UNIKASSEL VERSITÄT

ZENTRUM FÜR LEHRERBILDUNG ZLB

Wissenschaftliche Hausarbeit im Rahmen der ersten Staatsprüfung für das Lehramt an Haupt- und Realschulen im Fach Englisch,
eingereicht bei der
Hessischen Lehrkräfteakademie, Prüfungsstelle Kassel

2021

Thema:

The Role of Self-Concept and Motivation of Seventh Graders in Secondary Level I in Hesse:

A Comparative Analysis of CLIL Learner Groups and Non-CLIL Learner Groups

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Abstract

The aim of this study was to examine in how far academic self-concepts and motivation of school students during the initial phase of an English-German *CLIL* program differ from those of monolingual learner groups. To investigate this matter, a questionnaire of 31 items was designed. 74 seventh graders from a secondary school in Hesse, Germany participated in the survey. All these learners had recently applied for a learner group with the subjects biology and history being taught through *CLIL*. The results of the survey show significant differences between the two learner groups. Students from the *CLIL* group show higher English self-concepts and increased intrinsic motivation toward the subjects English and history. Additionally, the results implicate that extrinsic aspects seem to be the most important factor in the decision to apply for a *CLIL* learner group.

Abstract

Ziel der vorliegenden Arbeit war es herauszuarbeiten inwiefern Schülerinnen und Schüler, welche sich in der initialen Phase eines englisch-deutschen CLIL-Programmes befinden, sich von ihren Mitschülerinnen und Mitschülern aus monolingualen Lerngruppen, in Bezug auf schulische Selbstkonzepte und Motivation, unterscheiden. Um diese Frage zu untersuchen wurde ein Fragebogen mit 31 Fragen erstellt, welcher von 74 Lernenden, der siebten Klasse eines Gymnasiums in Hessen, Deutschland, bearbeitet wurde. Besagte Schülerinnen und Schüler hatten sich zuvor für die Teilnahme an einer CLIL-Klasse mit den bilingualen Unterrichtsfächern Biologie und Geschichte beworben. Die Auswertung der Fragebögen konnte zeigen, dass sich die Lerngruppen, mitunter, signifikant voneinander unterscheiden. So verfügen Schülerinnen und Schüler der CLIL-Klasse über ein höheres Selbstkonzept bezüglich Englisch und eine höhere intrinsische Motivation bezüglich der Fächer Englisch und Geschichte. Des Weiteren konnten die Ergebnisse zeigen, dass extrinsische Faktoren eine wichtige Rolle spielen in der Entscheidung einer CLIL-Klasse beitreten zu wollen.

ACKNOWLEDGEMENTS

First, I want to thank my responsible thesis supervisor Prof. Dr. Claudia Finkbeiner of the School of Humanities, Institute for English and American Studies at the University of Kassel. She has always provided me with fruitful advice and professional guidance regarding style, creativity, and the responsibilities of scholarship and research even in these challenging times of social distancing and online meetings. Her useful and constructive feedback to preceding papers and the accompanied seminars provided me with the experience needed to conduct this research project. She offered support when I needed it but still encouraged me to follow my own ideas and instincts.

I would also like to thank the school students who participated in this research project as well as the principal of the school in which the survey took place since he established the contact that led to this study. Additionally, I want to acknowledge all the support by the school's head of the department for humanities and social sciences who invested his time to meet with me and organized the entire survey process at the school. He arranged the dates in the school's computer lab, corresponded with the other teachers involved, and helped me with all additional questions during the time frame the study was conducted.

I want to thank my cousin Joseph for proofreading the thesis and providing me with useful advice and my two lovely children Aidan and Elina for cheering me up and making me laugh after many hours in my basement study. Finally, I want to express how deeply thankful I am for all the support from my wife Naro, my parents Renate and Patrick, and my mother-in-law Renate. They have always encouraged me to stay focused and believe in me and offered reassuring words when I was exhausted or in doubt. They have cared for and guided our two children and relieved me from some of my parental responsibilities so I would find the time and strength needed to conduct this research project. Thank you.

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Introduction

Bilingual programs have been an important vehicle to foster interculturality for the German school system during the last decades. At least since the Elysée Treaty was signed in 1969, German schools have implemented an increasing number of bilingual courses. Although many different languages offer vital opportunities, the two most common languages in those programs are English and French.

The Standing Conference of the Ministers of Education and Cultural Affairs *(Kultusministerkonferenz)* emphasizes the importance of bilingual programs not only for the promotion of highly talented language learners but also for the acquisition of language and intercultural competencies (2013). In 2011, the KMK postulated that *"Bilingualer Sachfachunterricht"* is where application-oriented language learning takes place, and that it serves as a preparation of as many school students as possible for the internationalization of education and professional life. According to Mentz, most of the bilingual programs in Germany focus on social sciences because political reasons like the reconciliation between France and Germany or the UK and Germany are partly responsible for their implementation and social sciences offer many opportunities to implement intercultural topics (2010, p. 33).

Having already conducted research in the field of mathematics through *CLIL*, I developed a certain passion for research in bilingual education. Most studies examine the effects of interventions with bilingual programs on students' self-concepts, motivation, or academic achievement. However, I have been asking myself: When the decision to apply for such a program is not institutional but rather individual, social, i.e., parents and students get to decide whether to request a place in a bilingual learner group, in how far do self-concepts and motivation differ between the students who applied for such a program and those who did not? Do they have different self-concepts considering English or the school subjects taught in a bilingual context? Is there a difference in motivation between these students? Several aspects can lead to the decision to attend a *CLIL* program: a passion for English language or the content subject, an additional chance to foster the English language and increase English proficiency, the outlook on a specific education or career path, or the desire to try something new. Since I live and study in the state of Hesse, Germany, I am especially interested in the situation at the schools of this

region. With the help of my responsible supervisor, Prof. Dr. Claudia Finkbeiner, contact to one of the schools with bilingual classes in Kassel, Hesse, was established.

Two fascinating, psychological constructs will be the center of this study: self-concept and motivation. I have designed a questionnaire to examine self-concepts, intrinsic, and extrinsic motivation considering the different school subjects of students who have recently applied for and have just started bilingual courses as well as their peers who attend monolingual courses. In chapter one, I will provide an overview on bilingual education and the different concepts in Germany and Europe. I will, furthermore, outline the theoretical background for the constructs self-concept and motivation, clarify their definition in this study and give an insight into recent research considering self-concepts and motivation in a *CLIL* context. The focus of chapter two will be to explain the reasons for conducting this study, to formulate the overarching research question, and to present the different hypotheses. In chapter three, I will introduce the instrument and the items, separated in categories. Chapter four will provide a brief insight into the process of conducting the study and introduce setting and participants. Chapter five will commence with an explanation of the statistical proceedings and testing used for this study. Following this, the results to all items will be presented in a brief manner and visualized through tables and diagrams. The results of every factor will be shortly summarized at the end of each section. In chapter six, I will discuss the instrument, the study design, and the results with the help of the research question and the hypotheses. I will, furthermore, outline the limitations of the study and attempt to make implications for future research.

1. Theory and Literature Review

1.1 Bilingual Education, CLIL / EMILE

There are many different forms of bilingual learning and teaching depending on the region, the purpose, and the addressees. According to Baker, “Bilingual education has a wide range of meanings but is generally used where two languages are used to transmit the curriculum.” (Baker, 2008, p. 113) The Reasons for bilingual education vary immensely. Canada, for example, holds the two official languages

French and English. In the 1960s, Canada introduced the French Immersion programs in which schools for students with English as their first language use French as the official classroom language for many of the school subjects to foster the French language proficiency in the English-speaking regions of the country. Similar programs were implemented in other countries or regions with inhabitants of two or more official languages. In many German schools, bilingual programs, those of which use the French language especially, started to facilitate the reconciliation of the former world war enemies France and Germany (Hollm, 2013, p. 7). In the meantime, further important reasons for bilingual education have caused a slight shift to the English language, which is now the most common in bilingual classes in Germany (Mentz, 2010, p. 31). One of the reasons for that seems to be that the English language does not only allow mutual understanding of German students and those from mainly English speaking countries but it also serves as a Lingua Franca, a term that is defined as a language that is used as a means of communication between people who have different native languages (Bußmann, 1990, as cited in Finkbeiner, 2002, p. 103). Furthermore, English also is the Lingua Franca in many fields of science and international business. Finkbeiner & Stehling state that bilingual education must qualify school students to not only being able to communicate on a daily-life level but also on an academic and professional level (2002, pp. 14–15). They should be enabled to participate in international science and business. The slightly different versions of bilingual programs have canalized in the last five decades. One of the most common approaches in European schools nowadays is *Content and Language Integrated Learning* or *Enseignement d'une matière par l'intégration d'une langue étrangère*. Since at least 1990, CLIL has been a central aspect of Foreign Language Research in Germany (Doff, 2010, p. 11). Marsh defines CLIL as follows: "CLIL and EMILE refer to any dual-focused educational context in which an additional language, thus not usually the first language of the learners involved, is used as a medium in the teaching and learning of nonlanguage content" (2002, p. 2). This definition clarifies the main aspects of a CLIL class, which are not primarily to foster language learning and language proficiency. Marsh emphasizes that the term CLIL refrains from implying preference for either language or non-language content but places them on a continuum with equal importance in education (2002, p. 58). Language and content are not separated but combined, and this does not exclude the students' first

language. Native languages of all students can be included and the differences in concepts considering the subject matter can be ascertained and contrasted (Wolff, 2013, pp. 287–288). These approaches are accompanied with many positive side effects or as Beardsmore (as cited in Marsh, 2002, p. 66) puts it "if properly designed" additional language proficiency can be achieved "at no cost to other skills and knowledge".

1.2 BSFU *(Bilingualer Sachfachunterricht)*

The Standing Conference of the Ministers of Education and Cultural Affairs (KMK) defined *Bilingualer Unterricht,* in 1994, as education in which parts of the content are taught in a foreign language before shifting to the more precise terminology *Bilingualer Sachfachunterricht* in 2006 and clarifying that the term stands for an approach that many other European countries refer to as CLIL (KMK, Sekretariat der Ständigen Konferenz der Kultusminister der Länder in der Bundesrepublik Deutschland, 2006, p. 7). They again affirmed the equality of the two different terms in 2013 (KMK, Sekretariat der Ständigen Konferenz der Kultusminister der Länder in der Bundesrepublik Deutschland, p. 4). In German foreign language research, the two terms are used interchangeably usually depending on the language the publication is written in. Many publications in German language seem to prefer BSFU, whereas those written in English seem to prefer CLIL. Following the definitions of Marsh (see 1.1) and the KMK, the terms CLIL and BSFU will be used interchangeably in this paper often depending on the source that is cited.

1.3 School Subjects in CLIL

One of the essential questions considering CLIL programs is whether all school subjects are suitable or expedient for such an approach. In the beginning, CLIL was mostly implemented in subjects like history, geography and social sciences due to its focus on the reconciliation between the UK, France and Germany (Baker, 2008; Mentz, 2010, p. 33). Mathematics and other natural sciences were considered to be unsuitable, an attitude which seems to have changed over the last two decades (Viebrock, 2009, pp. 64–65). Natural sciences were said to have insufficient opportunities for intercultural learning or discussion and communication (Lipski-

Buchholz, Gnutzmann, & Becker, p. 5). Recent studies, however, point out several advantages but also disadvantages of natural sciences in CLIL.

In her essay, Viebrock outlines the potential in juxtaposing mathematical concepts from different languages with many examples for the actual implementation in a CLIL class. Viebrock emphasizes, "as a result it can be stated that mathematics and language are seen to be closely linked, and that language can be considered the most important factor in the process of learning mathematics and 'how to speak like a mathematician'," pointing out the advantages of CLIL classes for students' mathematical skills (Viebrock, 2009, p. 74).

Piesche et al. compare numerous studies and conclude that students who participate in CLIL classes have advantages in language proficiency when compared with students from monolingual classes. Even in regard to the
content subject, many of the studies imply that students from bilingual courses perform better. However, according to Piesche et al., parts of these outcomes are possibly due to the fact that in many cases the more competent students seem to choose bilingual programs or are accepted in these in the first place (pp. 13–14). To eliminate this factor, they conducted three studies with students who attend the German *Realschule*. The students were randomly assigned to either monolingual or bilingual classes. The results of these studies were:

- Even though it was not the students' choice to attend the CLIL courses, they only experienced very subtle disadvantages.
- CLIL classes for natural sciences do not seem to decrease the gender effects (male students seem to perform better and show more motivation in natural sciences than female students).
- A positive self-concept regarding English is an important prerequisite for CLIL.
- Negative effects on the experience of competence as well as on fear and anxiety might be due to the lack of prior experience with CLIL classes.

Piesche et al. also justify the suitability of natural sciences in CLIL stating the following reasons (Piesche et al., pp. 20–21):

- English is the language of the scientific community.

- Natural sciences have many possible topics to implement intercultural learning, e.g., reproductive biology, or climate change.
- The difference in specific terminology between German and English is less problematic than predicted. Many terms derive from Latin or Greek origin and are thus quite similar, e.g., Photosynthese – photosynthesis.
- The discourse in class is highly standardized and limited to specific topics, which can facilitate communication.
- On the other hand, many concepts can be transferred to every-day language.
- Natural sciences offer many possibilities for experiments and holistic and action-oriented learning and teaching, which creates valuable authenticity for the necessary communication.
- They foster the alternation between the different levels and forms of representation, e.g., concrete, visual, symbolic, linguistic and with the use of formula.

According to Duske, data considering the influence of bilingual education on content-subject achievement is scarce. She compared several studies and asserted that no negative effect on the content subject was ascertained considering the subjects chemistry, biology, history, and geography (2017, pp. 46–50). Additionally, she states that natural sciences offer sufficient possibilities to implement intercultural learning and are increasingly popular in CLIL programs (pp. 38-39). Lipski-Buchholz et al. compared more than 20 different studies about natural sciences and mathematics through CLIL and asserted that students with a high interest in languages benefit from mathematics classes in a CLIL context and show increasing motivation towards mathematics. However, it can have a negative effect on students with a high interest in natural sciences, as they experience a decrease in motivation towards Mathematics (p. 263).

In conclusion, recent research has shown that almost all subjects are suitable for CLIL classes. The concept offers several important advantages for students' language and content subject proficiency. It offers possibilities for the implementation of intercultural learning and increases the motivation of students with an interest in languages rather than in natural sciences. One of the few disadvantages is that it might decrease cognitive activity of students with medium or low language proficiency in English. Since the research was conducted with

bilingual classes in different school settings, it should be kept in mind that these learner groups often consist of rather competent and well-performing students and cannot simply be compared to any other learner group. In addition, considering students' motivation, it certainly makes a difference if the students chose to attend or apply for a bilingual program themselves or if they were assigned to such a program by the school or for research purposes.

1.4 Self-Concept

In addition to many other aspects, a person's identity also consists of all the things they like doing, the things they are competent in, and the things they get rewarded for. Activities which are important to them seem to become part of their self-image. Everyone has an individual and subjective assessment of the things they are competent or not competent in, a self-concept. Moschner and Dickhäuser define self-concept as a person's mental model of their skills and character traits and elaborate that the term can be understood as one's cognitive-descriptive concept of oneself (2018, p. 750). Möller and Trautwein add to this definition that self-concepts are beliefs, assessments, and evaluations about oneself and can refer to different facets of a person or the person as a whole (2015, p. 178). In her study from 1995, Finkbeiner described self-concept as the entirety of students' attitudes towards themselves that can be evoked by a certain school subject and cumulate to a self-image of the student considering a specific domain (2005, p. 272).

1.4.1 The Roots of Self-Concept Research

According to Möller and Trautwein, the founder of self-concept research is said to be William James. In his work *Psychology,* he differentiates between the *I,* as the observer and the *Me,* as the object being observed. The *Me* can be described as the self-concept of a person, i.e., the thoughts and attitudes of the person regarding themselves. The *Me,* is constructed on the basis of experience and consists of spiritual, social and material elements (2015, p. 179). The spiritual self is described as "the entire collection of my states of consciousness, my psychic faculties and dispositions taken concretely" (James, 1892, as cited in Möller & Trautwein, 2015, p. 179). Möller and Trautwein add that it was Rosenberg, 1965, who elaborated on

the idea and formed the idea of self-concept as one's attitude towards oneself (2015, p. 183). The resulting construct resembles competence related self-concepts and domain-specific interest in modern research. They also state that James used the term *social self* to refer to the awareness of other people's perceptions of oneself and the concept of the *material self* to describe a person's knowledge about their own body, familiar objects and important people in their lives (2015, pp. 179–180). According to James, success, failure, and a person's position in the world can lead to different extents of shame and pride and, through this ratio, might create the self-feeling as an affective component of the *Me.* Success and failure should be seen as a subjective interpretation rather than an objective observation in this context (Möller & Trautwein, 2015, p. 180). Möller and Trautwein conclude that James' works laid the foundation for essential self-concept models such as the multidimension, hierarchical model by Shavelson, Hubner and Stanton even though some of his assumptions were disproved by empirical research (2015, p. 180).

1.4.2 The Hierarchical Model of Self-Concept

With reference to Kelley (1973), Shavelson, Hubner, and Stanton formulate a new definition of self-concept when they state,

> In very broad terms, self-concept is a person's perception of himself. These perceptions are formed through his experience with his environment, perhaps in the manner suggested by Kelley (1973) and are influenced especially by environmental reinforcements and significant others. We do not claim an entity within a person called "self-concept." Rather, we claim that the construct is potentially important and useful in explaining and predicting how one acts. One's perceptions of himself are thought to influence the ways in which he acts, and his acts in turn influence the ways in which he perceives himself. (Shavelson, Hubner, & Stanton, 1976, p. 411)

According to Shavelson et al., self-concept can be described as, "organized, multifaceted, hierarchical, stable, developmental, evaluative, differentiable" (1976, p. 411). Arens states that the essence of the model lies in its multifaceted and

hierarchical nature (2011, p. 7). Therefore, self-concept can be divided into several facets or domains such as academic, social, emotional and physical self-concept and these different subareas can be distinguished on an hierrarchical level (1976, p. 413). In regard to the multidimensional structure of self-concept, Möller and Trautwein conclude that people develop different beliefs about the amount of skill and talent they show in different areas (2015, p. 183). This could certainly be of use to distinguish between academic and non-academic self-concepts but also to ascertain differences between the varying school domains.

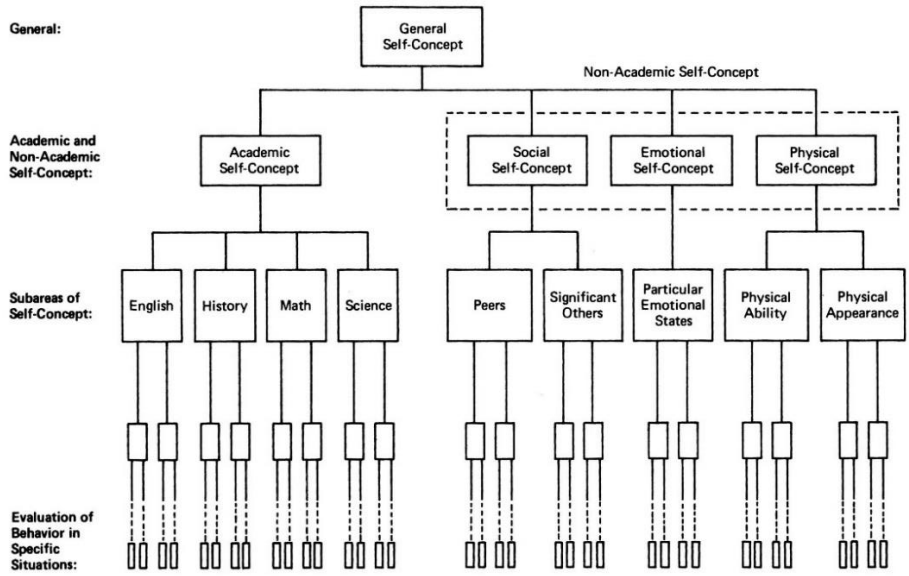

Figure 1: One possible representation of the hierarchic organization of self-concept. (Shavelson et al., 1976, p. 413)

As figure 1 shows, Shavelson et al. divide the general self-concept into the academic self-concept and the three non-academic self-concepts social, emotional, and physical self-concept. The academic self-concept can be further divided into the self-concepts considering the different school subjects and, additionally, into the behaviors in specific situations. (1976, p. 413). Subareas such as English, history, math and science can be referred to as domain-specific self-concepts (Möller & Trautwein, 2015, p. 178).

Since Shavelson et al. did not implement an instrument to validate the hypothesis of their hierarchical model, Marsh and O'Neil developed the *Self Description Questionnaire I, II and III* in regard to the different ages of the participants. These instruments were developed to match the multi-dimensional and hierarchical self-concept model of Shavelson et al. and are based on equal assumptions considering the structure and the characteristics of self-concept. Regarding the above-

mentioned multifaceted organization, the SDQs use several scales to display domain-specific self-concepts. Considering the hierarchical structure, the domain-specific scales can be summed up to evaluate global concepts such as the academic self-concept. The assumption was that the scales for physical abilities, physical appearance, opposite-sex relationships, same-sex relationships, parent relationships, honesty-trustworthiness, and emotional stability could be accumulated to display the general non-academic self-concept, whereas the scales for math, verbal and general school self-concept would sum up to the general academic self-concept (Arens, 2011, pp. 8–10).

In the following years, the SDQs were applied in many different occasions and translated to other languages with varying results considering the SDQ itself and the assumptions about the multifaceted and hierarchical structure of the self-concept model. According to Arens, numerous studies have ascertained the decent reliability and validity of the SDQ I (2011, p. 10). In 1996, Byrne even stated,

> I consider the SDQII to be the most validated self-concept measure available for use with adolescent children . . . [R]esearchers, clinicians, counselors, and others interested in the welfare of adolescent children, can feel confident in the validity of interpretations based on responses to its multidimensionally sensitive items. (as cited in Marsh, Ellis, Parada, Richards, & Heubeck, 2005, p. 83)

Marsh himself describes the SDQ II as an instrument with "sound theoretical foundation, excellent psychometric qualities, and long, established history of support for construct validation" (2005, p. 83).

