowledge of Cape Verde and Cape Verdean Creole” (p. 198). “Schools can recruit teachers with the dispositions of caring (Nieto 2000) and provide professional development to foster their capacity to serve as cultural brokers (Beckett 2002)” (p. 199).	Cultural awareness
14	Lessard et al., 2014	French-Canadian	n.a.	-
15	Mallon, 2005	Not stated	n.a.	-
16	Morales, 2008a	African American and Hispanic-American	“For example, (…) Hispanic females were more likely to report male opposition to their academic endeavors than the African American females” (p. 205). “The social, cultural, and familial resistance that the female participants reported in this study is consistent with much of the literature which points to traditional sex roles (…)” (p. 207).	Difficulties

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17	Morales, 2010	African American and Hispanic-American	<p>[Cultural awareness]: “Effective caring school personnel were identified by many of the students in this study” (p. 168). “(...) these crucial academic mentors were in possession of cultural capital essential to these students’ success in moving from one milieu (low-income/working-class, often urban, environments of color) to another (middle-class, majority White, academic environments). In this way, the mentors often served as effective cultural translators, literally and figuratively translating the academic language into words and ideas that the students could understand readily” (p. 168).</p> <p>[Difficulties]: The author discusses the phenomenon of “cultural inversion – the process by which subordinate groups view the dominant culture (academic culture) as inappropriate for them” (p. 172).</p>	Cultural awareness; Difficulties
18	Morales, 2014	African American and Hispanic-American	“(…) an effective faculty member must often serve as the ‘cultural glue’ that connects the students’ precollege experiences, values and norms with those of higher education and academia” (p. 100).	Cultural awareness
19	Morales et al., 2011	Hispanic-American	n.a.	-
20	Orr & Goodman, 2010	American and African-American	n.a.	-
21	Peterson et al., 2009	American and Asian-American	“Given the racial and cultural homogeneity of the sample for this study, replication with a more diverse sample should be undertaken before creating a scale” (p. 46).	Criticism of lack

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22	Rana et al., 2011	African	<p>[Adaptation strategies]: “Five of the youth mentioned that they were able to succeed in the United States because they did not forget where they came from and what their goals were when they came to their new homeland. They also mentioned that they had adopted some of the American culture to navigate successfully in the United States” (p. 2098).</p> <p>[Cultural awareness]: “Caseworkers from the agency served as cultural brokers, helping the youth understand their new culture and mediating when there were misunderstandings between the foster parents and the youth” (p. 2101);</p>	Adaptation strategies; Cultural awareness
23	Reis et al., 2004	Not stated	<p>“Common personal characteristics demonstrated by the achieving participants in addition to resilience included determination, motivation and inner will, positive use of problem solving, independence, realistic aspirations, heightened sensitivity to each other and the world around them, and appreciation of cultural diversity” (p. 116).</p>	Adaptation strategies
24	Richardson et al., 2015	Not stated	n.a.	-
25	Séror et al., 2005	Not stated	<p>[Adaptation strategies]: “Parents helped to keep students strongly connected to home languages and cultures (a personal source of pride for most of the students) and also provided vital economic and emotional support” (p. 63). “In addition to supportive parents, informants referred to the crucial role of friends from both the same linguistic-cultural background and from the native English-speaking (NES) community” (p. 64). “(...) experiences in the home country and culture were important in immigrants’ journeys from one culture to another” (p. 68).</p> <p>[Value perspective]: “The present study reveals that resilience may also involve culturally related beliefs and views about the value of education. Students in the present study were resilient because they believed strongly in the importance of education. Indeed, this strong belief was part of their first cultural heritage” (p. 71).</p>	Adaptation strategies; Value perspective

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26	Sosa, 2012	Mexican-American	<p>“Looking forward, larger studies that include the voices of marginalized urban youth are needed to detail their experiences, including how they successfully maneuver and manage to stay engaged in and committed to schools that often fail to attend to their needs or to value their cultural and experiential knowledge (McIntyre, Rosebery, & González, 2001; Moll & Gonzalez, 2004; Villegas & Lucas, 2002). To this end, other modes of research, particularly interviews of students over time that are sensitive to students’ culture, contexts and lives, should be pursued” (p. 44).</p>	Criticism of lack
27	Williams & Bryan, 2013	African-American	<p>The authors refer to “supportive school-based relationships and culturally relevant caring” (p. 297). “Some approaches to counselors’ care work include providing professional development on cultural awareness and caring for school faculty and staff” (p. 297);</p>	Cultural awareness
28	Williams & Portman, 2014	African-American	<p>“Students also spent time discussing the need for culturally competent school counselors who serve multiple roles (e.g., advisers, counselors, consultants, advocates)” (p. 25). “School counselors must be culturally competent to be effective in their work” (p. 26).</p>	Cultural awareness