The conducted studies also certify and legitimize the assumption of the multidimensional structure of self-concept (Byrne, 1996; Marsh, 1990; Shavelson et al., 1976). According to Arens, the SDQ procedures have shown vital advantages in confirmatory and explanatory factor analysis. Considering their goodness-of-fit, multidimensional models were superior to those with a unidimensional approach. This leads to the conclusion that the single items of the different scales of the SDQs cannot simply be cumulated to a combining factor. Instead the single items of a scale seem to represent independent factors which represent separate facets of self-concept (2011, p. 11). Further confirmatory and explanatory factor analyses have

shown intercorrelations between the different self-concept factors, and between-network studies which juxtapose self-concept and school performance (see 1.4.4) again showing that domain-specific self-concepts are indeed independent from each other. Möller and Trautwein state that empirical research has pointed out the insignificant correlation between the verbal and the math self-concept in a school context (2015, p. 184). These findings certainly highlight the weaknesses of combining them to global constructs like a general academic self-concept and support the assumption of Shavelson et al. that self-concept is multifaceted (Arens, 2011, p. 12; p. 17).

Another essential feature of the model by Shavelson et al. is that self-concept is hierarchical (Shavelson et al., 1976, p. 411). Empirical research has shown higher intercorrelations between the scales for physical abilities and peer-relationships (physical self-concept and social self-concept) than between physical abilities and physical appearance. These findings implicate that the domains should be treated separately and cannot be cumulated to a general physical or general social self-concept (Arens, 2011, p. 18).

In conclusion, Shavelson et al. (1976) developed a fundamental model for self-concept research with important assumptions considering its structure. To fulfil the need for an instrument to analyze self-concept, Marsh and O'Neil introduced the *Self Description Questionnaires* in 1990. These SDQs have been validated numerous times and have proven to be an effective instrument in self-concept research. Studies have shown that the assumed multifaceted structure of the model by Shavelson et al. can be confirmed by empirical research, whereas the assumptions about its hierarchical structure cannot be validated.

1.4.3 The Revised Model by Marsh, Byrne and Shavelson (1988)

Marsh et al. state that putting the so called Shavelson model (Shavelson et al., 1976) to the test again in 1985 proved, "the hierarchy […] to be more complicated than originally anticipated", which led to a new revised model of the construct self-concept (1988, p. 366). With regard to the focus of this revised model, they declare,

> Of particular relevance to our investigation was that verbal and math self-concepts were nearly uncorrelated and did not combine with school self-

> concept to form a single, second-order academic factor. Instead, the results argued for two second-order academic factors representing verbal/academic and math/academic self-concepts. (Marsh et al., 1988, p. 366)

In a first step, Marsh tried to find an explanation for the distinct character of verbal and math self-concepts and their relation to verbal and math achievements which seemed to be very content-specific. In 1986, he introduced *The Internal/External Frame of Reference Model* as an approach to understand these findings (Marsh et al., 1988, p. 367).

The model assumes that for well performing students in a specific subject the external frame of reference, i.e., the social comparison with fellow students, results in a high self-concept considering the same subject. Additionally, since verbal achievement and math achievement are correlated, verbal and math self-concepts will correlate positively. On the other hand, students also use an internal frame of reference, meaning, in a dimensional comparison, they juxtapose their performance in one domain with their performance in another. Noticing differences in the two will lead to a high self-concept in one domain and a low self-concept in the other (Möller & Trautwein, 2015, p. 189). Marsh et al. postulate, "The joint operation of both processes, depending on the relative strength of each, will lead to the near-zero correlations that have been observed in empirical research" (1988, p. 367). Furthermore, direct effects of achievement in one domain on self-concept of the other can be noticed, as students with a low performance in mathematics upvalue their verbal self-concept, whereas students who perform well in mathematics devalue their verbal self-concept (negative correlation) (Möller & Trautwein, 2015, p. 189).

With the intent to create a more adequate model that would derive from the findings of research, Marsh et al. introduced their revised model in 1988 (Möller & Trautwein, 2015, p. 184).

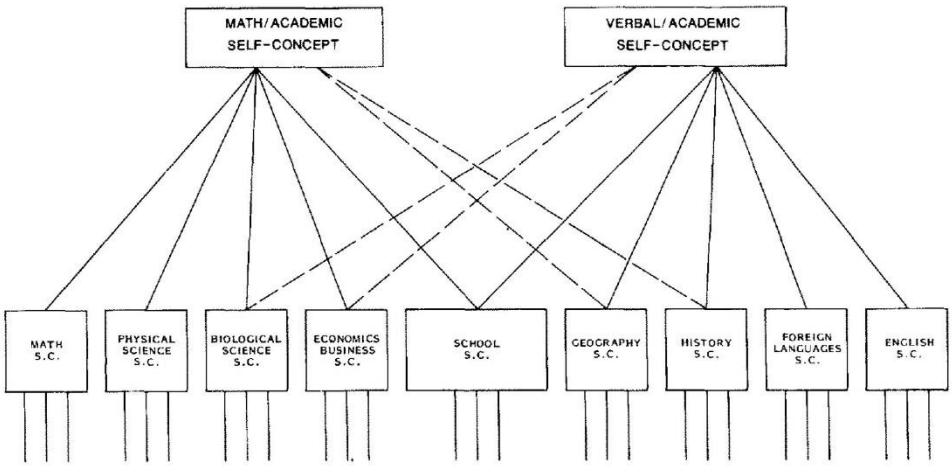

Figure 2: An elaboration of Marsh and Shavelson's (1985) revision that includes a wider variety of specific academic facets. (S.C. = self-concept.) (Marsh et al., 1988, p. 378)

In the domain of academic self-concept, Marsh et al. make an important first distinction between the math and the verbal self-concept, which are considered to be largely separate. The main subareas that influence the verbal self-concept are languages, history, and geography, whereas the math self-concept is influenced by math, natural sciences, and economics. As a result, the model is characterized by two superordinated factors and does not assume a hierarchical relation between school domains. The model is said to be the basis for empirical research about the relation between math and verbal self-concepts and their influence on academic achievement (Möller & Trautwein, 2015, p. 184).

In summary, researchers such as Byrne, Marsh, O'Neil, and Shavelson conducted further research to analyze the intricacy of the hierarchical structure of self-concept. One of many interesting outcomes of these studies was that students who perform well in one domain seem to have a low self-concept in the other and vice versa. With his Internal/External-Frame-of-Reference- Model, Marsh was able to explain the correlations between subject-specific performance and subject-specific self-concept. Finally, a new revised model was created which takes the multifaceted structure into account but divides academic self-concept into two separated constructs: verbal and math self-concept, and, thereby, refrains from the originally assumed hierarchical structure.

1.4.4 Self-Concept and Academic Achievement

As mentioned above, self-concepts and academic achievement have sophisticated relations and statistical correlations. According to Möller and Trautwein, a student who has one of the best scores in a math test in his year can still think he is not talented in math. Fascinating discrepancies between objective performance and subjective assessment can be ascertained. Students need comparative information which they can collect from social, temporal, and dimensional comparisons as well as comparisons with general criteria. In a social context, students compare their achievements with their fellow students. Temporal comparisons are comparisons with one's own achievements over a period of time, whereas dimensional comparisons are those between different domains or facets. Students also gain information about their level of achievement through general criteria such as grades, tests, and official qualifications. Naturally, these different pieces of information cannot be clearly separated but work with or against each other in their influence on self-concept (2015, p. 187).

Success and failure certainly have an influence on self-concepts; however, causal attribution seems to play a major role in how strong these effects are. A strong influence can be noted when students attribute their success or failure to the existence or lack of talent. Instead, the effect seems to be less prominent if they attribute it to their lack of effort. In any circumstances, an ongoing period of success or failure will have an important influence on academic self-concepts (Möller & Trautwein, 2015, pp. 187–188).

Möller and Trautwein (2015, pp. 188–189) present two different approaches to explain the development of academic self-concept and its influence on school performance: *The Big-Fish-Little-Pond-Effect* (Marsh, 1986) and the *Internal/External Frame of Reference Model* (Marsh, 1984). As mentioned above (see 1.4.3), the *Internal/External Frame of Reference Model* implies that,

> (a) verbal and math achievements are highly correlated, (b) verbal and math self-concepts are nearly uncorrelated or at least are substantially less correlated than verbal and math achievements, (c) verbal achievement has a strong, positive direct effect on verbal self-concept but a weaker, negative direct effect on math self-concept, and (d) math achievement has a strong

> positive effect on math self-concept but a weaker, negative effect on verbal self-concept. (Marsh et al., 1988, p. 367)

The Big-Fish-Little-Pond-Effect focuses mainly on the social comparisons between members of a learner group. The basic idea is that "equally able students have lower academic self-concepts in high-ability schools than in low-ability schools" (Marsh, 1986, p. 3). According to Marsh, numerous ground laying studies from 1939 to 1969 found that "group membership influences the values and standards of performance used by individuals in their self-evaluations" (1986, p. 8). On a social level, students compare their achievements with other members of their learner group. Möller and Trautwein state that if a student with a defined performance is a member of a rather low-performing learner group, this experience will have a positive influence on his self-concept. He might feel like a big fish in a little pond. On the other hand, being part of a high-performing learner group might result in a decrease of self-concept. It seems especially important to mention that these effects are often caused by the teacher's assessment of the student's performance in this exact learner group and the many occasions for comparisons with higher-performing students. In addition to students' perception of their performance, many other factors can influence their self-concept. One of these factors seems to be the transition between elementary school and secondary school, which is accompanied by new requirements, a new and instable environment, and more pressure to do well (2015, p. 188). Other factors include: learning environment, classroom atmosphere, individualization, and social comparisons by the teacher (Möller & Trautwein, 2015, p. 192).

It seems vital that teachers take these relations and influences into account when they occur and assess in which situations they can be useful or hindering. According to Möller and Trautwein, being aware of these dimensional effects can help teachers to understand the self-images of their students and help to prevent them from over- or underestimating their individual competencies (2015, p. 190).

With a focus on gender differences, research has shown that dissimilarities in domain-specific self-concepts match the assumed stereotypes. Even if differences in performance are not that prominent, boys seem to show a higher math self-concept, whereas girls show a higher verbal self-concept (Möller & Trautwein,

2015, p. 191). Naturally, these tendencies are still subject to the above-mentioned additional influences.

It seems obvious that a high self-concept in an academic domain can foster decent performance. Möller and Trautwein juxtapose different approaches to describe effects and their direction of influence. Domain-specific self-concepts can be influenced directly by feedback on performance and in an interaction with social comparisons and causal attributions. Furthermore, numerous studies confirm that academic self-concepts have a positive influence on academic achievement (2015, p. 193). These outcomes seem to be especially significant in single domains like school subjects (Valentine, DuBois, & Cooper, 2004, p. 111). Möller and Trautwein conclude that the effects between self-concept and academic achievement reinforce each other in a reciprocal manner (2015, p. 193). However, these important findings do not offer an explanation for these reciprocal effects.

In 1992, Helmke conducted a study which examined the relation between self-concept and performance. He found that a high math self-concept leads to a higher engagement in class and more effort considering homework and assessments, which can lead to a positive development of students' math performance (1992, pp. 191–193). Finkbeiner underlines these findings by indicating the importance of the relation between self-concept and interest to explain successful learning (2005, p. 271).

During a school career many vital decisions, such as choice of courses or specialization in specific academic fields, must be made. Regarding these decisions, another important aspect of high self-concepts is that they foster domain specific interest and motivation, which correlate with favorable learning behavior and influence the choice of school courses (Möller & Trautwein, 2015, p. 194). In this way, self-concepts developed early during primary school can have a considerable impact on a student's future education and career choices. According to Möller und Trautwein, the motivation resulting from a high self-concept is an additional factor that can lead to improved learning results. In advanced terms of a school career, the reciprocal positive influences between domain-specific self-concepts and interest as well as the correlation between self-concept and school performance lead to a rather narrow relation between self-concept, interest, and performance (2015, pp. 195–196). A student with high interest in languages and a decent verbal self-concept might perform well in this domain, which will furthermore contribute to

his self-concept and generate more interest. It is very likely that this student will choose more school courses in this domain and thereby foster his interest, his self-concept, and his future performance.

In conclusion, students' achievements seem to influence their self-concepts. This effect is especially noticeable inside a certain domain. On the other hand, a high self-concept in a specific domain can be a useful prerequisite for decent achievement in the future.

Regarding this study, it is vital to make certain distinctions between the different constructs. The focus of this thesis can merely lie on academic self-concepts. Other facets like physical abilities, physical appearance, opposite-sex relationships, same-sex relationships, parent relationships, honesty-trustworthiness, and emotional stability cannot be considered.

1.4.5 Competence and Affect Components of Academic Self-Concept

Assuming the multidimensional structure and distinguishing different domains seems to be expedient in self-concept research. For a more profound analysis of the construct, academic self-concept can be further separated into competence and affect components Marsh (Marsh, Craven, & Debus, 1999; Arens, 2011). According to Arens, competence components refer to the self-evaluation of skills. Examples from Marsh's SDQ I include "I am good at all school subjects." And "I get good marks in reading." Affect components describe affective and motivational reactions to the different domains, e.g., "I enjoy doing work in all school subjects." And "I look forward to mathematics." At least since the implementation of the SDQs, competence-oriented and affect-oriented items where often used in one scale to display domain-specific self-concepts. For a detailed observation of the different concepts, the results could be analyzed separately. This would support the findings of Marsh et al., who confirmed competence-oriented and affect-oriented items to build independent factors in 1999 (2011, pp. 26–27). According to Möller and Trautwein, some authors demand a strict separation of the two concepts, as they postulate academic self-concept only represents the cognitive-evaluative, i.e. the competence, factors and consider the affect components to be part of the constructs interest or motivation (2015, pp. 186–187).

1.4.6 The Construct of Academic Self-Concept in this Study

As mentioned in 1.4.5, a separation of competence-oriented and affect-oriented aspects of self-academic self-concepts should be considered. According to Möller and Trautwein, competence-oriented self-concept can additionally be divided into an ability self-concept and a self-concept of talent. Following this distinction, the ability self-concept describes a student's self-perception of their performance. A sample item from Marsh's SDQ II would be "I get good marks in mathematics" or "I'm good at most school subjects." Furthermore, the self-concept of talent includes students' dispositions, their talents and things they are gifted with. This could be tested through items like "I learn things quickly in English classes." Since these concepts overlap and are sometimes used interchangeably by different authors, it seems difficult to clearly differentiate them in empirical research (2015, p. 179).
A closer look at the affect-oriented aspects unveils the considerable overlaps with the construct *Intrinsic Motivation* (see 1.5). Many studies have used the SDQs since their implementation. In contrast to those studies that cumulate competence-oriented and affect-oriented items to one scale displaying domain-specific self-concepts, the aim of this study is to divide these constructs and examine: competence-oriented self-concept, factors of intrinsic motivation, i.e., the affect-oriented self-concept, and extrinsic motivation in an academic context. Hence, from now on, following the definition of Möller and Trautwein, the term self-concept will be used to describe the competence-oriented components, i.e. a student's cognitive representation of their skills and / or talents in a specific domain (2015, p. 183). Moreover, the focus will lie on four domain-specific self-concepts: general school self-concept, English, history, and biology self-concepts.

1.5 Motivation

In our everyday life, we engage in different sorts of activities, some of which can be described as things we do just for fun, whereas others can be considered to be duties or obligations. However, in most cases we can determine an underlying factor that initiates the process of engaging in an activity, an answer to the question: why am I doing this? Certainly, this is a question that school students ask themselves or their teachers on a regular basis. According to Deci, "'Why'

questions fall within the field of motivation, and psychologists working in the field have provided various kinds of answers to these questions" (1976, p. 3). It seems highly unlikely to engage students in the process of learning something if they do not have any motivation to do so. Rheinberg and Vollmeyer define motivation as an activating orientation of the present execution of life activities with the goal of a positive condition (2012, p. 15).

According to Schiefele and Schaffner, behavioral characteristics that depend on motivation are direction, perseverance, and intensity. The term direction refers to the actual activity, i.e., what the person does, the term perseverance describes the time span over which the person is engaged in the activity, and intensity illustrates the amount of concentration and effort a person shows in the process. Combining these three factors leads to the so-called energizing effect of motivation. In a school context, it might seem important to determine how often and for how long a certain amount of motivation can be ascertained. Since the above-mentioned definition of motivation shows limitations in regard to analyzing learning behavior and achievement, it is vital to, firstly, introduce the concept of learner motivation which can be described as the intention to learn specific content or skills to achieve certain goals and, secondly, to distinguish between intrinsic and extrinsic motivation (2015, pp. 154–155).

1.5.1 Intrinsic Motivation

According to Schiefele and Schaffner, an important distinction can be made considering the goals a learner wants to achieve and the reasons for engaging in an activity. If these goals / reasons are part of the action itself, e.g., positive emotions that arise during the performance, the motivation can be described as intrinsic. However, if these goals / reasons are consequences of the action, e.g., recognition or respect, the motivation is of an extrinsic nature (2015, p. 155).

Intrinsic motivation is defined as the desire or the intention to perform a certain learning activity only because it is experienced as something interesting, exciting, and / or challenging (Schiefele & Schreyer, 1994, pp. 1–2) or as Deci puts it:

> Intrinsically motivated activities are ones for which there is no apparent reward except the activity itself. People seem to engage in the activities for

> their own sake and not because they lead to an extrinsic reward. The activities are ends in themselves rather than means to an end. (1976, p. 22)

According to Schiefele and Schreyer further distinctions can be made. The definition mentioned above mainly applies to intrinsic motivation as a temporal state in a specific moment. Certainly, intrinsic motivation can also occur as a general habit of a person. This would be the case if a student repeatedly studies and learns out of a general curiosity and interest and would not be bound to a specific subject or topic. Additionally, intrinsic motivation can be action-oriented or subject-oriented. Following this distinction, a person could be motivated for a learning activity because they enjoy the corresponding actions, e.g., students can be motivated for English lessons because they love reading. On the other hand, students can be motivated to learn because they have an interest in a specific school-subject or topic (1994, pp. 2–3). Therefore, subject-oriented intrinsic motivation can be ascertained when students experience positive emotions during a learning activity due to curiosity and a high interest in a certain topic no matter which actions accompany the learning process (Schiefele & Schaffner, 2015, p. 158). In Addition to pointing out the basics of the construct, it seems of vital importance, in the context of school learning especially, to determine how intrinsic motivation can be initiated and fostered. Schiefele and Schaffner state that the most crucial modern theory considering intrinsic motivation is the *Self Determination Theory* by Deci and Ryan (2015, p. 157).

1.5.2 Self-Determination Theory

To understand the concept of intrinsic motivation, Deci offers an explanation considering the sources of the construct. He states that “organisms have a general need for feelings of competence and self-determination” and concludes, “intrinsically motivated behavior is behavior which is motivated by one's need for feeling competent and self-determining” (1976, p. 61). Deci and Ryan describe self-determination as “a quality of human functioning that involves the experience of choice” and state that the cause of the functioning is located in the person themselves (1985, p. 38). The term competence is described as “the structures through which effectance motivation [the drive to produce an effect on the

environment] operates" (1985, p. 27). In other words, people would feel competent after engaging in an activity through which they have an effect on their environment. This feeling of competence is the motivation for the activity.

According to Deci, the need to have an effect on our environment is innate and functions as a prerequisite for human development. He postulates, "Children are born with a basic undifferentiated intrinsic motivation, the need for being competent and self-determining in relation to their environment" and their motivation "is present through the various stages of development" (1976, p. 90). Deci describes life as an ongoing process of setting and achieving goals, and, in doing so, getting rewarded by feelings of competence and self-determination which result in satisfaction (1976, p. 123). In other words, we strive to feel that we are capable, efficient, qualified, skilled, or plainly spoken good at something and we want to choose freely what we spend our time with. For engaging in activities which cater to these needs we get rewarded with satisfaction. This reward on the other hand leads to the drive to engage in these activities again. To further specify the idea of the activity itself being the reward for engaging with it, Deci clarifies: "A person can perform an activity or accomplish a goal, but that is not the reward; the reward is the internal condition brought about by the attainment of the goal (i.e., the satisfaction)." (1976, p. 116)

Additionally to the needs for feelings of competence and self-determination, Deci and Ryan mention the need for interpersonal relatedness as a third prerequisite for intrinsic motivation (1985, p. 6). According to Schiefele and Schaffner, interpersonal relatedness can be described as the ambition to build trustful and supporting relationships to other people. On the one hand, this can be seen as an important extrinsic factor for motivation, and on the other, it can be a motor to develop interest or intrinsic motivation. The interests of a person that one has a trustful relationship with might thereby become important for oneself (sports, hobbies, school subjects), and the cooperation with such peers might lead to positive emotions and thus foster intrinsic motivation. It can be confirmed that satisfying these needs is not only a prerequisite for intrinsic motivation and a healthy development but also essential for mental health (2015, pp. 157–158).

1.5.3 Flow

Another ground laying theory to explain and examine the concept of intrinsic motivation is the *Flow Theory* by Csikszentmihalyi. According to Csikszentmihalyi and Schiefele, experiencing *Flow* in the process of learning is vital for intrinsic motivation and cognitive development of school students. Students that feel positive emotions during a school activity might be more motivated to learn in this specific subject, which would result in being more attentive, more curious, and more thorough in their working process (1993, p. 207). They assert that the *Self-Determination Theory* by Deci and Ryan is not sufficient to explain why certain activities are often carried out with ambition and intrinsic motivation and focus on the emotional experience during the performance (Csikszentmihalyi & Schiefele, 1993, p. 208).

Csikszentmihalyi started investigating the striking fact that artists work concentrated for many hours on a piece of art and experience joy and enthusiasm in the creational process. However, after finishing their work, they often lose interest in the specific piece, and most of them do not intend to make money from it. In conclusion, no external rewards could be ascertained. After questioning more people who engage in time-consuming and exhausting activities that offer no material reward or immense social recognition, he found that many share a specific emotional experience often referred to as *Flow* (Csikszentmihalyi & Schiefele, 1993, p. 209).

To understand the concept of *Flow*, Csikszentmihalyi and Schiefele outline four components of the specific emotional state:

1. In the state of *Flow*, action and consciousness of the acting person seem to merge. They feel like being a part of the action. Climbers feel like being part of the rock; chess players like being one with the actions on the board.
2. Attention seems to canalize toward a limited excerpt of the environment. It is only directed at the action itself, and other stimuli seem to be blocked. Focus lies on the present; the past and the future are only marginally important.
3. Being in the state of *Flow,* people seem to be less self-conscious. Self-doubts and worries become less important. However, people do not seem to

lose perception of inner processes but, in fact, perceive, e.g., movements or muscle contractions which they are generally not aware of.

4. People in the *Flow* feel in control regarding the action and their environment and do not fear to lose this control during the activity.

According to Csikszentmihalyi and Schiefele, studies have shown that these four components are characteristic for activities which are carried out with intrinsic motivation. During *Flow,* thoughts and emotions are consonant and directed toward a certain activity, whereas disrupting stimuli are not recognized (1993, pp. 209–210).

In addition to the components, Csikszentmihalyi and Schiefele present two underlying conditions for the state of *Flow*:

1. The ability of the performing person and the requirements of the specific action must be balanced out. If the action requires too little and is no challenge, the result can be boredom. Activities which are too challenging and offer no prospect of success, on the other hand, may lead to anxiety. Additionally, extremely unchallenging activities can lead to insecurity and thereby also result in anxiety. To lead to the experience of *Flow,* abilities and requirements need to fit and be above average from the individual's perspective.
2. The second condition mentioned is the clarity of the activity structure. The agent must be in full awareness of the action's goals. Reflections about goals and requirements of an action can be tiring and tedious and, thus, hinder the development of *Flow.* This seems to be the reason why games with defined rules and goals are perfect occasions to experience *Flow.*

In addition to these two prerequisites for *Flow,* people's characteristic features, such as beliefs, interests, motives, and abilities play a considerable role in the possible experience of *Flow.* It can be asserted, though, that experiencing *Flow*-like emotions is an important pre-condition of intrinsic motivation (1993, p. 211).

Schiefele and Schaffner suggest that the necessity for a balanced relation between abilities and requirements can be seen as a supporting aspect of experiencing competence. This, indeed, would highlight an important similarity between the *Self-Determination Theory* and the *Flow Theory* (2015, p. 158).

1.5.4 Interest

One of the essential constructs considering motivation in a school context is interest. According to Schiefele and Schaffner, interest research distinguishes two different aspects: individual and situational interest. Individual interest can be defined as a person's, rather enduring, appreciation of a subject area, e.g., a school subject. However, situational interest describes the state of being interested in something. It is accompanied by feelings of curiosity, fascination, as well as a high level of attention and is initiated by external circumstances or stimuli, such as an exciting lecture, speech, or movie. Interest can be interpreted as a relationship between a person and an object or subject. It defines how valuable this subject or object is to the person, i.e., in how far they develop valences for it (2015, pp. 162–163). A subject may be of high value to someone out of different reasons. Firstly, an action is valued when it is carried out with interest and is accompanied by positive emotions (Krapp, 1996, as cited in Finkbeiner, 2005, p. 50). Furthermore, a subject may be valued because engaging with it is considered to be important for one's personal development or future life. These concepts of intrinsic and extrinsic valences, thus, intersect with the concepts of intrinsic and extrinsic motivation (see 1.5.1). Experiencing situational interest, e.g., in a school context, offers similar opportunities to experiencing competence and / or *Flow* and it may, thus, be seen as an important source of intrinsic motivation (Schiefele & Schaffner, 2015, p. 162). Naturally, this is accompanied by all the useful effects of intrinsic motivation on academic achievement (see 1.5.6). As we have seen in chapter 1.4.4 the positive effects of self-concept on academic achievement are followed by positive effects of the achievements on self-concept, a situation that might also be asserted for interest. Finkbeiner describes the relation between interest and learning as reciprocal. Learning can be the catalyst for interest whereas interest can be the catalyst for learning (2005, p. 33).

1.5.5 Extrinsic Motivation

A possible introducing question to this chapter might be: Why do people engage in activities that they are not interested in? In other words: What makes us do the things we do not want to do? Deci and Ryan state that during their development,

children are guided to “engage in behaviors that they would not otherwise do, but that ensure their safety, conform with cultural values, or in some way gratify” the needs of other people. These sorts of activities sometimes seem unnatural and are rarely intrinsically motivated but “important for effective functioning in the social ‘world’”. External regulation is needed to enforce these sorts of activities. The concept explaining this phenomenon can be referred to as *socialization*, and in the means of socialization, humans have to make use of extrinsic motivation, which, in a social context, can be triggered by any external reward or punishment one encounters (1985, p. 127).

Deci and Ryan outline the process of *internalization,* which describes the “developmental movement from the nonregulation of behaviors that do not interest one, toward self-determined regulation of the subset of those behaviors that are useful for one’s effective adaptation” (1985, p. 131). During these internalization processes, norms, beliefs, and activity goals are accepted and internalized. It is suggested that they are initiated by the same positive emotions as intrinsic motivation. The internalization of social norms can also result in experiencing self-determination, competence, and interpersonal relatedness. One of these social norms could be the act of finishing one’s homework in time. After an individual has internalized the importance of such a behavior, they might engage in it with self-determination, it will help them with their social relationships to teachers and peers and foster future experience of competence (Schiefele & Schaffner, 2015, pp. 158–159).

Beginning with external regulation, which involves responding to external contingencies, Deci and Ryan place the developmental process to integration on a continuum. They name “three processes and three corresponding types of self-regulation” (1985, p. 133).

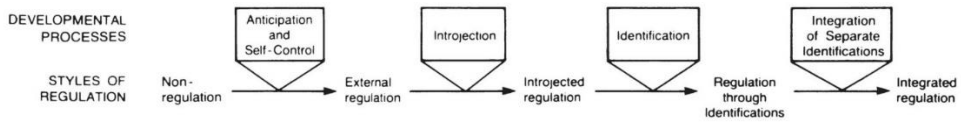

Figure 3: The internalization continuum of orgasmic integration theory (Deci & Ryan, 1985, p. 137)

The first process *Introjection* describes the internalization of a regulation in its original form, e.g., the student that now hands in his homework in time even though

they are not directly punished or rewarded for their actions anymore. In a second step, through the process of *identification,* the individual is now accustomed to the behavior and accepts it as their own. The student would not continue doing their homework because they have internalized that it is the right thing to do but because they are now accustomed to doing it and noticed advantages that derive from that behavior. During the process of *integration of separate identifications,* the last step on the continuum toward self-determination, the behavior is integrated in a person's self. It involves understanding all consequences of an action and understanding its importance. The individual now decides freely but with responsibility whether to carry out the action or refrain from it. The student now understands the importance of homework and is self-determined in the decision whether to finish it on time. If though the student decides to refrain from doing so, they are aware of all possible consequences and accept them with responsibility (Deci & Ryan, 1985, pp. 133–136).

Schiefele and Schaffner further categorized the four types of self-regulation and placed intrinsic motivation at the end of the continuum as the highest form of self-determination.

Extrinsische Motivation				Intrinsische Motivation
Externale Regulation	Introjizierte Regulation	Identifizierte Regulation	Integrierte Regulation	Intrinsische Regulation
Handeln aufgrund von äußerem Druck (Belohnung, Bestrafung)	Internalisierung eines Handlungsziels ohne Identifizierung	Identifizierung mit einem Handlungsziel, aber vorhandene Konflikte mit anderen Zielen	Identifizierung mit einem Handlungsziel ohne Konflikte mit anderen Zielen	Handeln aufgrund von handlungsbegleitenden Anreizen
fremdbestimmt		**selbstbestimmt**		

Figure 4: Differentiation between extrinsic and intrinsic motivation (Schiefele & Schaffner, 2015, p. 159)

In their adapted model, they assert that external and introjected regulation can be identified as controlled by others, whereas regulation through identification, integrated regulation and intrinsic motivation are self-determined (Schiefele & Schaffner, 2015, p. 159).

As we have seen, extrinsic motivation plays a vital role in human development and is also present in the context of learning and academic achievement. This extrinsic **learning** motivation is defined as a student's intention to engage in a learning activity to induce positive or prevent negative consequences. These consequences could be grades, recognition, future opportunities, shame or punishment and are

located outside of the activity (Schiefele & Schaffner, 2015, p. 155). According to Schiefele and Schaffner, six components of extrinsic motivation can be asserted:

1. Learning with the aim to receive good grades or other feedback considering one's performance (performance-related extrinsic learning motivation).
2. Learning with the aim to gain competence (competence-related extrinsic learning motivation).
3. Learning with the aim to demonstrate superior skills or outperform others (competition-related extrinsic learning motivation).
4. Learning with the aim to receive social appreciation (social extrinsic learning motivation).
5. Learning with the aim to achieve material work-related goals, such as prestige or income (profession-related material extrinsic learning motivation).
6. Learning with the aim to pursue a certain career (profession-content-related extrinsic learning motivation).

Surely, all these factors, 5. and 6. especially, can play a role in students' decisions to apply for a *CLIL* class. Students and parents alike reflect on possible future career paths and determine whether bilingual education might be useful for the students' future. The KMK remarks how helpful bilingual programs can be for a future career (2013, p. 7) "[…]particularly in relation to labor markets, social cohesion, and the changing aspirations of young people, within the border-free European context" (Marsh, 2002, p. 10).

1.5.6 Motivation and Academic Achievement

In the context of academic achievement, the obvious question is in how far motivation has a positive effect on it. An overall logic implication is that students who are not motivated to engage in learning activities will not reach their full potential in class. Considering motivation in an academic context, Deci presents the following dilemma:

> One of the most endearing qualities possessed by children is their curiosity […] Children are intrinsically motivated to learn; they want to understand about themselves and the world around them; they want to feel effective in

> dealing with their environment. Yet these curious children often turn into uninterested students who are bored and angry about school. What has happened to their intrinsic motivation for learning? (1976, p. 205)

Although it cannot be the aim of this study to make implications on how to maintain intrinsic motivation during a school career, it seems necessary to point out that the loss of it is counterproductive and underline how important the construct is for academic achievement. According to Schiefele and Schaffner, many studies assert a small to medium positive correlation between intrinsic motivation and academic achievement and a considerable connection to learning strategies that enable a profound processing of content (2015, p. 165). Deci and Ryan add, “The desire to explore, discover, understand, and know is intrinsic to people's nature and is a potentially central motivator of the educational process” and assert that reviews highlight the essential role of intrinsic motivation to promote learning and academic achievement (1985, p. 239). Additionally, they conclude that “being intrinsically motivated to learn improves the quality of learning” (1985, p. 250). Chapters 1.5.1 and 1.5.2 made an attempt to name vital pre-conditions for intrinsic motivation and it can be assumed that the mentioned emotions are also the reasons for its positive effect on learning and achievement. Deci and Ryan state that “when people are intrinsically motivated, they experience interest and enjoyment, they feel competent and self-determining, they perceive the locus of causality for their behavior to be internal, and in some instances they experience flow. (1985, p. 34). Thus, positive emotions are paired with the components of *Flow* (see 1.5.3).

According to Csikszentmihalyi and Schiefele, it may be assumed that people in the state of *Flow* are at their highest level of performance (1993, p. 210). They experience joy and activation in class which results in better grades at the end of the school year (p. 214). Schiefele and Schaffner confirm positive correlations between *Flow* and learning as well as academic achievement (2015, p. 166). Similar to the satisfaction of basic psychological needs, experiencing *Flow* seems to be an additional appeal of intrinsically motivated activities (p.158).

Considering interest, research confirms a medium correlation with performance and school grades. In many cases interest for mathematics was a significant predictor for mathematics competence (Schiefele & Schaffner, 2015, p. 166). However, this

effect seems to be especially strong in higher school levels since in lower levels a decent part of students' motivation stems from extrinsic factors such as assessments, grades and reinforcement (2015, p. 167).

As mentioned in chapter 1.5.5, extrinsic learning motivation occurs when a student engages in a learning activity to create positive or avoid negative consequences (Deci & Ryan, 1993, p. 225; Schiefele & Schaffner, 2015, p. 155). In a foreign language learning context, this consequences include: "the prospects of a good job that requires L2 proficiency, or, at school, a particular test to be taken or an involving instructional task" (Dörnyei, 2008, p. 619). Research confirms that extrinsic motivation definitely has an impact on academic achievement and the use of expedient learning strategies although this impact seems to be weaker in comparison to intrinsic motivation (Schiefele & Schaffner, 2015, p. 165). Society's values, such as status, money, grades, graduations, titles, prizes, and so on, seem to influence many of our actions and decisions in life. It seems only natural that extrinsic factors influence academic decisions and activities for most of us as well. Even the writing of this very paper is partly influenced by extrinsic factors although some of them are already integrated in the author's self. Some authors, however, point out negative effects of extrinsic factors on intrinsic motivation. Deci and Ryan assert that "both intrinsic and extrinsic motivational processes" promote "children's learning and achievement" (1985, p. 239) but point out that "intrinsically motivated learning is superior" (p. 264). Deci states that, although it was assumed intrinsic and extrinsic motivation were "additive", they are not, meaning, "extrinsic rewards affect intrinsic motivation; in general, the greater the extrinsic rewards the greater the decrease in intrinsic motivation" (1976, p. 219).

In conclusion, intrinsic motivation, which includes experiencing competence, self-determination, and interpersonal relatedness, *Flow,* interest, and extrinsic motivation are all said to have a positive effect on academic achievement. However, intrinsic motivation is favored over extrinsic motivation, and the latter can decrease the former.

1.5.7 The Construct of Motivation in this Study

Due to the different effects on academic achievement and the differing preconditions, components, and causalities (see 1.5.1; 1.5.5; 1.5.6) it is essential for

this study to differentiate between intrinsic and extrinsic motivation. The theory of interest is said to be one of the predecessors of motivation psychology (Schiefele, 1996, p. 18 as cited in Finkbeiner, 2005, p. 32). Finkbeiner states that interest as a construct cannot be completely separated from other constructs (2005, p 34) and that hierarchy and interdependence between interest and motivation are not clearly defined (p. 35). According to Schiefele, interest is not equal with intrinsic motivation but functions as a cognitive link between a subject and positive emotions as well as individual valor (1991 as cited in Schiefele & Schreyer, 1994, p. 4). Interest can therefore serve as a precondition for intrinsic motivation (Schiefele & Schreyer, 1994, p. 11). Though often treated as independent constructs, we will, from now on, following the definitions and findings of Deci, 1976; Deci and Ryan, 1985; Csikszentmihalyi and Schiefele, 1993; Schiefele and Schreyer, 1994; Schiefele, 1996; Finkbeiner, 2005; Schiefele and Schaffner, 2015; refer to the experience of competence, self-determination, social relatedness, *Flow,* and interest as factors of and prerequisites for intrinsic motivation.

The construct of extrinsic motivation in this study will mainly be focused on the components: *profession-related material extrinsic learning motivation* and *profession-content-related extrinsic learning motivation* of Schiefele and Schaffner's (2015) construct of extrinsic learning motivation (see 1.5.5) in regard to choice of school courses.

1.6 State of Research

1.6.1 Self-Concept in CLIL

Beginning with the works of William James (1892), self-concept has been an important part of psychological research. According to Möller and Trautwein, Cooley (1902) described the influence of important people, such as friends and family, on a person's self-concept and Mead and Morris (1934), differentiated between single individuals and social groups as an influence. Markus (1977) juxtaposed lasting and situational aspects of self-concept, whereas Filipp (1979) created the idea of self-concept as a structure of knowledge (as cited in: 2015, pp. 180–181). Numerous works which include: Shavelson et al. (1976); Marsh (1986); Marsh et al. (1988); Marsh (1990); Byrne (1996) and many others have

contributed to the findings in this field of study and the development of the construct self-concept.

Since this study focusses on academic self-concepts, research was canalized towards studies with implications on a school context. Möller and Trautwein state that an important factor of self-concept is its positive effect on students' subject specific interest. Eccles (1983) integrated these factors into her *Expectancies-Value Model,* and Retelsdorf and Möller (2008) concentrated on the influence of social environments on reading self-concept and reading motivation (2015, p. 195). Finkbeiner laid the focus on self-concept and interest in the context of second language reading (2005).

A vast amount of research has been done regarding the influence of self-concept on academic achievement (see 1.4.4). Valentine et al. conducted a meta-analysis of 55 research reports and state,

> There has been extensive debate among scholars and practitioners concerning whether self-beliefs influence academic achievement. To address this question, findings of longitudinal studies investigating the relation between self-beliefs and achievement were synthesized using meta-analysis. Estimated effects are consistent with a small, favorable influence of positive self-beliefs on academic achievement […] Stronger effects of self-beliefs are evident when assessing self-beliefs specific to the academic domain and when measures of self-beliefs and achievement are matched by domain (e.g., same subject area). (2004, p. 111)

These studies include many that examine the positive influence of verbal self-concept on language learning inside a specific domain, e.g., English self-concept and English achievement. In the context of *CLIL* in Germany, it seems important to analyze the effects of *CLIL* lessons on the English self-concept and on the content subject self-concept in particular.

A research in the database *FPP/ERIC* resulted in 52 hits for the keywords "CLIL self-concept". Out of these 52 results, one study analyzed the effect of a *CLIL* lesson (physical education) on the students' anxiety, and, "results indicate that […] CLIL pupils experience significantly less anxiety than their non-CLIL counterparts" (Smet, Mettewie, Galand, Hiligsmann, & van Mensel, 2018, p. 48). Evnitskaya and

Berger analyzed learners' willingness to participate in class in a *CLIL* context (2017). Lasagabaster and Doiz found an increase in English proficiency when they compared *CLIL* classes with regular English as a Foreign Language *(EFL)* classes (2016). Heras and Lasagabaster ascertained that gender differences regarding motivation might be reduced by a *CLIL* approach (2015). Tragant, Marsol, Serrano and Llanes compared a *CLIL*-based and a regular *EFL* term in the same learner group and examined no difference in vocabulary learning process (2016). Through the implementation of "a blend of CLIL and cooperative learning" Pistorio found that students learned how to learn, became more autonomous, self-directed and intrinsically motivated. (2010, p. 1). Buse examined the influence of a bilingual module on students' self-concept and interest. Regarding knowledge gain, no differences between *CLIL* and monolingual courses could be found. *CLIL* learners showed an increase in English proficiency after the treatment, but this difference was not significant over the long term (2017). Seikkula-Leino examined a low foreign language self-concept but a strong motivation to learn in *CLIL* learner groups (2007). Rumlich conducted a study at German secondary schools in 2015 and claims that, "after two years, the analyses found no CLIL-related benefits for general *EFL* proficiency or interest in *EFL* classes and solely a minor increase in *EFL* self-concept that might be attributable to CLIL" (2017, p. 110). Rodenhauser and Preisfeld compared two bilingual groups as well as one monolingual biology learner group and state that no significant differences in cognitive achievement were found and the students' biological self-concept had no impact on cognitive achievement (2015).

In conclusion, ten of the studies found through the database research examine the influence of *CLIL* on students' achievement and motivational factors. Only three studies take into perspective which effects on students' academic or foreign language self-concepts can be ascertained.

1.6.2 Motivation in CLIL

A second vital construct in psychological research, in educational psychology especially is motivation. Beginning with ancient Greek philosophers who asserted an important "driving force in behavior" is hedonism, motivation theory has a long history (Steers, Mowday, & Shapiro, 2004, pp. 379–380). According to Steers et

al., philosophers of the 17th and 18th century elaborated on this field until "the issue of motivation began to migrate from the realm of philosophy to the newly emerging science of psychology" (2004, p. 380). From the first conception of interest in the context of educational psychology which were introduced by Herbart in 1806 (Finkbeiner, 2005, p. 32) over suggestions by James, Freud, and McDougall in the early 20th century that "much behavior resulted from instinct" to models based on drive or reinforcement (Steers et al., 2004, p. 380) motivation research has evolved and introduced many concepts that certainly apply to an academic context. Important attributions to this field were made by Deci (1976); Deci and Ryan (1985); Csikszentmihalyi and Schiefele (1993); Schiefele and Schreyer (1994); Schiefele (1996); Finkbeiner (2005) and Schiefele and Schaffner (2015), only to name a few, and asserted the importance of motivation for academic achievement.

Regarding a *CLIL* context, many studies have been conducted in the last 15 years. With reference to Holm (2013), Schmelter (2013), and Haagen-Schützenhöfer et al. (2011) Piesche, Keßler, Jonkmann, Holm and Schwab confirm that bilingual education has a positive influence on language proficiency (p. 21). Considering the content subject proficiency, the findings are rather inconclusive. With reference to Bialystok and Martin (2004), Bialystok (1999), Kuska, Zaunbauer and Möller (2010), Hasher, Zacks and May (1999), Wolff (1997), Wannagat (2013), Hartmannsgruber (2014), Lo and Lo (2014), Jäppinen (2005) as well as Marsh, Kong and Hau (2000), only to name a few, Piesche et al. assert that many studies found advantages of bilingual children or bilingual learning in regard to academic achievement in the content subject, whereas only few attest negative effects (pp. 22–24).

Although a steadily increasing amount of research is conducted in the field of bilingual education, studies that examine motivation in the context of *CLIL* still seem to be rare. Breidbach and Viebrock assert, "Motivation is among the marginally examined concepts in German-speaking CLIL research." (2012, p. 11) Finkbeiner offered a very profound insight into the relation between interest and learning strategies that might have positive effects on deeper processing of content and thereby on English proficiency (2005). Referring to studies such as Lo and Lo (2014), Witzigmann (2011), Landgraf (2009), Fehling (2008), Abendroth-Timmer (2007), Zydatiß (2007), Bredenbröker (2000), Lasagabaster and Sierra (2009), Seikkula-Leino (2007), Piesche et al. confirm that *CLIL* has a positive effect on

language learning motivation (p. 27). Considering motivation in regard to the content subject, the state of research seems to be even more scarce. The databases *ERIC* and *FIS Bildung* both offered zero results for the keywords "CLIL and motivation" or "CLIL and Motivation and Sachfach". Piesche et al. compared the following studies in regard to this matter: Lo and Lo (2014), Witzigmann (2011), Rymarczyk (2003), Landgraf (2009), Meyer (2003), Weber (1993), Hartmannsgruber (2014), as well as Verrière (2014), and conclude that in most cases *CLIL* resulted in increasing or at least equal motivation towards the content subject (pp. 28–29).

In summary, evidence shows that, in many cases, *CLIL* programs have a positive effect on motivation towards language learning and a positive or no effect on the motivation towards the content subject.

2. Research Purpose, Research Question and Hypotheses

2.1 Research Purpose and Research Question

As evidence shows *CLIL* courses may increase students' self-concepts and motivation regarding language learning and the content subject (see 1.6.1; 1.6.2) and thus affect academic achievement regardless of the domain positively (see 1.4.4; 1.5.6). It seems obvious that academic self-concepts and motivation should be fostered, and these findings suggest that *CLIL* courses might be one possibility to do so. The above-mentioned positive effects have certainly been tested or measured after an intervention such as a *CLIL* course, term, or module. A factor that has not yet been examined is in how far the decision to attend such a course, i.e., shortly before or shortly after these courses begin, has an impact on students' self-concepts or motivation. Furthermore, what sort of motivation and self-concepts students that recently applied for being part of a *CLIL* learner group and now experience the initial phase of *CLIL* show considering the specific bilingual subjects and English compared to other students of similar age attending the same school but monolingual classes. It seems possible that students who make the decision to attend a bilingual course in history experience an increase of motivation and self-concept before the course even started or at least within the first few weeks of the course. On the other hand, it can be assumed that students who apply for a *CLIL*

learner group, with biology and history being the two subjects taught in English during the first year, already possess decent motivation for and sufficient self-concepts in the domains biology, history and / or English as a second language.

All these aspects contributed to the purpose of this project and led to the research question:

In how far do self-concepts, intrinsic motivation, and extrinsic motivation considering the subjects: English, history and biology of students who have recently decided to apply for a *CLIL* learner group and now experience the initial phase of the program differ from self-concepts, intrinsic motivation, and extrinsic motivation of students of the same grade and same school who attend monolingual history and biology courses?

2.2 Hypotheses

With the help of the research purpose and the research question, it was possible to generate the following seven hypotheses:

1. H_1: Students who have recently applied for and now experience the initial phase of *CLIL* courses have higher-self concepts in English than those from the monolingual learner groups.

2. H_2: Students who have recently applied for and now experience the initial phase of biology through *CLIL* have higher-self concepts in biology than those from the monolingual learner groups.

3. H_3: Students who have recently applied for and now experience the initial phase of history through *CLIL* have higher-self concepts in history than those from the monolingual learner groups.

4. H_4: Students who have recently applied for and now experience the initial phase of *CLIL* courses experience more intrinsic motivation toward English than those from the monolingual learner groups.

5. H_5: Students who have recently applied for and now experience the initial phase of biology through *CLIL* experience more intrinsic motivation toward biology than those from the monolingual learner groups.

6. H_6: Students who have recently applied for and now experience the initial phase of history through CLIL experience more intrinsic motivation toward history than those from the monolingual learner groups.

7. H_7: Extrinsic factors considering future careers, such as possible future income or status, play an important role in the decision to apply for CLIL courses.

3. Method

3.1 Instrument: The Questionnaire

To collect the data for this study, a questionnaire was chosen as the most adequate research instrument. According to Mackey and Gass, "Questionnaires allow researchers to gather information that learners are able to report about themselves, such as their beliefs and motivations about learning or their reactions to learning and classroom instruction and activities—information that is typically not available from production data alone." (2005, pp. 92–93). They add that questionnaires may contain two different item formats: open ended items and closed ended items. Open ended items are characterized by the fact that they "allow […] respondents to answer in any manner they see fit", whereas closed ended items are those "for which the researcher determines the possible answers" (Mackey & Gass, 2005, p. 93). The present questionnaire contains 31 items, 3 of which are open ended items and 28 closed ended. 22 of the questions aim at measuring the attitude of the participants. The most popular model of attitude measurement in questionnaires is the Likert Scale. Likert scales consist of several items, that all offer the possibility to answer on a scale of two or more options to indicate in how far participants agree or disagrees with a statement (Bradburn, Sudman, & Wansink, 2004, p. 126). For the present study, a four-point answering scale of the Likert type, with the statements 1=disagree strongly, 2=disagree somewhat, 3=agree somewhat and 4=agree

strongly, was chosen. An uneven number of answering options offers the possibility to give an entirely neutral answer, meaning participants indicate they are undecided or unsure about the answer, i.e., they agree to a statement as much as they disagree. To avoid a tendency to an intermediate answer, only the above mentioned four answering options were used in this study. This way, if the students are not sure, they would have to decide between 2 and 3 and can be allocated to either agreement or disagreement if necessary. To benefit from the expertise of experienced authors as well as valid and reliable items, the items of the questionnaire have been borrowed or were inspired by items of existing questionnaires (Wolff, 2002, p. 12; Graner, 2015, pp. 60–67; Arens, 2011, p. 26; Finkbeiner, 1995, p. 253; Marsh, 1990). To thoroughly analyze the different constructs in this study, the items had to be grouped and divided into the following four categories.

3.1.1 Demographic Questions

Item 1: Geschlecht: weiblich, männlich, divers - *Gender: female, male, divers*

Item 2: Schulklasse: monolingual, bilingual - *Learner group: monolingual, bilingual*

Item 3: Meine Erstsprache / n ist / sind? - *My first language is / languages are?*

Asking about the first languages will allow analyzing whether certain results correlate with the first language of the participant.

3.1.2 Self-Concept

A decent self-concept in a specific domain such as a school subject can predict high academic achievement in this field. On the other hand, due to their reciprocal relation, academic achievement might also attribute to the further increase of self-concepts. As mentioned in chapter 1.4.6, the construct self-concept in this study refers to the competence-oriented components of domain specific self-concepts. Furthermore, for a possible differentiation of self-concepts of talent and ability self-concepts and with reference to Marsh (1990) as well as Möller and Trautwein (2015), one item aiming at each of these components, for each domain, i.e., school

subject, were included in the instrument. Hence, the two items can be combined to examine a domain-specific self-concept, e.g., biology self-concept, or analyzed separately for more differentiation.

Self-concepts of talent

Item 27: Englisch fällt mir leicht. – *English comes easily to me.*

Item 30: Biologie fällt mir leicht. – *Biology comes easily to me.*

Item 8: Geschichte fällt mir leicht. – *History comes easily to me.*

Item 20: Schule allgemein fällt mir leicht. – *School in general comes easily to me.*

Ability self-concepts

Item 31: Im Englischunterricht bin ich gut. – *I am good at English.*

Item 28: Im Biologieunterricht bin ich gut. – *I am good at biology.*

Item 14: Im Geschichtsunterricht bin ich gut. – *I am good at history.*

Item 24: In der Schule bin ich gut. – *I am good at school.*

3.1.3 Intrinsic Motivation

As we have seen in chapters 1.5.1, 1.5.2, 1.5.3, and 1.5.4, intrinsic motivation has a positive influence on students' academic achievement and can be fostered or initiated through activities which are fun, create joy, are performed with interest and in a setting that satisfies the need for social relatedness. In a school context social relatedness can be fostered by an anxiety-free learning environment and a healthy relationship to the teacher and fellow students. To indicate possible differences of intrinsic motivation towards the different school subjects, the items were grouped accordingly. All these factors were considered while creating the following items:

Item 4: Der Englischunterricht macht mir Spaß.
English lessons are fun.

Item 10: Ich interessiere mich in meiner Freizeit für Englisch.
I am interested in English in my spare time.

Item 16: Im Englischunterricht herrscht bei uns eine gute Atmosphäre.

We have a positive classroom atmosphere in our English lessons.

Item 21: Ich habe eine gute Beziehung zu meiner Englischlehrkraft.
I have a positive relationship with my English teacher.

Item 25: Im Englischunterricht mache ich gerne mit.
I like to participate in English lessons.

Item 11: Der Biologieunterricht macht mir Spaß.
Biology lessons are fun.

Item 5: Ich interessiere mich in meiner Freizeit für Biologie.
I am interested in biology in my spare time.

Item 22: Im Biologieunterricht herrscht bei uns eine gute Atmosphäre.
We have a positive classroom atmosphere in our biology lessons.

Item 17: Ich habe eine gute Beziehung zu meiner Biologielehrkraft.
I have a positive relationship with my biology teacher.

Item 26: Im Biologieunterricht mache ich gerne mit.
I like to participate in biology lessons.

Item 18: Der Geschichtsunterricht macht mir Spaß.
History lessons are fun.

Item 29: Ich interessiere mich in meiner Freizeit für Geschichte.
I am interested in history in my spare time.

Item 6: Im Geschichtsunterricht herrscht bei uns eine gute Atmosphäre.
We have a positive classroom atmosphere in our history lessons.

Item 12: Ich habe eine gute Beziehung zu meiner Geschichtslehrkraft.
I have a positive relationship with my history teacher.

Item 23: Im Geschichtsunterricht mache ich gerne mit.
I like to participate in history lessons.

3.1.4 Extrinsic Motivation

The students of the bilingual class all applied for their possible participation in this learner group. They all chose freely, in agreement with their parents to attend a bilingual class. To examine whether there are any differences in students' extrinsic motivation, questions were included that aim at possible extrinsic factors involved

in applying for the *CLIL* learner group. This way extrinsic motivation toward the different subjects can be examined. Extrinsic factors in the means of positive consequences in an academic context include, "the prospects of a good job that requires L2 proficiency, or, at school, a particular test to be taken or an involving instructional task" (Dörnyei, 2008, p. 619). To analyze which extrinsic factors might have played a role in the decision for *CLIL*, the following items were included:

Item 13: Ich habe mich für die bilinguale Klasse entschieden, weil:
I chose the bilingual learner group because:

Item 7: Möchtest du in deinem zukünftigen Beruf etwas mit Englisch machen? (ja/nein)
Do you pursue a profession connected to the English language? (yes/no)

Item 19: Was möchtest du werden? Berufswunsch:
What career do you want to pursue?

Item 9: Denkst du, dass sich bilingualer Unterricht positiv auf die Zukunft einer Schülerin / eines Schülers auswirkt? (ja/nein)
Do you think bilingual education has a positive effect on a student's future? (yes/no)

Item 13 was only presented to the CLIL learner group.

4. Conducting the Study

4.1 Setting: A secondary school *(Gymnasium)* in Kassel, Hesse, Germany

The study was conducted at a secondary school for level one (5th to 10th grade) and level two (11th to 13th grade). A *Gymnasium* is one of several different types of schools in the German school system. In the state of Hesse teachers offer a non-mandatory recommendation whether students should visit a *Gymnasium* after primary school. Regular preconditions for a *Gymnasium* recommendation are learning development, performance, and work attitude of the students, since *Gymnasiums* prepare students for their higher education entrance *(in German:*

Abitur). The school where the study was conducted specializes on sports and bilingual education. Beginning in 5th grade, students can attend special sports learner groups which have additional sports courses at school. Additionally, students can apply for a *CLIL* program, which begins in 7th grade. In the *CLIL* learner groups two of all subjects are taught in English.

4.2 Choice of the Learner Groups

Three learner groups of the above-mentioned school participated in this study. One bilingual group as the experimental group and two monolingual learner groups as the control group. The students answered the questionnaire about six weeks after the beginning of the school year. By this time, the experimental group had just begun with biology and history lessons through *CLIL*. The *CLIL* group will attend bilingual courses in two main subjects for five years, according to the following schedule:

8th grade:	history, biology, geography
9th grade:	history, biology, geography, music, physical education
10th grade:	geography, music, physical education, chemistry
11th grade:	3 subjects of the group: history, politics/economics, biology, chemistry, geography
12th/13th grade:	2 subjects of the group: history, politics/economics, biology, chemistry, geography

4.3 Participants (Social Background, Origin, Gender)

74 students participated in the survey, 32 of which identified as female and 42 as male. Referring to the preconditions for attending a *Gymnasium*, most of the students performed well during primary school. The students come from all socioeconomic backgrounds and represent a very heterogenous, multiethnic and multinational group.

4.4 Procedure and Timeframe

After the contact was established, Mr. B., who is a teacher at the above-mentioned school and head of the department for humanities and social sciences, offered his help and organized the whole process of conducting the survey. He reserved the rooms, informed the teachers of the learner groups, and coordinated authorizations and declarations of consent. The survey was conducted at the end of October 2020. The questionnaire was designed in an online format, thus, the students filled in the questionnaire on school laptops in the computer lab.

4.5 Anonymity

The survey was conducted in an anonymous online format. No personal information and no contact data were collected.

5. Results

5.1 Proceedings / Statistical Testing

The collected data was analyzed and tested with several analytical and statistical proceedings through the statistical software SPSS. The following tests were performed with the data:

- Descriptive statistics
    - Numerical measures
    - Frequencies analysis
    - Crosstabulation
- Recoding of Data
- Reliability Test – *Cronbach's Alpha*
- *Bayesian Normality test*
- *Levene Test*
- Comparison of Means – *Student's T-Test* and *Welch's T-Test*

5.1.1 Numerical Measures / Frequencies analysis / Crosstabulation

Numerical measures can be used to summarize the data. In a first step the percentage, the mean value and the median can be calculated (Finkbeiner, 2005, p. 301; Brosius, 2018, p. 439). To display and compare the numerical measures of two different variables, they can be entered in a crosstabulation (Patzelt, 1985, p. 36).

5.1.2 Recoding of Data

In order to analyze and compare the answers to open-ended questions, the answers must be recoded and categorized first (Brosius, 2018, p. 278). Long Answers to open questions can be categorized to either correct or incorrect or assigned to different categories such as career fields.

5.1.3 Reliability Test – *Cronbach's Alpha*

Some constructs such as attitudes can best be measured through a set of items. The items have to show a high intercorrelation to be considered a reliable scale (Bradburn et al., 2004, p. 126). To verify that a scale can actually be used to measure a certain factor, e.g., Intrinsic Motivation, its reliability can be tested through the *Cronbach's Alpha*. If the items show equal variances, the *Cronbach's Alpha* indicates an estimation for the reliability of the scale. If the *Cronbach's Alpha* is 0,7 or higher the scale can be considered reliable (Brosius, 2018, p. 951).

5.1.4 Bayesian Normality Test

One important prerequisite to perform the t-test for means comparison is that the data is normally distributed. This can be tested with the *Bayesian Normality Test* (Brosius, 2018, p. 477).

5.1.5 Levene's Test

To apply a *t-test*, the variances of the two samples need to be approximately equal. The H_0 of *Levene's Test* states that the variances are approximately equal. If the significance of *Levene's Test* is greater than 0.05, *Levene's* test is non-significant, the H_0 cannot be rejected and it can be ascertained that the variances of the two samples are approximately equal (homogeneity of variances) (Brosius, 2018, pp. 481–482).

5.1.6 Comparison of Means – *Student's T-Test*

The *Student's T-Test* is used to compare the means of two different samples or two sub groups of the study (Finkbeiner, 2005, p. 301; Brosius, 2018, p. 557). *Student's T-Test* for two independent samples can indicate whether the variables of two items correlate with each other. A significant difference in the means between the two samples or subgroups would suggest that there is statistical evidence for a significant difference of the means in the associated population. The H_0 of *Student's T-Test* states that the means of the two samples are approximately equal. If the p-value is under 0.05, the H_0 can be rejected, and it can be stated that the means are significantly different (Brosius, 2018, p. 558).

5.1.7 Comparison of Means – *Welch's T-Test*

If *Levene's Test* states that the variances of two variables are not approximately equal, *Student's T-Test* cannot be performed. An alternative for two variables with unequal variances is *Welch's T-Test.* Similar to *Student's T-Test,* it can indicate if there is a difference in means between the two samples. The H_0 of *Welch's T-Test* states that the means of the two samples are approximately equal. If the p-value is under 0.05, the H_0 can be rejected, and it can be stated that the means are significantly different (Brosius, 2018, p. 602).

5.2 Demographic Questions

5.2.1 Item 1: Gender

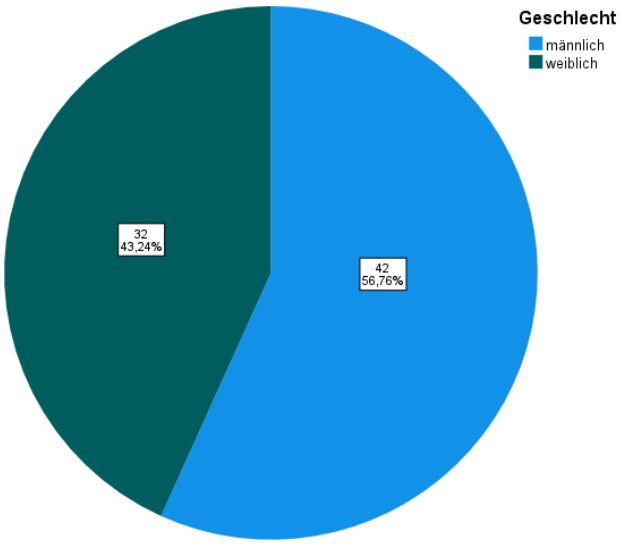

Figure 5 – Gender (own figure)

As mentioned in chapter 4.3, 32 of the participants identified as female and 42 as male. None of the students identified as divers which was the third option of the question.

*Geschlecht * Schulklasse Crosstabulation*

			Schulklasse		
			Bilingual	Monolingual	Total
Geschlecht	männlich	Count	12	30	42
		% within Schulklasse	40,0%	68,2%	56,8%
	weiblich	Count	18	14	32
		% within Schulklasse	60,0%	31,8%	43,2%
Total		Count	30	44	74
		% within Schulklasse	100,0%	100,0%	100,0%

*Figure 6 – Crosstabulation – Gender * Learner Group (own figure)*

However, the distribution between bilingual and monolingual learner groups differs. The bilingual group consists of 18 females (60,0 %) and 12 males (40,0

%), whereas the monoligual group consists of 14 females (31,8 %) and 30 males (68,2 %).

5.2.2 Item 3: First language/s

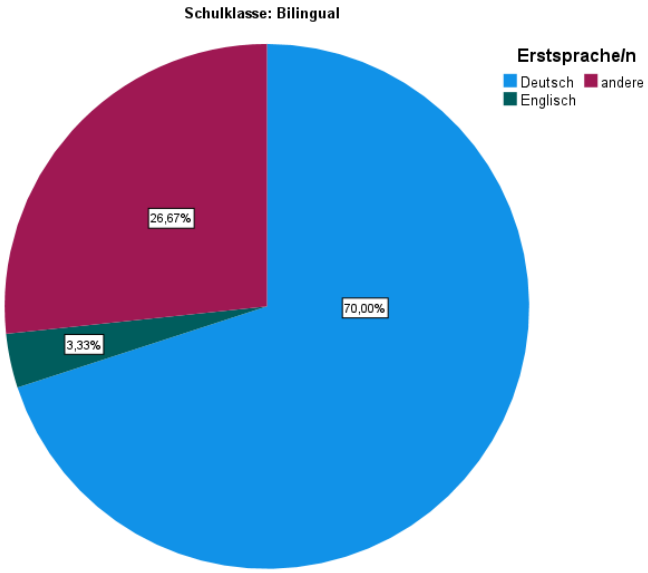

Figure 7 - First Language/s – Bilingual learner group (own figure)

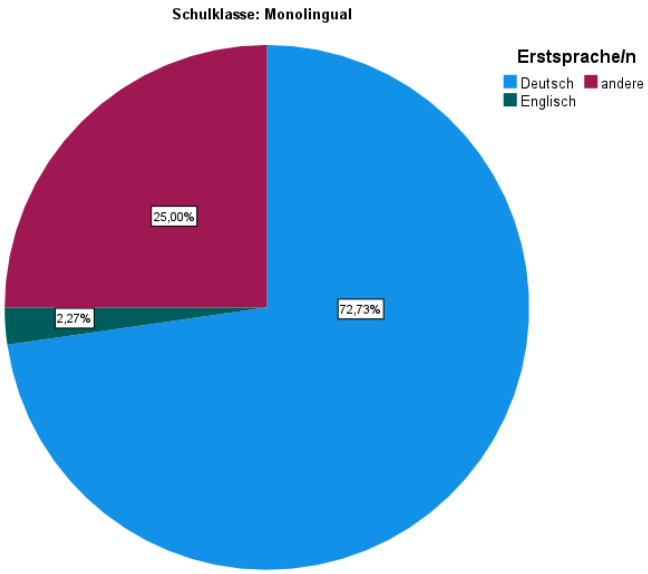

Figure 8 - First Language/s – Monolingual learner group (own figure)

The answers to the question: what is / are your first language/s? had to be coded and assigned to three different categories: German, English, and other. Only minimal differences can be ascertained. In the *CLIL* group, 70.00% named German

as their first language, 3.33% named English, and 26.67% named other languages. In the monolingual group, 72.73% named German, 2.27% named English, and 25.00% named other languages.

5.3 Self-Concept

5.3.1 Item 27: English comes easily to me

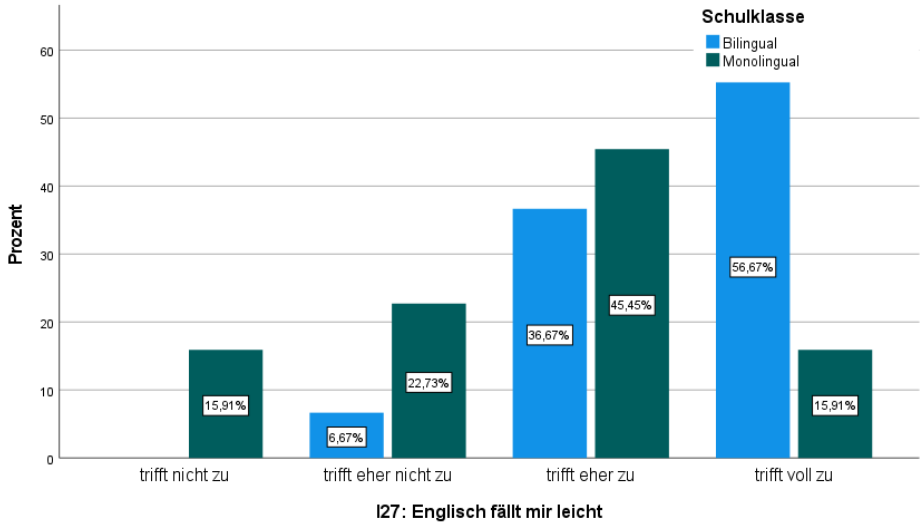

Figure 9 – Item 27: English comes easily to me (own figure)

Figure 9 shows that in the bilingual group 56.67% of the participants agree strongly and 36.67% agree somewhat to this statement. In sum 93.34% agree to the statement whereas only 6.67% disagree. In the monolingual learner group only 15.91% agree strongly and 45.45 agree somewhat. In sum 61.36% agree whereas 38.64% disagree.

5.3.2 Item 31: I am good at English

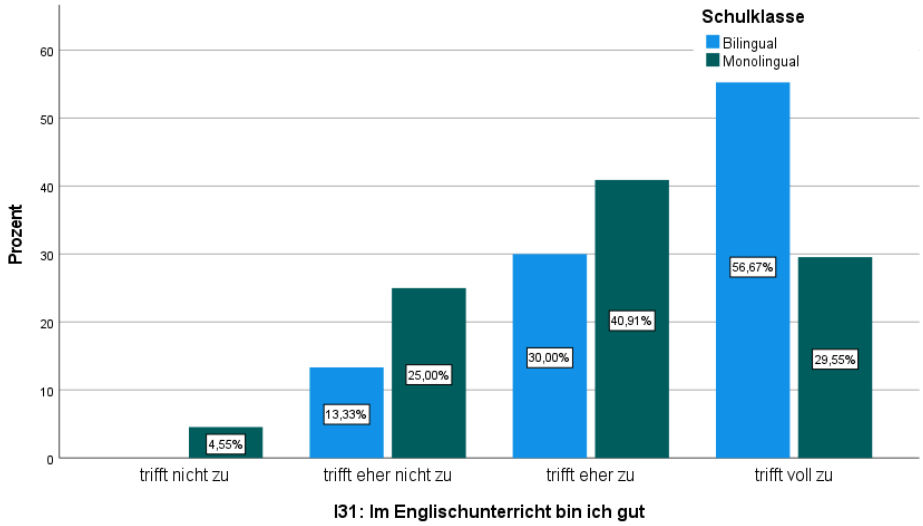

Figure 10 – Item 31: I am good at English (own figure)

Figure 10 shows that in the bilingual group 56.67% of the participants agree strongly and 30.00% agree somewhat to this statement. In sum 86.67% agree to the statement whereas only 13.33% disagree. In the monolingual learner group only 29.55% agree strongly and 40.91% agree somewhat. In sum 70.46% agree whereas 29.54% disagree.

5.3.3 English Self-Concept

Since the domain-specific self-concepts cannot be determined through one item in a questionnaire, the items displaying ability and competence oriented self-concepts had to be combined to a scale. This way a factor analysis could be conducted. To measure the reliability of a scale the *Cronbach's Alpha* was calculated with SSPS. According to Brosius, a *Cronbach's Alpha* over 0,7 is required to determine the scale's reliability considering the factor Aspects of Intrinsic Motivation (Brosius, 2018, p. 951).

Reliability Statistics

Cronbach's Alpha	N of Items
,880	2

Figure 11 – Cronbach's Alpha – Scale English Self-Concept (own figure)

The *Cronbach's Alpha* of 0.880 confirms that the items can be treated as a reliable scale, which would allow it to calculate a mean of the scale.

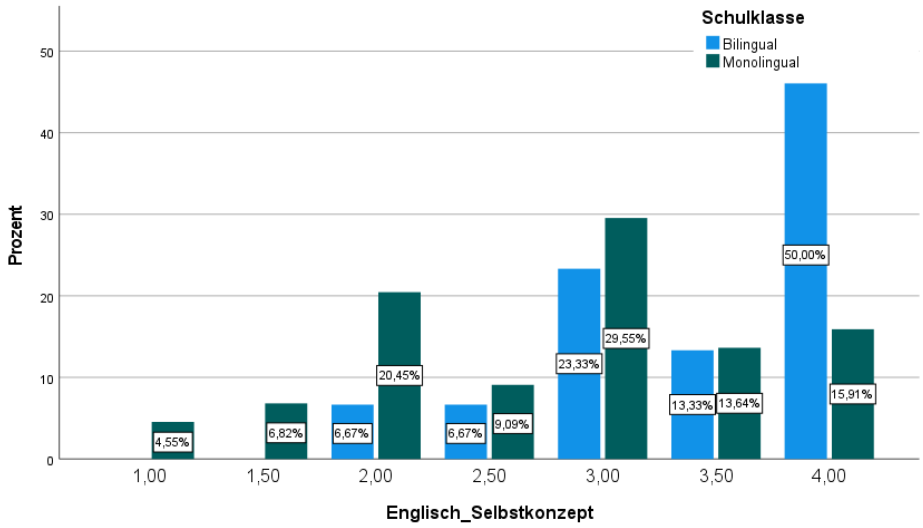

Figure 12 – English Self-Concept (own figure)

Figure 12 shows that students from the *CLIL* group seem to have a higher English self-concept than students from the monolingual group. The mean of a scale from 1 to 4 is 2.5, and the figures shows that in the *CLIL* group 86.66% of the students reach a score of 3.0 or higher, whereas in the monolingual group only 59.10% reach a score of 3.0 or higher.

Group Statistics

	Schulklasse	N	Mean	Std. Deviation	Std. Error Mean
Englisch Selbstkonzept	Bilingual	30	3,4667	,64237	,11728
	Monolingual	44	2,7841	,85180	,12841

Figure 13 – English Self-Concept – Means (own figure)

A comparison of the means shows that even though the means of both groups are above the mathematical mean of 2.5, the mean of the *CLIL* group is higher than the mean of the monolingual group.

The *Student's T-Test* can be used to confirm this assumption. As two prerequisites for applying the *T-Test*, the distribution of the items had to be tested for normality. Normality was confirmed by the *Bayesian Normality Test* (see attachment).

Posterior Distribution Characterization for One-Sample Mean

	N	Posterior			95% Credible Interval	
		Mode	Mean	Variance	Lower Bound	Upper Bound
Englisch_Selbstkonzept	74	3,0608	3,0608	,010	2,8634	3,2582

Prior on Variance: Diffuse. Prior on Mean: Diffuse.

Figure 14 – English Self-Concept – Posterior Distribution Characterization for One-Sample Mean (own figure)

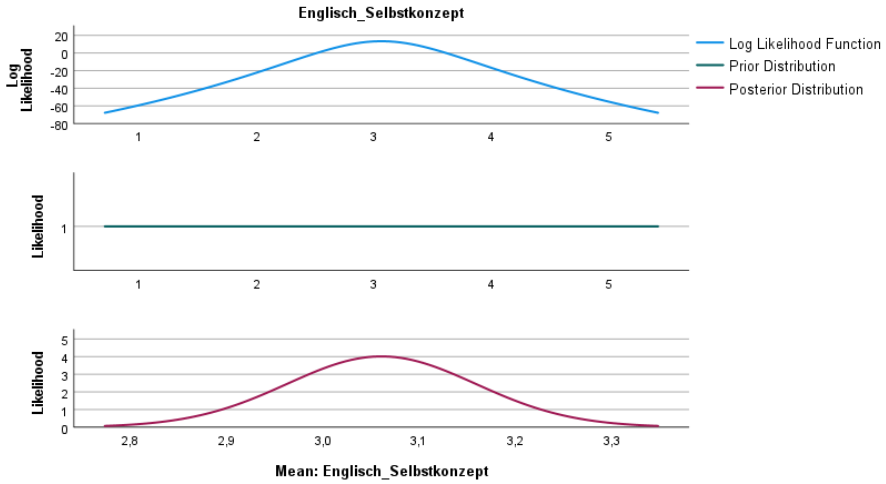

Figure 15 – English Self-Concept – Distribution (Bayesian Normality Test) (own figure)

Furthermore, *Levene's Test* for equality of variances was applied because to apply a t-test, the variances of the two samples need to be approximately equal. Since the p-value of *Levene's Test* is 0.090, which is higher than 0.05, the H_0 of *Levene's Test* cannot be rejected and it can be ascertained that the variances of the two samples are approximately equal (homogeneity of variances).

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Englisch Selbstkonzept	Equal variances assumed	2,957	,090	3,723	72	<,001	,68258	,18333	,31712	1,04804
	Equal variances not assumed			3,925	71,199	<,001	,68258	,17391	,33583	1,02933

Figure 16 – English Self-Concept – T-Test (own figure)

Finally, the two-sided p-value, which indicates the level of significance, of the t-test was calculated. The figure shows that the p-value is under 0.001, which is under 0.05 stating that the means are significantly different. In fact, when the p-value is less than 0.001, it can be stated that the difference is highly significant.

5.3.4 Biology Self-Concept

With a *Cronbach's Alpha* of 0.839, the items can be treated as a reliable scale, which would allow it to calculate a mean of the scale.

Group Statistics

	Schulklasse	N	Mean	Std. Deviation	Std. Error Mean
Biologie Selbstkonzept	Bilingual	30	2,9000	,63518	,11597
	Monolingual	44	2,7045	,70972	,10699

Figure 17 – Biology Self-Concept – Means (own figure)

A comparison of the means only shows a small difference between the bilingual and monolingual learner groups.

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Biologie Selbstkonzept	Equal variances assumed	,688	,410	1,213	72	,229	,19545	,16116	-,12582	,51673
	Equal variances not assumed			1,239	66,760	,220	,19545	,15778	-,11951	,51041

Figure 18 – Biology Self-Concept – T-Test (own figure)

The t-test confirms that there is no significant (p=0.229) difference between the two groups.

5.3.5 History Self-Concept

With a *Cronbach's Alpha* of 0.765, the items can be treated as a reliable scale, which would allow it to calculate a mean of the scale.

Group Statistics

	Schulklasse	N	Mean	Std. Deviation	Std. Error Mean
Geschichte Selbstkonzept	Bilingual	30	3,1500	,72099	,13163
	Monolingual	44	2,9205	,85551	,12897

Figure 19 – History Self-Concept – Means (own figure)

A comparison of the means only shows a small difference between the bilingual and monolingual learner groups.

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Geschichte Selbstkonzept	Equal variances assumed	,060	,807	1,206	72	,232	,22955	,19037	-,14996	,60905
	Equal variances not assumed			1,246	68,703	,217	,22955	,18429	-,13812	,59722

Figure 20 – History Self-Concept – T-Test (own figure)

The t-test confirms that there is no significant (p=0.232) difference between the two groups.

5.3.6 General School Self-Concept

With a *Cronbach's Alpha* of 0.818, the items can be treated as a reliable scale, which would allow it to calculate a mean of the scale.

Group Statistics

	Schulklasse	N	Mean	Std. Deviation	Std. Error Mean
Schule allgemein Selbstkonzept	Bilingual	30	3,0333	,58624	,10703
	Monolingual	44	3,0000	,60039	,09051

Figure 21 - General School Self-Concept – Means (own figure)

A comparison of the means only shows a very small difference between the bilingual and monolingual learner groups.

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Schule allgemein Selbstkonzept	Equal variances assumed	,028	,867	,237	72	,814	,03333	,14081	-,24738	,31404
	Equal variances not assumed			,238	63,431	,813	,03333	,14017	-,24674	,31341

Figure 22 – General School Self-Concept – T-Test (own figure)

The t-test confirms that there is no significant (p=0.814) difference between the two groups.

5.3.7 Summary of the Results – Self-Concept

There is a highly significant difference between the two groups considering English self-concept. The CLIL learner group seems to have higher English self-concept than the monolingual group. Considering biology, history, and general self-concept, no differences between the two groups can be ascertained.

5.4 Intrinsic Motivation - English

Group Statistics

	Schulklasse	N	Mean	Std. Deviation	Std. Error Mean
I4: Englischunterricht macht Spaß	Bilingual	30	3,37	,765	,140
	Monolingual	44	2,57	,873	,132
I10: Ich interessiere mich in meiner Freizeit für Englisch	Bilingual	30	3,23	,898	,164
	Monolingual	44	2,41	,787	,119
I16: Im Englischunterricht herrscht bei uns eine gute Atmosphäre	Bilingual	30	3,50	,682	,125
	Monolingual	44	3,32	,883	,133
I21: Ich habe eine gute Beziehung zu meiner Englischlehrkraft	Bilingual	30	3,57	,728	,133
	Monolingual	44	2,70	,904	,136
I25: Im Englischunterricht mache ich gerne mit	Bilingual	30	3,43	,728	,133
	Monolingual	44	2,86	,824	,124

Figure 23 – Items 4, 10, 16, 21, 25 – Means (own figure)

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
I4: Englischunterricht macht Spaß	Equal variances assumed	,629	,430	4,057	72	<,001	,798	,197	,406	1,191
	Equal variances not assumed			4,160	67,499	<,001	,798	,192	,415	1,182
I10: Ich interessiere mich in meiner Freizeit für Englisch	Equal variances assumed	1,024	,315	4,177	72	<,001	,824	,197	,431	1,218
	Equal variances not assumed			4,074	56,838	<,001	,824	,202	,419	1,229
I16: Im Englischunterricht herrscht bei uns eine gute Atmosphäre	Equal variances assumed	3,991	,050	,950	72	,345	,182	,191	-,200	,563
	Equal variances not assumed			,997	70,797	,322	,182	,182	-,182	,545
I21: Ich habe eine gute Beziehung zu meiner Englischlehrkraft	Equal variances assumed	2,048	,157	4,347	72	<,001	,862	,198	,467	1,258
	Equal variances not assumed			4,528	69,923	<,001	,862	,190	,482	1,242
I25: Im Englischunterricht mache ich gerne mit	Equal variances assumed	,097	,756	3,059	72	,003	,570	,186	,198	,941
	Equal variances not assumed			3,132	67,201	,003	,570	,182	,207	,933

Figure 24 - Items 4, 10, 16, 21, 25 – T-Test (own figure)

A first look at the means of all five items separately shows that there is a highly significant ($p<0.001$) difference in means between the two groups considering items 4: “English is fun”, 10: “I am interested in English in my spare time”, and 21: “I have a positive relationship with my English teacher”. There is a significant ($p=0.003$) difference considering item 25: “I like to participate in English lessons” and no significant difference ($p=0.345$) considering item 16: “We have a positive classroom atmosphere in our English lessons”.

5.4.1 Item 4: English lessons are fun

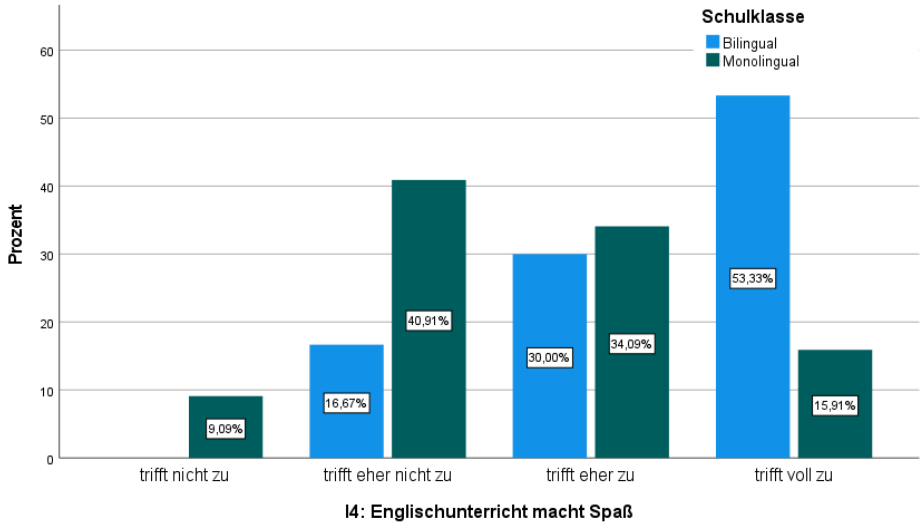

Figure 25 – Item 4: English lessons are fun (own figure)

Figure 25 shows that in the bilingual group 53.33% of the participants agree strongly and 30.00% agree somewhat to this statement. In sum 83.33% agree to the statement whereas only 16.67% disagree. In the monolingual learner group only 15.91% agree strongly and 34.09% agree somewhat. In sum 50.00% agree whereas 50.00% disagree.

5.4.2 Item 10: I am interested in English in my spare time

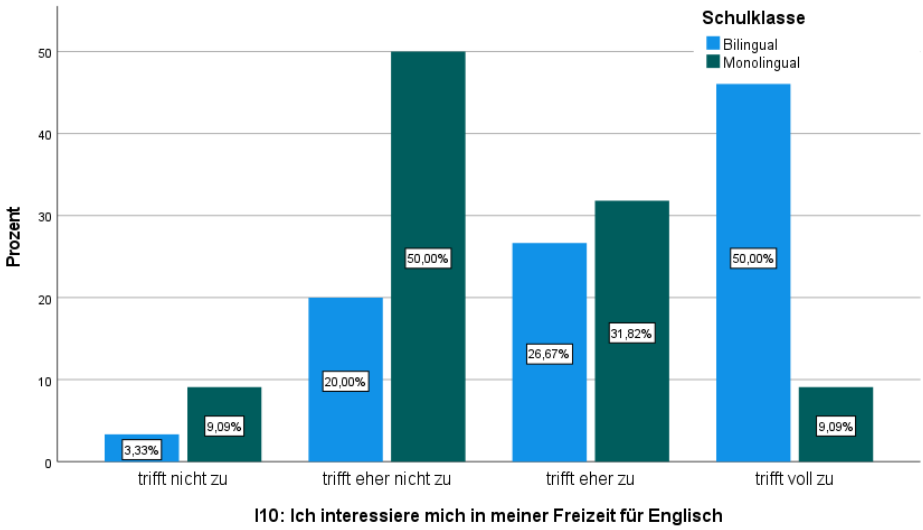

Figure 26 – Item 10: I am interested in English in my spare time (own figure)

Figure 26 shows that in the bilingual group 50.00% of the participants agree strongly and 26.67% agree somewhat to this statement. In sum 76.67% agree to the statement whereas only 23.33% disagree. In the monolingual learner group only 9.09% agree strongly and 31.82% agree somewhat. In sum 40.91% agree whereas 59.09% disagree.

5.4.3 Item 16: We have a positive classroom atmosphere in our English lessons

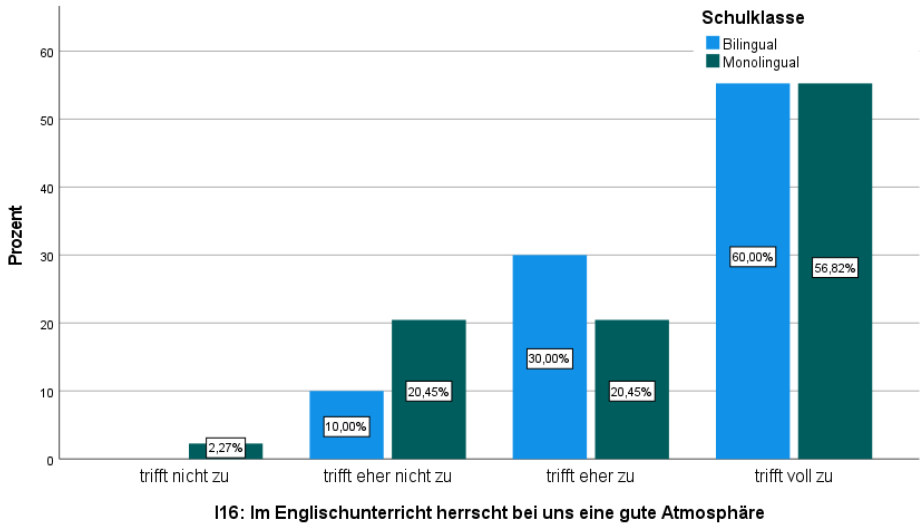

Figure 27 – Item 16: We have a positive classroom atmosphere in our English lessons (own figure)

Figure 27 shows that in the bilingual group 60.00% of the participants agree strongly and 30.00% agree somewhat to this statement. In sum 90.00% agree to the statement whereas only 10.00% disagree. In the monolingual learner group 56.82% agree strongly and 20.45% agree somewhat. In sum 77.27% agree whereas 77.72% disagree.

5.4.4 Item 21: I have a positive relationship with my English teacher

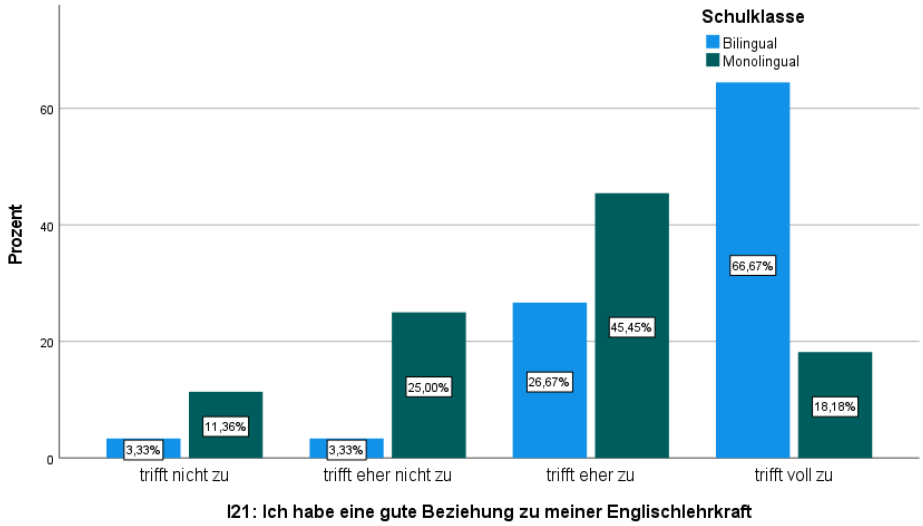

Figure 28 – Item 21: I have a positive relationship with my English teacher (own figure)

Figure 28 shows that in the bilingual group 66.67% of the participants agree strongly and 26.67% agree somewhat to this statement. In sum 93.34% agree to the statement whereas only 6.66% disagree. In the monolingual learner group only 18.18% agree strongly and 45.45% agree somewhat. In sum 63.63% agree whereas 36.36% disagree.

5.4.5 Item 25: I like to participate in English lessons

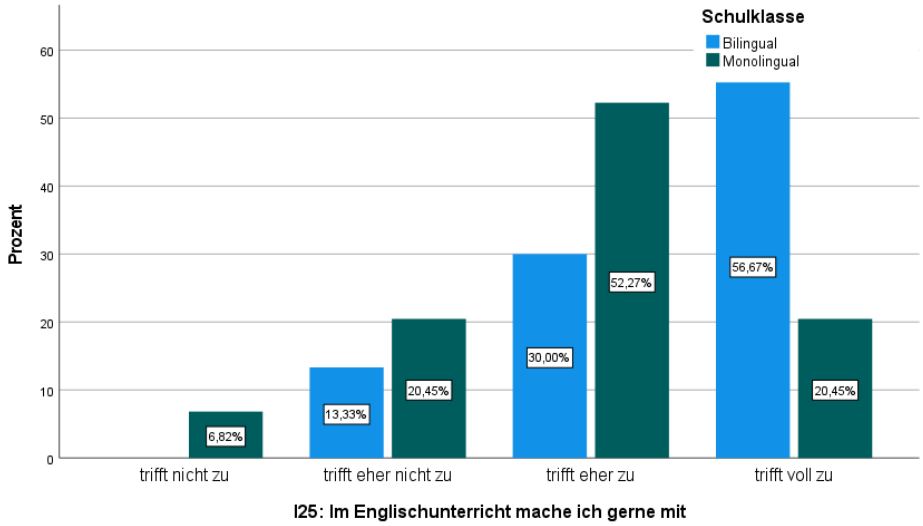

Figure 29 – Item 25: I like to participate in English lessons (own figure)

Figure 29 shows that in the bilingual group 56.67% of the participants agree strongly and 30.00% agree somewhat to this statement. In sum 86.67% agree to the statement whereas only 13.33% disagree. In the monolingual learner group only 20.45% agree strongly and 52.27% agree somewhat. In sum 72.72% agree whereas 27.27% disagree.

5.4.6 Aspects of Intrinsic Motivation – English

A construct such as intrinsic motivation considering a school subject cannot be tested through one single item in a questionnaire. Since items 4, 10, 16, 21, and 25 all represent different pre-conditions for intrinsic motivation, they might be combined to one scale. Firstly, a factor analysis had to be conducted to determine the reliability of such a scale.
With a *Cronbach's Alpha* of 0.843, the items can be treated as a reliable scale, which would allow it to calculate a mean of the scale.

Group Statistics

	Schulklasse	N	Mean	Std. Deviation	Std. Error Mean
Aspekte intrinsischer Motivation - Englisch	Bilingual	30	3,4200	,59038	,10779
	Monolingual	44	2,7727	,63625	,09592

Figure 30 – Aspects of Intrinsic Motivation – English – Means (own figure)

A comparison of the means shows that the bilingual group has a mean of 3.4200, whereas the monolingual group has a mean of 2.7727.

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Aspekte intrinsischer Motivation - Englisch	Equal variances assumed	,037	,848	4,422	72	<,001	,64727	,14637	,35549	,93905
	Equal variances not assumed			4,486	65,439	<,001	,64727	,14429	,35915	,93540

Figure 31 – Aspects of Intrinsic Motivation English – T-Test (own figure)

The t-test affirms that there is a highly significant ($p<0.001$) difference in means between the two learner groups.

5.4.7 Summary of the Results – Intrinsic Motivation – English

Considering the participants' approval of the different statements in items 4, 10, 16, 21, and 25, the *CLIL* group seems to have more fun in their English lessons, a more positive relationship to their English teacher, seems to be more interested in the English language, and to enjoy participating in English lessons more than the monolingual group. Considering the scale *Aspects of Intrinsic Motivation*, the *CLIL* group seems to experience more of these preconditions and might be considered to be more intrinsically motivated for the subject English.

5.5 Intrinsic Motivation – Biology

Group Statistics

	Schulklasse	N	Mean	Std. Deviation	Std. Error Mean
I11: Biologieunterricht macht Spaß	Bilingual	30	2,30	1,119	,204
	Monolingual	44	2,48	,927	,140
I5: Ich interessiere mich in meiner Freizeit für Biologie	Bilingual	30	2,07	1,015	,185
	Monolingual	44	1,84	,914	,138
I22: Im Biologieunterricht herrscht bei uns eine gute Atmosphäre	Bilingual	30	2,30	,915	,167
	Monolingual	44	2,98	,698	,105
I17: Ich habe eine gute Beziehung zu meiner Biologielehrkraft	Bilingual	30	2,63	,999	,182
	Monolingual	44	3,25	,943	,142
I26: Im Biologieunterricht mache ich gerne mit	Bilingual	30	2,43	,971	,177
	Monolingual	44	2,86	,905	,136

Figure 32 – Items 11, 5, 22, 17, 26 – Means (own figure)

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
I11: Biologieunterricht macht Spaß	Equal variances assumed	2,021	,159	-,742	72	,460	-,177	,239	-,653	,299
	Equal variances not assumed			-,716	54,470	,477	-,177	,248	-,673	,319
I5: Ich interessiere mich in meiner Freizeit für Biologie	Equal variances assumed	1,020	,316	,998	72	,322	,226	,226	-,225	,677
	Equal variances not assumed			,978	57,965	,332	,226	,231	-,236	,688
I22: Im Biologieunterricht herrscht bei uns eine gute Atmosphäre	Equal variances assumed	6,618	,012	-3,607	72	<,001	-,677	,188	-1,052	-,303
	Equal variances not assumed			-3,429	51,157	,001	-,677	,198	-1,074	-,281
I17: Ich habe eine gute Beziehung zu meiner Biologielehrkraft	Equal variances assumed	,385	,537	-2,696	72	,009	-,617	,229	-1,073	-,161
	Equal variances not assumed			-2,666	59,992	,010	-,617	,231	-1,079	-,154
I26: Im Biologieunterricht mache ich gerne mit	Equal variances assumed	1,066	,305	-1,950	72	,055	-,430	,221	-,870	,010
	Equal variances not assumed			-1,923	59,417	,059	-,430	,224	-,878	,017

Figure 33 – Items 11, 5, 22, 17, 26 – T-Test (own figure)

A first look at the means of all five items separately shows that there is a highly significant ($p<0.001$) difference in means between the two groups considering item 22: “We have a positive classroom atmosphere in our biology lessons”. There is no significant difference in any of the other items.

5.5.1 Item 11: Biology lessons are fun

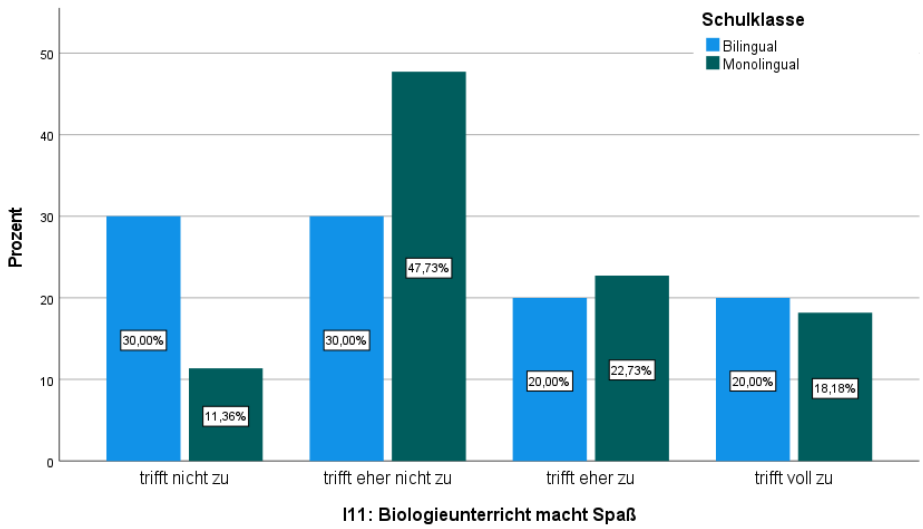

Figure 34 – Item 11: Biology lessons are fun (own figure)

Figure 34 shows that in the bilingual group 20.00% of the participants agree strongly and 20.00% agree somewhat to this statement. In sum only 40.00% agree to the statement whereas 60.00% disagree. In the monolingual learner group 18.18% agree strongly and 22.73% agree somewhat. In sum 40.91% agree whereas 59.09% disagree.

5.5.2 Item 5: I am interested in biology in my spare time

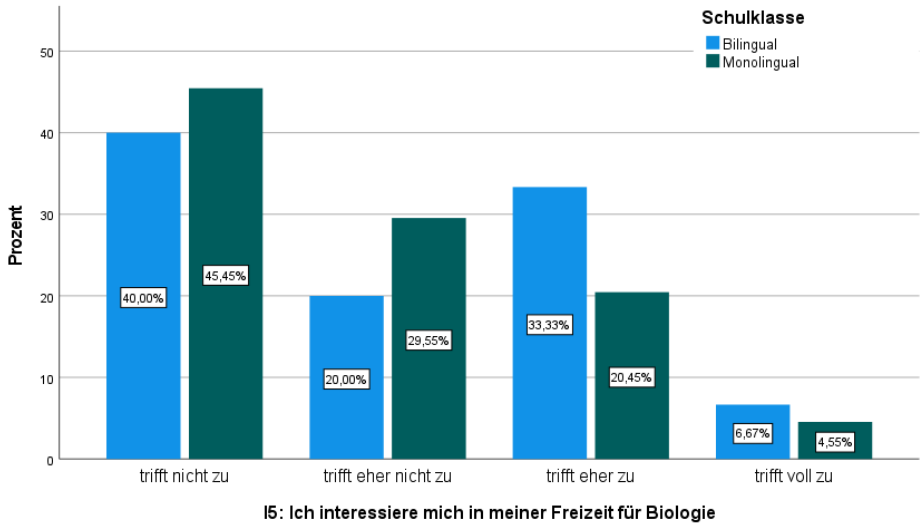

Figure 35 – Item 5: I am interested in biology in my spare time (own figure)

Figure 35 shows that in the bilingual group only 6.67% of the participants agree strongly and 33.33% agree somewhat to this statement. In sum 40.00% agree to the statement whereas 60.00% disagree. In the monolingual learner group only 4.55% agree strongly and 20.45% agree somewhat. In sum 25.00% agree whereas 75.00% disagree.

5.5.3 Item 22: We have a positive classroom atmosphere in our biology lessons

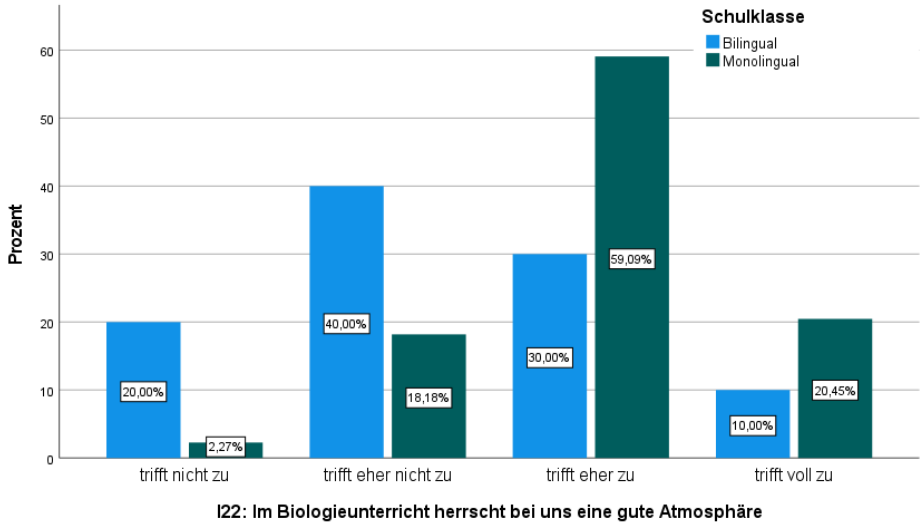

Figure 36 – Item 22: We have a positive classroom atmosphere in our biology lessons (own figure)

Figure 36 shows that in the bilingual group only 10.00% of the participants agree strongly and 30.00% agree somewhat to this statement. In sum 40.00% agree to the statement whereas 60.00% disagree. In the monolingual learner group 20.45% agree strongly and 59.09% agree somewhat. In sum 79.54% agree whereas 20.45% disagree.

5.5.4 Item 17: I have a positive relationship with my biology teacher

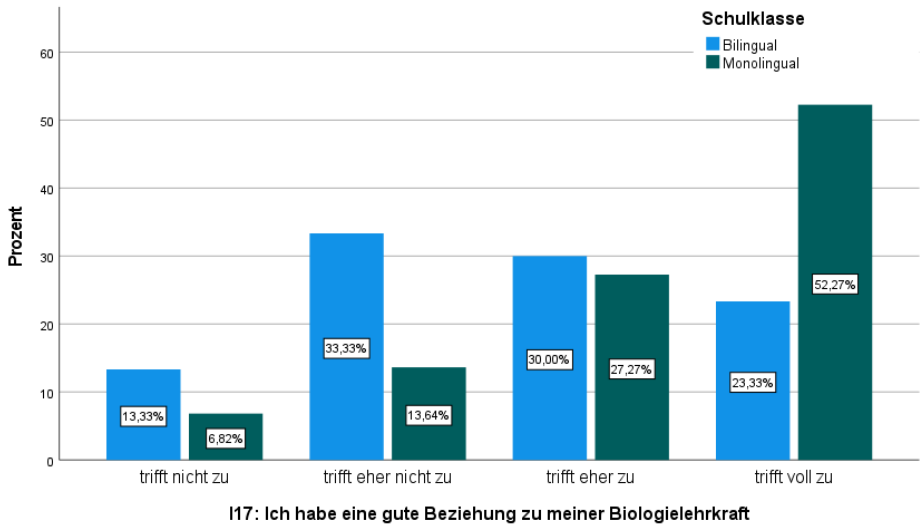

Figure 37 – Item 17: I have a positive relationship with my biology teacher (own figure)

Figure 37 shows that in the bilingual group 23.33% of the participants agree strongly and 30.00% agree somewhat to this statement. In sum 53.33% agree to the statement whereas 46.66% disagree. In the monolingual learner group 52.27% agree strongly and 27.27% agree somewhat. In sum 79.54% agree whereas 20.46% disagree.

5.5.5 Item 26: I like to participate in biology lessons

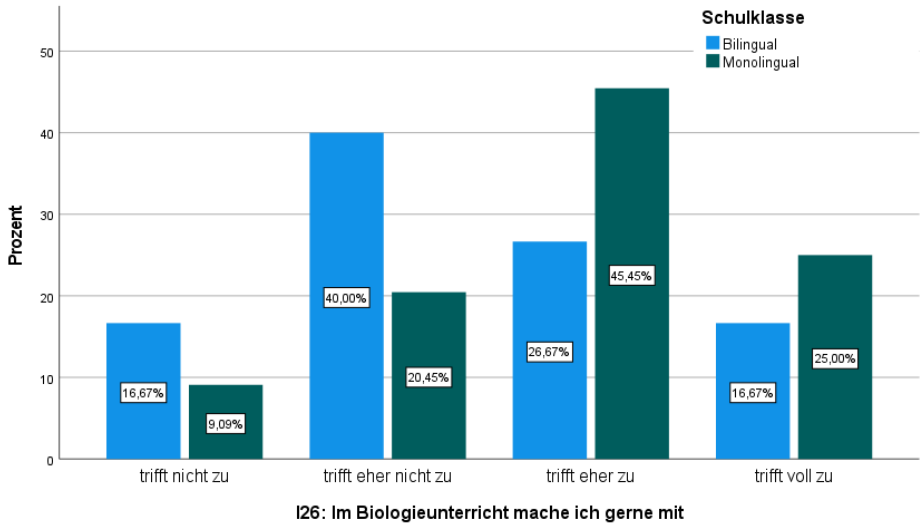

Figure 38 - Item 26: I like to participate in biology lessons (own figure)

Figure 38 shows that in the bilingual group only 16.67% of the participants agree strongly and 26.67% agree somewhat to this statement. In sum 43.34% agree to the statement whereas 56.67% disagree. In the monolingual learner group 25.00% agree strongly and 45.45% agree somewhat. In sum 70.45% agree whereas 29.54% disagree.

5.5.6 Aspects of Intrinsic Motivation – Biology

The *Cronbach's Alpha* of the scale is 0.846, thus, it can be treated as a reliable scale, which would allow it to calculate a mean of the scale.

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Aspekte intrinsischer Motivation - Biologie	Equal variances assumed	4,285	,042	-1,916	72	,059	-,33515	,17493	-,68386	,01356
	Equal variances not assumed			-1,834	52,715	,072	-,33515	,18272	-,70168	,03137

Figure 39 - Aspects of Intrinsic Motivation – Biology – T-Test (own figure)

The t-test affirms that there is no significant (p=0.59) difference in means between the two learner groups. The negative t-value indicates that in this case the monolingual group has the higher mean.

5.5.7 Summary of the Results – Intrinsic Motivation – Biology

Considering the participants' approval of the different statements in items 11, 5, 22, 17, and 26, the monolingual group seems to have a more positive classroom atmosphere in their biology lessons. Considering the scale *Aspects of Intrinsic Motivation - Biology*, no significant difference between the *CLIL* group and the monolingual group can be asserted.

5.6 Intrinsic Motivation – History

Group Statistics

	Schulklasse	N	Mean	Std. Deviation	Std. Error Mean
I18: Geschichtsunterricht macht Spaß	Bilingual	30	3,07	,907	,166
	Monolingual	44	2,30	,978	,147
I29: Ich interessiere mich in meiner Freizeit für Geschichte	Bilingual	30	2,17	,986	,180
	Monolingual	44	1,48	,664	,100
I6: Im Geschichtsunterricht herrscht bei uns eine gute Atmosphäre	Bilingual	30	3,17	,791	,145
	Monolingual	44	2,20	1,002	,151
I12: Ich habe eine gute Beziehung zu meiner Geschichtslehrkraft	Bilingual	30	3,20	,925	,169
	Monolingual	44	2,16	1,010	,152
I15: Im Geschichtsunterricht mache ich gerne mit	Bilingual	30	3,20	,925	,169
	Monolingual	44	2,52	1,023	,154

Figure 40 – Items 18, 29, 6, 12, 15 – Means (own figure)

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
I18: Geschichtsunterricht macht Spaß	Equal variances assumed	1,966	,165	3,427	72	,001	,771	,225	,323	1,220
	Equal variances not assumed			3,477	65,466	<,001	,771	,222	,328	1,214
I29: Ich interessiere mich in meiner Freizeit für Geschichte	Equal variances assumed	9,757	,003	3,598	72	<,001	,689	,192	,307	1,071
	Equal variances not assumed			3,348	46,728	,002	,689	,206	,275	1,104
I6: Im Geschichtsunterricht herrscht bei uns eine gute Atmosphäre	Equal variances assumed	3,550	,064	4,403	72	<,001	,962	,219	,527	1,398
	Equal variances not assumed			4,603	70,349	<,001	,962	,209	,545	1,379
I12: Ich habe eine gute Beziehung zu meiner Geschichtslehrkraft	Equal variances assumed	,520	,473	4,501	72	<,001	1,041	,231	,580	1,502
	Equal variances not assumed			4,578	65,948	<,001	1,041	,227	,587	1,495
I23: Im Geschichtsunterricht mache ich gerne mit	Equal variances assumed	1,255	,266	2,906	72	,005	,677	,233	,213	1,142
	Equal variances not assumed			2,962	66,396	,004	,677	,229	,221	1,134

Figure 41 – Items 18, 29, 6, 12, 15 – T-Test (own figure)

A first look at the means and the t-value of all five items separately shows

that there is a highly significant ($p<0.001$) difference in means between the two groups considering items 29: “I am interested in history in my spare time”, 6: “We have a positive classroom atmosphere in our history lessons”, and 12: “I have a positive relationship with my history teacher”. There is a significant difference considering item 18: “History lessons are fun” ($p=0.001$), and item 23: “I like to participate in history lessons” ($p=0.005$).

5.6.1 Item 18: History lessons are fun

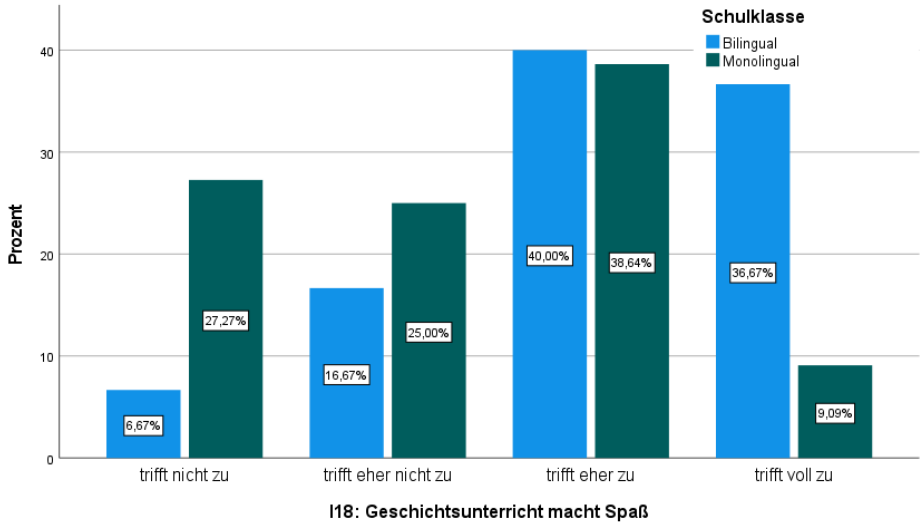

Figure 42 - Item 18: History lessons are fun (own figure)

Figure 42 shows that in the bilingual group 36.67% of the participants agree strongly and 40.00% agree somewhat to this statement. In sum only 76.67% agree to the statement whereas 23.34% disagree. In the monolingual learner group 9.09% agree strongly and 38.64% agree somewhat. In sum 47.73% agree whereas 52.27% disagree.

5.6.2 Item 29: I am interested in history in my spare time

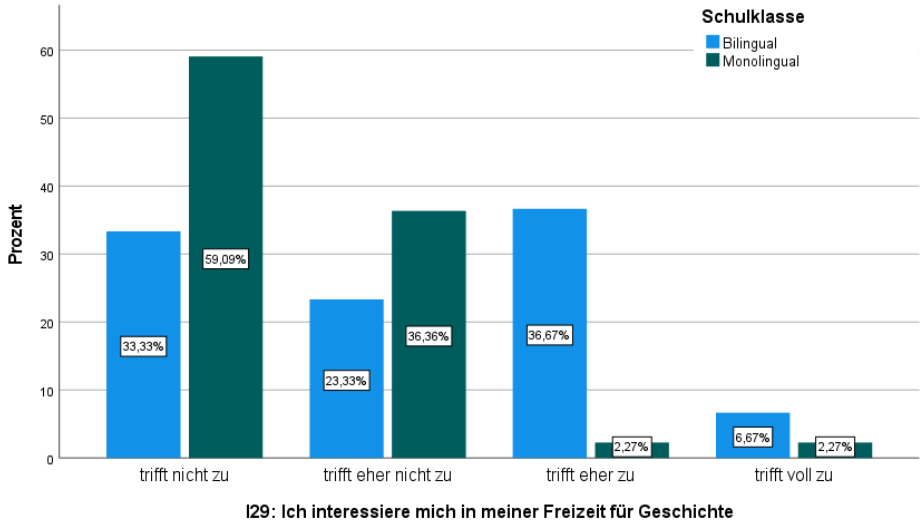

Figure 43 - Item 29: I am interested in history in my spare time (own figure)

Figure 43 shows that in the bilingual group 6.67% of the participants agree strongly and 36.67% agree somewhat to this statement. In sum 43.34% agree to the statement whereas 56.66% disagree. In the monolingual learner group 2.27% agree strongly and 2.27% agree somewhat. In sum 4.54% agree whereas 95.46% disagree.

5.6.3 Item 6: We have a positive classroom atmosphere in our history lessons

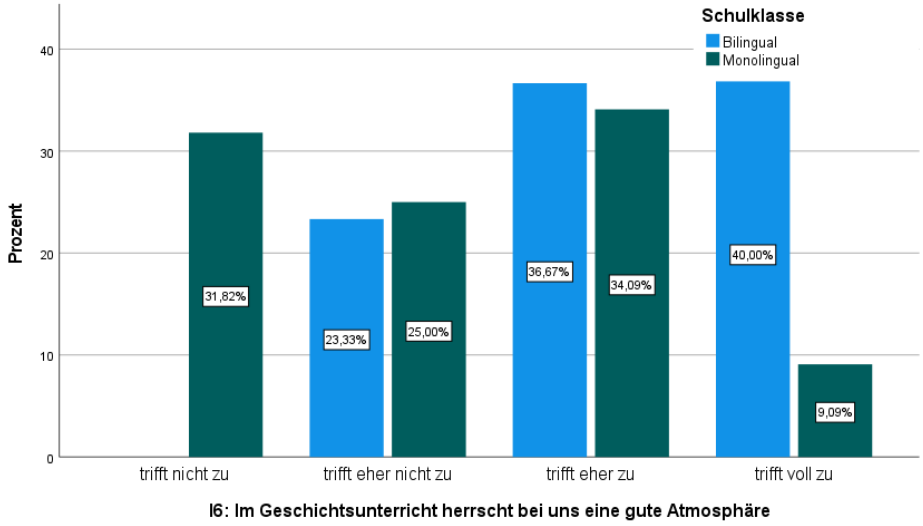

Figure 44 - Item 6: We have a positive classroom atmosphere in our history (own figure)

Figure 44 shows that in the bilingual group only 40.00% of the participants agree strongly and 36.67% agree somewhat to this statement. In sum 76.67% agree to the statement whereas 23.33% disagree. In the monolingual learner group 9.09% agree strongly and 34.09% agree somewhat. In sum 43.18% agree whereas 56.82% disagree.

5.6.4 Item 12: I have a positive relationship with my history teacher

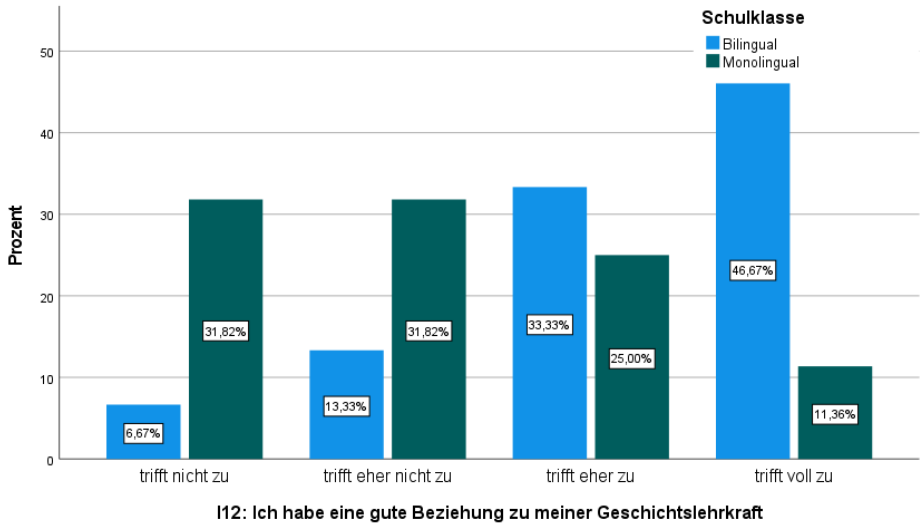

Figure 45 - Item 12: I have a positive relationship with my history teacher (own figure)

Figure 45 shows that in the bilingual group 46.67% of the participants agree strongly and 33.33% agree somewhat to this statement. In sum 80.00% agree to the statement whereas 20.00% disagree. In the monolingual learner group 11.36% agree strongly and 25.00% agree somewhat. In sum 36.36% agree whereas 63.64% disagree.

5.6.5 Item 23: I like to participate in history lessons

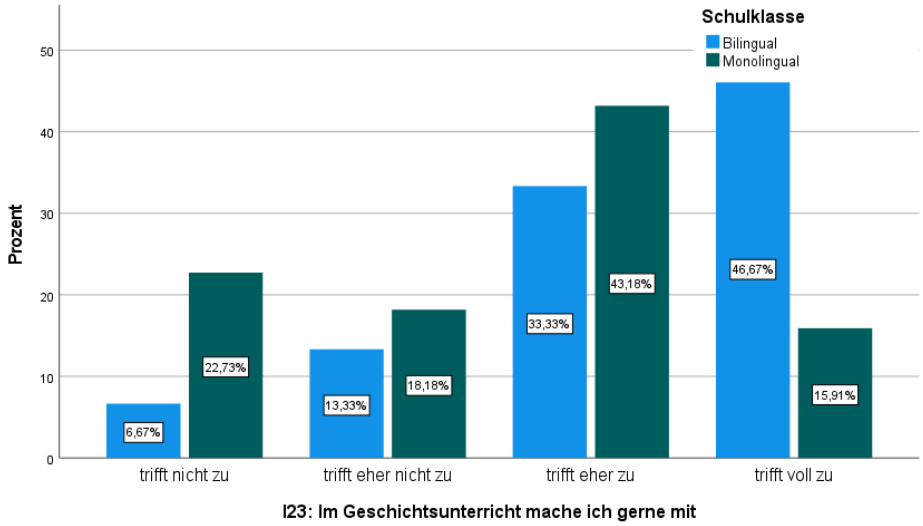

Figure 46 - Item 23: I like to participate in history lessons (own figure)

Figure 46 shows that in the bilingual group 46.67% of the participants agree strongly and 33.33% agree somewhat to this statement. In sum 80.00% agree to the statement whereas 20.00% disagree. In the monolingual learner group 15.91% agree strongly and 43.18% agree somewhat. In sum 59.09% agree whereas 40.91% disagree.

5.6.6 Aspects of Intrinsic Motivation – History

The *Cronbach's Alpha* of the scale is 0.875, thus, it can be treated as a reliable scale, which would allow it to calculate a mean of the scale.

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Aspekte intrinsischer Motivation - Geschichte	Equal variances assumed	,054	,817	4,828	72	<,001	,82818	,17153	,48625	1,17012
	Equal variances not assumed			4,848	63,332	<,001	,82818	,17082	,48685	1,16951

Figure 47 - Aspects of Intrinsic Motivation – History – T-Test (own figure)

The t-test affirms that there is a highly significant ($p<0.001$) difference in means between the two learner groups.

5.6.7 Summary of the Results – Intrinsic Motivation – History

Considering the participants' approval of the different statements in items 18, 29, 6, 12, and 23, the *CLIL* group seems to have more fun in their history lessons, a more positive classroom atmosphere, and a more positive relationship to their history teacher. Additionally, the group seems to be more interested in history, and enjoy participating in history lessons more than the monolingual group. Considering the scale *Aspects of Intrinsic Motivation - History*, the *CLIL* group seems to experience more of these preconditions and might be considered to be more intrinsically motivated for the subject history.

5.7 Extrinsic Motivation

5.7.1 Item 13: I chose the bilingual learner group because (only for CLIL students)

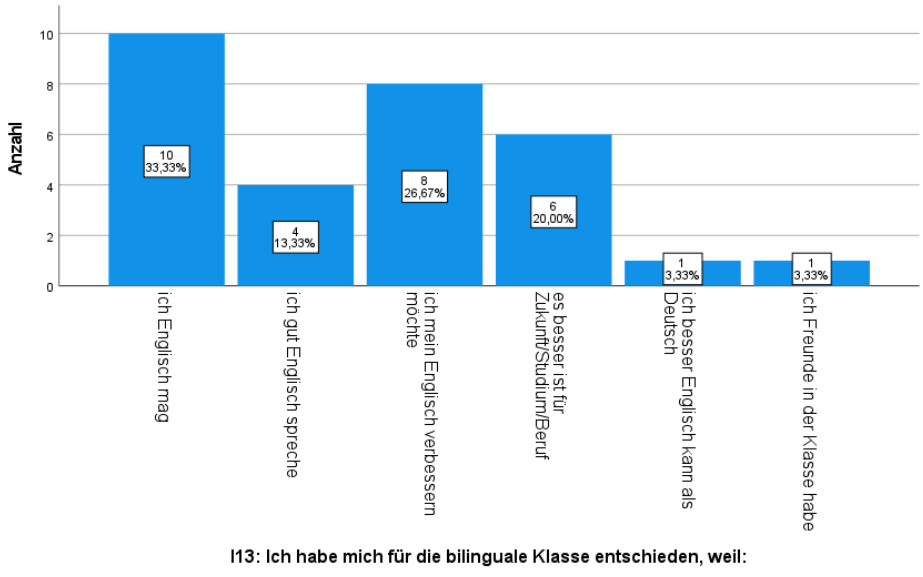

Figure 48 – Item 13: I chose the bilingual learner group because (own figure)

To analyze the answers to this question, the answers had to be recoded and then grouped into categories. 33.33% of the students who attend the bilingual group chose it because they like English, 26.67% chose the course to better their English proficiency, 20.00% expect advantages for their future careers, 13.33% chose the course because they already speak decent English, 3.33% because they speak better

English than German, and 3.33% because their friends are part of the same learner group.

5.7.2 Item 7: Do you pursue a profession connected to the English language?

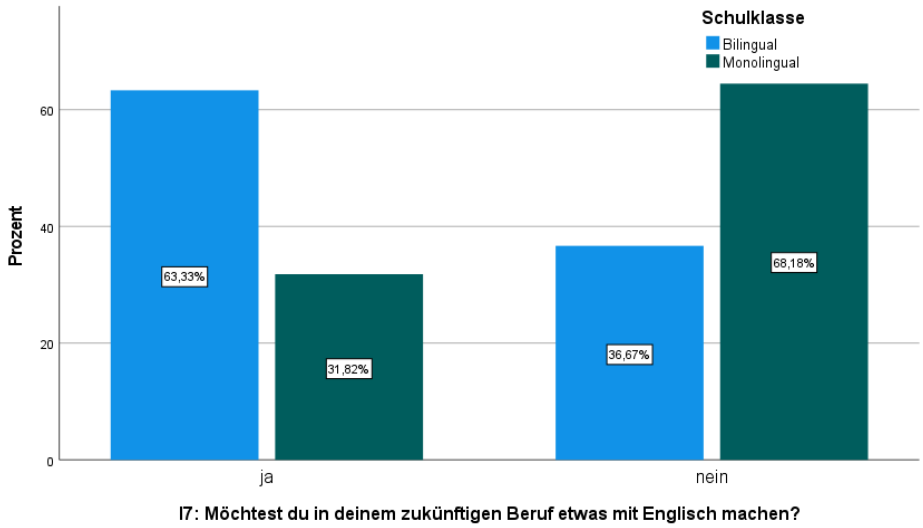

Figure 49 – Item 7: Do you pursue a profession connected to the English language? (own figure)

In the bilingual group, 63.33% of the students already plan to pursue a career that is connected to the English language. In the monolingual group, only 31.82% plan to do so.

5.7.3 Item 19: What career do you want to pursue?

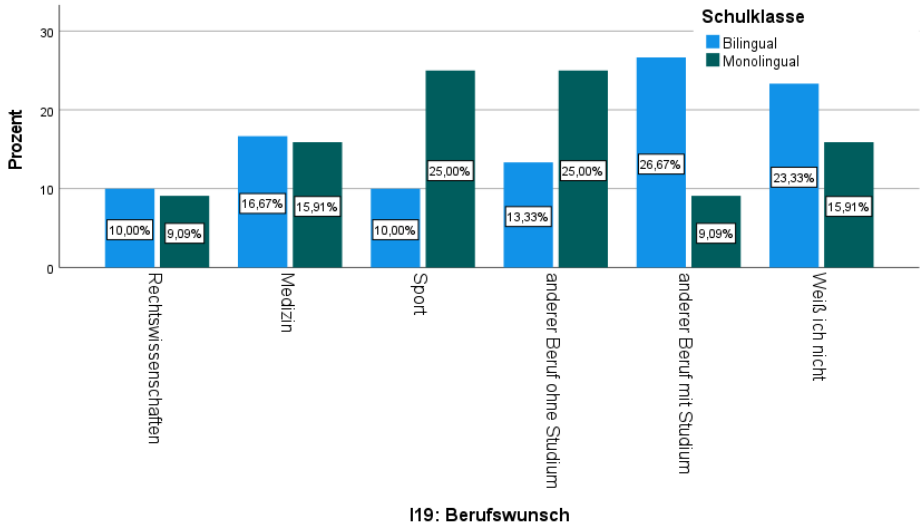

Figure 50 – Item 19: What career do you want to pursue? (own figure)

To analyze the results of this open-ended question, the answers had to be recoded and grouped into categories. The answers: a career in medicine or law are rather equally distributed. One of the monolingual groups is specialized in sports, which might be the reason why 25.00% of the monolingual group favor a career in sports. 26.67% of the bilingual group pursue a different career that involves a university degree; in the monolingual group only 9.09% do so. On the other hand, 25.00% of the monolingual group pursue a different career that does not involve a university degree whereas; only 9.09% in the monolingual group do so.

After removing all participants that do not know what career they want to pursue and those who favor a career in sports, the results were grouped into students who favor a career which involves a university education and students who do not. This way the sample decreases to 46 participants.

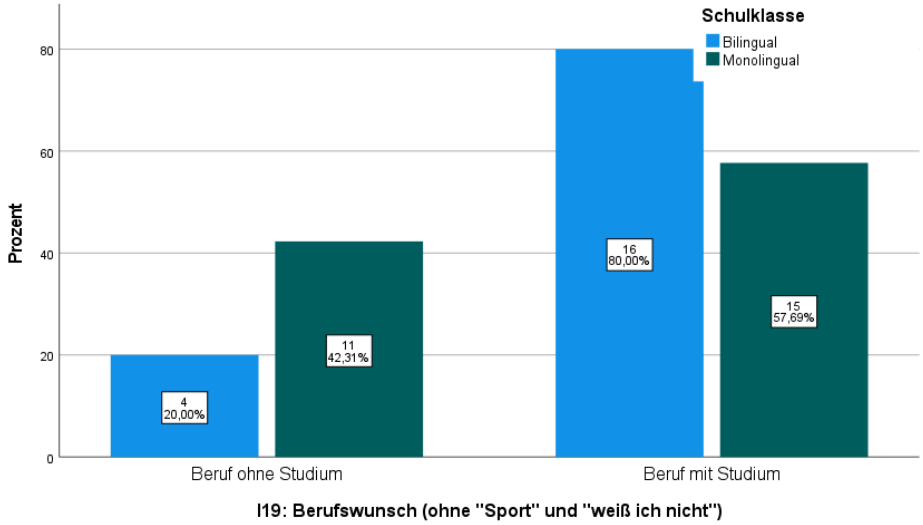

Figure 51 - Item 19: What career do you want to pursue? (without "Sports" and "I don't know") (own figure)

In the bilingual group 80.00% favor a career which involves a university education. In the monolingual group, only 57.69% do so. However, since *Levene's Test* states that the variances are not approximately equal, *Student's T-Test* could not be used (see fig. 52).

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
I19: Berufswunsch (ohne "Sport" und "weiß ich nicht")	Equal variances assumed	10,802	,002	-1,610	44	,114	-,22308	,13854	-,50228	,05613
	Equal variances not assumed			-1,654	43,825	,105	-,22308	,13485	-,49488	,04872

Figure 52 - Item 19: What career do you want to pursue? (without "Sports" and "I don't know") – Levene's Test and Student's T-Test (own figure)

To compare the means of two variables with unequal variances, *Welch's T-Test* must be used.

Robust Tests of Equality of Means

I19: Berufswunsch (ohne "Sport" und "weiß ich nicht")

	Statistic[a]	df1	df2	Sig.
Welch	2,737	1	43,825	,105
Brown-Forsythe	2,737	1	43,825	,105

[a]. Asymptotically F distributed.

Figure 53 - Item 19: What career do you want to pursue? (without "Sports" and "I don't know") – Welch's T-Test (own figure)

Welch's T-Test shows that there is no significant difference in means between the two groups.

5.7.4 Summary of the results - Extrinsic Motivation

Most of the bilingual students chose the *CLIL* group because they like English. Two other important reasons were that they want to improve their English proficiency and expect advantages for their future careers. This was highlighted because more than 60% of the bilingual students want to pursue a career for which English is needed. Additionally, students from the *CLIL* group seem to focus more on career paths involving a university education.

6. Discussion

The focus of this study was to examine the differences considering academic self-concepts and motivation toward different school-subjects between two learner groups. The bilingual learner group, i.e., the experimental group, have started biology and history courses through *CLIL* six weeks before taking part in the survey. In agreement with the teacher of the learner group, it can be stated that the first weeks of the new school year are often used to lead into the new approach, and, for the learner group, bilingual education had just begun when the study was conducted. This suggests that the students' answers reflect their state of mind without much experience in bilingual education. Thus, it cannot be the aim of the study to ascertain whether these students' self-concepts have changed due to an intervention of *CLIL* but rather how high their self-concepts in the different domains and their motivation towards the subjects were when they made the decision to apply for such an approach and during its initial phase.
Before the results of the study can be discussed in regard to research question and hypotheses, certain methodological aspects will be reviewed.

6.1 Discussion of Instrument and Design

To assure the reliability and validity of the questionnaire, the items were borrowed and altered from already existing instruments that have been tested in field and

approved by experienced researchers (see 3.1). The choice of items to test self-concepts allowed it to separate self-concepts of talent and ability self-concepts or combine them to examine domain-specific self-concepts (see 3.1.2). Considering intrinsic motivation, the items offer the possibility to display whether students experience fun during the different lessons or are genuinely interested in the subject. The two factors can be combined with other prerequisites for intrinsic motivation to determine in how far students experience these factors and if it can be assumed, they are intrinsically motivated for a subject (see 3.1.3). All scales used in this study reach a *Cronbach's Alpha* over 8.00 and can be considered to be reliable. For the closed-ended items, either yes or no, or 4-point *Likert-Scale* options were implemented. Thus, both item formats can be objectively analyzed. To avoid any misunderstandings, the questionnaire was developed in German language and to assist the participants, the author was present during the survey and answered all questions.

The different learner groups all attend the same school; thus, the participants are about the same age. Since all students attend 7th Grade in Hesse the learner groups can be compared to other 7th grade grammar school students from Hesse or states with similar school regulations. The members of the monolingual control group derive from two different learner groups, one of which is a sports class. They do have the same subjects and learn the same content, but students from the sports class have additional sports courses and can differ from the other students considering their career plans.

6.2 Discussion of the results

6.2.1 Hypothesis 1 (H_1)

H_1: Students who have recently applied for and now experience the initial phase of *CLIL* courses have higher-self concepts in English than those from the monolingual learner groups.

The results show that this is indeed the case. The *CLIL* students have higher self-concepts of talent and ability. Thus, combining these two factors shows they also have a higher English self-concept than the monolingual group. This seems to be

apparent as even though the decision to apply for the *CLIL* learner group may be influenced by the parents, students who do not believe in their skills and competence in English might not seek to attend two additional courses in English but rather try to avoid such courses. If students do not apply but are assigned to bilingual courses by the school, the outcome could surely be different. As mentioned in chapter 1, this may result in a decrease of motivation and academic achievement for some students.

6.2.2 Hypothesis 2 (H_2) and Hypothesis 3 (H_3)

H_2: Students who have recently applied for and now experience the initial phase of history through *CLIL* have higher-self concepts in history than those from the monolingual learner groups.

H_3: Students who have recently applied for and now experience the initial phase of biology through *CLIL* have higher-self concepts in biology than those from the monolingual learner groups.

The results show that students from the bilingual group do not have higher history or biology self-concepts. The underlying idea for this assumption was that students with a high history or biology self-concept might be more adventurous and confident to face the challenges of attending these subjects taught in English. It seems possible that students with decent English skills as well as competencies in the specific subject would have less trouble adjusting to the new learning approach. In this study though, high history or biology self-concepts did not seem to have influenced the decision-making process considerably. As mentioned in 6.2.1, for most of the students the important factor seems to be their English self-concept and content-subject self-concepts seem to play a minor role. One explanation for this might be that the content subjects change throughout the five years of bilingual education. Students' might choose *CLIL* courses even though they lack self-concepts in that specific domain because they know the subjects will vary (see 4.2).

6.2.3 Hypothesis 4 (H_4)

H_4: Students who have recently applied for and now experience the initial phase of *CLIL* courses experience more intrinsic motivation toward English than those from the monolingual learner groups.

One of the most vital prerequisites for being intrinsically motivated is to have fun when performing an action (see 1.5). If students experience positive emotions during class, it is likely that they develop the urge to deal with the subject matter only for the sake of the action itself (Schiefele & Schaffner, 2015, p. 155). As mentioned in chapter 6, the different aspects of intrinsic motivation cannot be interpreted as an effect induced by *CLIL* lessons. They rather display affectional factors that have developed throughout the last two school years, the last term before summer break especially. The results show that the *CLIL* group seems to have more fun in their English lessons and a more positive relationship to their English teacher. Additionally, they seem to be more interested in the English language and enjoy participating in English lessons more than the monolingual group. In addition to being pre-conditions for intrinsic motivation, these factors can be seen as prerequisites for the decision to apply for a *CLIL* learner group. Students who experience fun in their English class and have a positive relationship to their teacher might attribute these positive emotions to *CLIL* classes because they are closely connected to English. A decent interest in English and a positive attitude toward participation in English classes might have similar effects. Students might be influenced in their decision to attend bilingual courses by their interest in the English language. Furthermore, most of the participation in their future bilingual courses will be in English. Students that enjoy participating in English classes might have a similar attitude toward other subjects taught in English. On the other hand, students who do not like to participate in regular English classes, for example because they are self-conscious about their English skills and seek to avoid talking in English, might not choose *CLIL* classes. In conclusion, it can be asserted that students from the *CLIL* group seem to experience more or a stronger manifestation of preconditioning aspects of intrinsic motivation than the monolingual group and, thus, seem to be more intrinsically motivated for the subject English.

6.2.4 Hypothesis 5 (H_5)

H_5: Students who have recently applied for and now experience the initial phase of biology through *CLIL* experience more intrinsic motivation toward biology than those from the monolingual learner groups.

The results show that this does not apply to the examined learner groups. According to the scale *Aspects of intrinsic motivation,* no significant difference could be found. In fact, the monolingual learner group states that they experience a very positive classroom atmosphere in their biology lessons. Naturally, classroom atmosphere depends on many different factors. The idea behind this item was that students who experience a positive classroom atmosphere in biology might attribute these positive emotions to biology as a subject and that this attribution would support them in a decision to attend a bilingual biology class. On the other hand, since the classroom atmosphere depends on their teacher and their fellow students from last school year, students might seek to stay in that specific group and not change into the *CLIL* learner group. Another explanation would be that, analogous to the results considering self-concepts (see 5.3.7; 6.2.1; 6.2.2), a positive classroom atmosphere in biology classes does not play a major role in the decision to attend the *CLIL* group because biology is only one of many subjects that will be taught through *CLIL* in the five years of bilingual education.

6.2.5 Hypothesis 6 (H_6)

H_6: Students who have recently applied for and now experience the initial phase of history through *CLIL* experience more intrinsic motivation toward history than those from the monolingual learner groups.

The results show that the *CLIL* group experiences more fun during the history lessons. Additionally, they seem to have a more positive classroom atmosphere and a more positive relationship to their teacher. The numbers indicate that the bilingual students are more interested in history and enjoy participating in class more than the monolingual group. Surprisingly, these results differ from the results considering intrinsic motivation for biology. The discussion of the former

hypotheses led to the assumption that English self-concepts and intrinsic motivation for English play the main role in deciding whether to apply for a *CLIL* class and that self-concepts and intrinsic motivation considering biology and history do not. The results lead to the question why intrinsic motivation for history would play a more important role than intrinsic motivation for biology. One explanation would be that history does play a more important role in the bilingual curriculum of the examined school. Depending on the choice of the students in the following years, history courses through *CLIL* can be attended during each of the five years of bilingual education, whereas biology only during three. Since students and parents know the schedule (see 4.2), intrinsic motivation for history might play a more important role in the decision than intrinsic motivation for biology. A second explanation might be the differentiation between verbal and math academic domains. According to Marsh et al, history as a subject is part of the verbal self-concept whereas biology can be assigned to the math self-concept likewise to all other natural sciences. Since many students rather show high self-concepts in either one of these domains, a high English self-concept might correlate positively with history self-concept but negatively with biology self-concept (1988, p. 378). Although the difference between the two groups was not significant, the bilingual group showed a very high history self-concept. The Scale *History Self-Concept* reached a mean of 3.15 compared to 2.92 in the monolingual group and only 2.9 (bilingual), 2.7 (monolingual) considering biology. It can be assumed that the *CLIL* students' high history self-concept was a possible reason for their increased motivation toward history. Furthermore, it must be kept in mind that many other factors such as relationships to teachers and peers might have influenced the results of the survey. Finally, it can be stated that in any case, intrinsic motivation toward English still does play a more important role in the decision to apply for *CLIL* than intrinsic motivation toward history. The results show that, in the *CLIL* group, the scale *Aspects of Intrinsic Motivation – English* reaches a mean of 3.42, whereas *Aspects of Intrinsic Motivation – History* only reaches a mean of 2.96 (see appendix).

6.2.6 Hypothesis 7 (H_7)

H_7: Extrinsic factors considering future careers, such as possible future income or status, play an important role in the decision to apply for CLIL courses.

Referring to chapter 1.5.5, extrinsic factors play a role in the decision to apply for a *CLIL* learner group. As mentioned in chapter 1.5.5 and 1.5.6 bilingual classes have a positive effect on language awareness (Fehling, 2008, p. 195) and language proficiency of the student, as they offer an additional exposure to a second language in an authentic setting (Piesche et al., pp. 13–14; Marsh, 2002, p. 48). Increasing one's English proficiency is one extrinsic factor that might play a role in attending a *CLIL* learner group. Although positive effects on proficiency of the subject matter can be ascertained (Grimm, Meyer, & Volkmann, 2015, p. 77), they seem to depend strongly on the prerequisites of intrinsic motivation and the interest of the student. The majority of the *CLIL* students state that they chose the *CLIL* course because they like English. Although this seems obvious, it is interesting that, in this study, the content subject only plays a minor role in this decision. *CLIL* courses mainly attract students that have a positive relationship to the English language and assume that English will be needed for their future profession. Additionally, *CLIL* seems to attract students that favor a career which involves a university education although the difference between the two groups is not significant. Even though many *CLIL* teachers would hope that students choose the courses to increase their proficiency in the content subject, 26.67% chose the course to increase their English proficiency. Other important extrinsic factors in this decision seem to be advantages for future careers and the fact that 13.33% of the students state they already speak decent English. The fact that more than half (63.33%) of the *CLIL* students want to pursue a career for which English is needed and their indications regarding the fields of their possible future careers (see chapter 6.4.3) confirm again that the English language is seen as a vehicle to a variety of ambitious career paths that might partly depend on English proficiency as well as an instrument to confront the possibilities and challenges of a border-free European job market. With applying for a *CLIL* learner group, these students seem to accept and face these challenges with aspiration. The fact that item 13 (I chose the bilingual learner group because…) is an open-ended question offered the opportunity to also name an intrinsic factor

as the main reason to attend *CLIL* courses which 33.33% of the bilingual students did (…I like English). The main extrinsic factors: English proficiency and advantages for future careers make up 46.67% of the answers from *CLIL* students. Even though studies suggest that bilingual education can foster intrinsic motivation (see 1.5.6), the decision to apply for a *CLIL* learner group seems to be mainly influenced by extrinsic factors.

6.10 Limitations of the Study

Firstly, the small sample size of the study must be considered. Due to formal and time-frame limitations and the fact that not all possible participants provided the declaration of consent, the number of learner groups to participate in the study had to be reduced to three, thus, only 74 students took part in the study. Due to the sample size, the study cannot make implications about the attitudes or experiences of all students in Hesse, let alone in Germany. In addition, some of the learner groups are very specific. One of them is a sports group, which indicates that the students might have different career plans than those from regular learner groups. All participants were *Gymnasium* students in the beginning of 8th grade and the decision to apply for the *CLIL* group was not an institutional one but an individual, social one, as students made this decision in accordance with their parents. It would not be of use to compare these specific students to the whole population of school students in Hesse. Secondly, the study aimed at giving an overview of two very complex constructs: self-concept and motivation. The many overlapping aspects and different approaches make it difficult to compare this study with others in the same field. A third aspect is also connected to time frame limitations. A longitudinal study with a time frame from over a school year would offer the possiblity to examine in how far the results change over the course of the first bilingual school year.

6.11 Suggestions for Future Research

Possibilities for future research in this field of study include working with a similar questionnaire but with an increased sample size. It would also be interesting to conduct a longitudinal study and compare the findings of this thesis with the results

of a second survey conducted at the end of the first school year with *CLIL* courses. It would certainly be interesting to examine whether self-concepts and motivation change due to the *CLIL* courses. Another possibility would be to compare the results of bilingual and monolingual learner groups from different school forms and grades. This way, the influence of factors such as relationships to certain teachers on the results could be minimized. Due to the gap in research, the construct intrinsic motivation in a *CLIL* context should be analyzed more deeply. This analysis could be based on a new questionnaire that includes a higher number and more specific questions to that factor.

7. Conclusion

The number of schools offering *CLIL* courses is steadily increasing in the state of Hesse. *CLIL* offers positive effects on English proficiency but also on academic achievement in the content subjects. It is thus legitimate to implement this approach and offer students the possibility to broaden their horizons and benefit from additional input and possible advantages for their future careers. *CLIL* courses do not have to be limited to certain subjects or academic fields. Every school subject offers different important possibilities to foster second language proficiency, content subject matter, and intercultural knowledge and can, thereby, be treated as adequate for bilingual learning and teaching.

Since *CLIL* does not seem to have positive effects on all students, it seems fruitful to leave the decision to apply for a *CLIL* learner group mainly to students and parents. Students who are self-conscious about their English or did not perform well in the recent past might not benefit from such an approach. To determine how these students could be included in *CLIL* programs, we need to, firstly, ascertain which students apply for *CLIL* learner groups and what exactly influences their decision. Although, self-concept and motivational constructs have been examined thoroughly over the last decades, we need to differentiate and evaluate research implications depending on the actual context. Since many studies focus on the effect an intervention of a bilingual teaching program has on self-concept and motivation of the students, it seems vital to examine self-concepts and motivation of students before the *CLIL* program has started or during its initial phase.

For the very specific learner groups in this study and the underlying fact that the participants chose to attend the bilingual courses in correspondence with their parents, the study has shown that students who recently applied for and now experience the initial phase of *CLIL* courses have higher English self-concepts than their peers who attend monolingual courses. They do not have higher self-concepts considering biology and history, which leads to the assumption that self-concepts in these two domains play a minor role in the decision-making process. Additionally, the *CLIL* students seem to be more intrinsically motivated for English and history, with intrinsic motivation toward English being the most prominent. This again implies that intrinsic motivation for English plays the most important role in the decision to attend bilingual courses for any subject. These findings can be helpful to engage students with high motivation for English in any content subject. Students that lack self-concept and motivation in a certain field, e.g., Mathematics, but are highly motivated for English might experience a gain in self-concept and motivation for mathematics-through-*CLIL* programs.

However, the essential part of motivation that influences the decision for *CLIL* derives from extrinsic factors. Students attending bilingual courses seem to be very concerned about their future career and expect bilingual education to be of help to pursue their career plans. Since English is the *Lingua Franca* in many fields and a pre-condition for numerous professions, in a border-free Europe especially, *CLIL* courses can be of help to facilitate these pursuits and support students considering their ambitions. It should be kept in mind though that German, English, and first languages of all students must be fostered first. Only this way we can make *CLIL* courses attractive for all students in Germany and, thereby, take important steps toward equal opportunities.

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Zusammenfassung in deutscher Sprache

Die Anzahl der Schulen in Hessen, welche *CLIL* Kurse anbieten, steigt stetig. *CLIL* kann positive Auswirkungen auf die sprachlichen Kompetenzen der Unterrichtssprache sowie auf die fachlichen Kompetenzen im Sachfach haben. Demzufolge ist die Einführung von bilingualen Angeboten legitim und ermöglicht Schülerinnen und Schülern ihren Horizont zu erweitern sowie von zusätzlichem Eindrücken und möglichen Vorteilen in Bezug auf ihre Zukunft zu profitieren. *CLIL*-Angebote müssen nicht auf bestimmte Fächer oder schulische Bereiche beschränkt sein, denn jedes Schulfach eröffnet andere Möglichkeiten um zweitsprachliche Kompetenzen, Sachfachinhalt und interkulturelles Wissen zu fördern und kann demzufolge als passend für bilinguales Lehren und Lernen betrachtet werden.

Es scheint zielführend zu sein die Entscheidung über die Teilnahme an *CLIL*-Programmen hauptsächlich den Lernenden sowie ihren Eltern zu überlassen. Schülerinnen und Schüler, welche im Englischen unsicher sind oder aktuell keine adäquaten Leistungen gezeigt haben, profitieren möglicherweise nicht von diesem Ansatz. Um zu eruieren, wie diese Lernenden, gewinnbringend, in *CLIL*-Kurse inkludiert werden können, ist es vorerst notwendig festzustellen welche der Lernenden sich für die Teilnahme an eben solchen Programmen bewirbt und wodurch genau ihre Entscheidungen beeinflusst werden. Auch wenn Selbstkonzept und motivationale Konstrukte in den letzten Jahrzehnten intensiv und gründlich untersucht wurden, so sollten Forschungsergebnisse und Implikationen in Bezug auf den jeweiligen Kontext differenziert und evaluiert werden. Da viele Studien sich eher mit den Auswirkungen von Interventionen durch ein *CLIL*-Programm auseinandersetzen, scheint es notwendig auch das Selbstkonzept und die Motivation der Lernenden zu untersuchen bevor sie ein solches Programm beginnen oder während sie sich in der initialen Phase befinden.

In Bezug auf die sehr spezifische Lerngruppen in dieser Studie und den zugrundeliegenden Umstand, dass alle Lernenden der *CLIL*-Gruppe die Entscheidung diesbezüglich selbst getroffen haben, konnte gezeigt werden, dass Schülerinnen und Schüler, welche sich erst kürzlich auf die Teilnahme an einem bilingualen Modell beworben haben, ein höheres Selbstkonzept in Englisch aufweisen als ihre Mitschülerinnen und Mitschüler der monolingualen Klassen. Da

sie jedoch kein höheres Selbstkonzept bezüglich Biologie und Geschichte zeigen, ist davon auszugehen, dass das Selbstkonzept in diesen Bereichen eine untergeordnete Rolle im Entscheidungsfindungsprozess gespielt hat. Zusätzlich scheinen die Schülerinnen und Schüler aus der *CLIL*-Klasse über höhere intrinsische Motivation bezüglich Englisch und Geschichte zu verfügen, wobei die intrinsische Motivation für Englisch am ausgeprägtesten ist. Dies impliziert erneut, dass die intrinsische Motivation im Hinblick auf Englisch der wichtigste Faktor ist im Entscheidungsprozess für *CLIL*-Programme, unabhängig davon um welches Sachfach es sich handelt. Dieser Umstand kann sehr hilfreich sein, wenn es darum geht Schülerinnen und Schüler, mit hoher Motivation für Englisch, für jegliche Sachfächer zu begeistern, denn Lernende, welchen es an Motivation für einen bestimmten Lernbereich, z.B. Mathematik, fehlt, können über ihre hohe Motivation für Englisch für bilingualen Mathematikunterricht begeistert werden.

Trotz alledem sind extrinsische Faktoren der ausschlaggebende Aspekt im Entscheidungsprozess für eine *CLIL*-Klasse. Schülerinnen und Schüler einer bilingualen Klasse setzten sich intensiv mit ihrer zukünftigen Karriere auseinander und erwarten, dass der bilinguale Unterricht ihnen beim Erreichen ihrer Ziele hilfreich ist. Da Englisch als die *Lingua Franca in vielen Bereichen gilt* und eine Voraussetzung für zahlreiche Berufe, vor allem in einem zusammenwachsenden Europa, ist, können *CLIL*-Kurse einen wichtigen Beitrag dazu leisten, dieses Bestreben zu fazilitieren und Schülerinnen und Schüler in ihren Ambitionen zu unterstützen. Dennoch muss zwingend in Betracht gezogen werden, dass die deutsche Sprache, Englisch und die Erstsprache aller Lernenden vorher adäquat gefördert werden müssen, denn nur so können *CLIL*-Kurse für alle Lernenden in Deutschland an Attraktivität gewinnen und ein wichtiger Schritt in Richtung Chancengleichheit unternommen werden.

Appendix

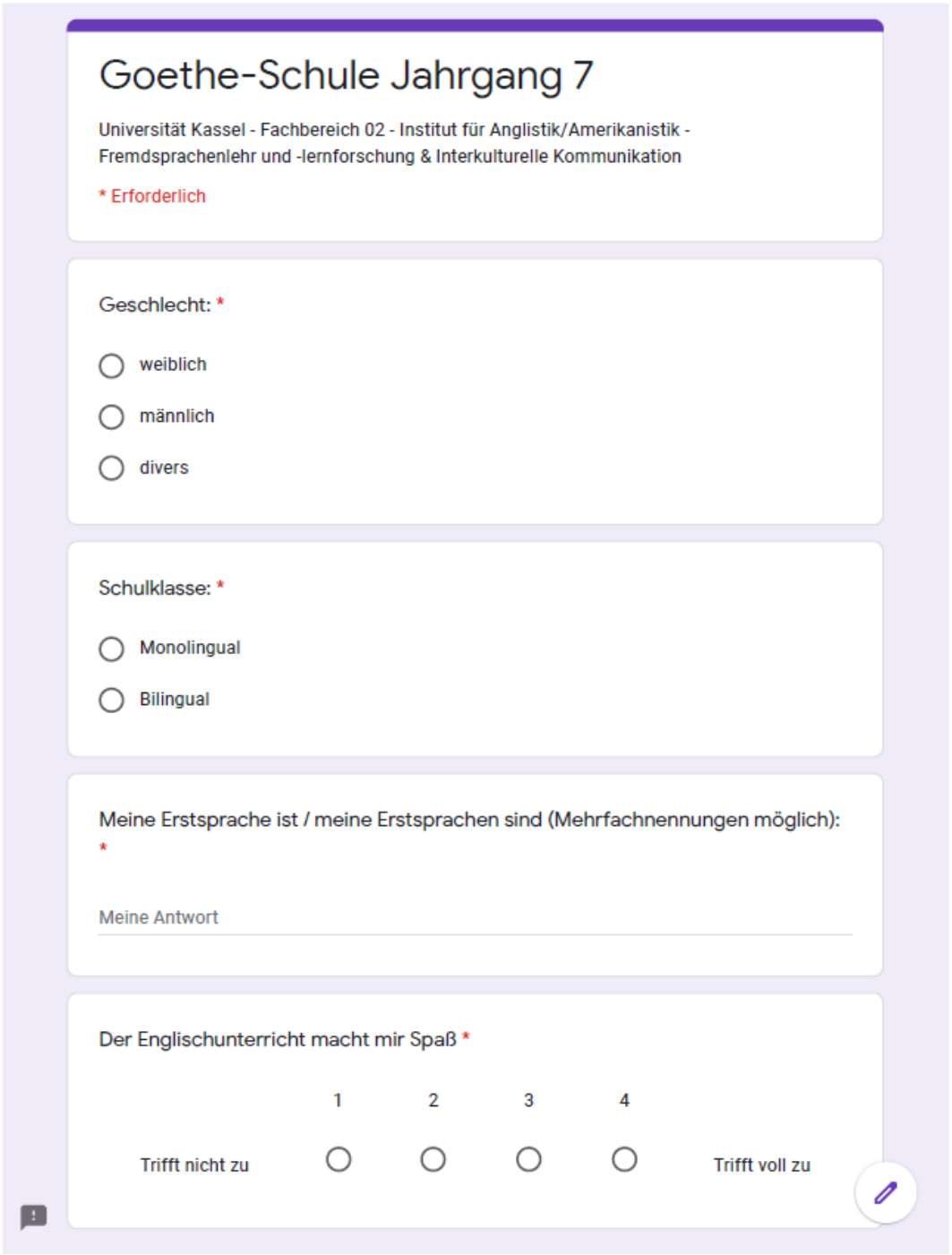
Table of Content - Appendix

1. Overview of all items and coding

Intrinsische Motivation	Englisch	
Kodierung	**Variable im Fragebogen**	**Itemtext**
1. (+)	4	Der Englischunterricht macht mir Spaß
2. (+)	10 (vgl. Wolf, 2002)	Ich interessiere mich in meiner Freizeit für Englisch
3. (+)	16 (vgl. Graner, 2015)	Im Englischunterricht herrscht bei uns eine gute Atmosphäre
4. (+)	21 (vgl. Graner, 2015)	Ich habe eine gute Beziehung zu meiner Englischlehrkraft
5. (+)	25 (vgl. Wolf, 2002)	Im Englischunterricht mache ich gerne mit
Intrinsische Motivation	Biologie	
Kodierung	**Variable im Fragebogen**	**Itemtext**
6. (+)	11	Der Biologieunterricht macht mir Spaß
7. (+)	5 (vgl. Wolf, 2002)	Ich interessiere mich in meiner Freizeit für Biologie
8. (+)	22 (vgl. Graner, 2015)	Im Biologieunterricht herrscht bei uns eine gute Atmosphäre
9. (+)	17 (vgl. Graner, 2015)	Ich habe eine gute Beziehung zu meiner Biologielehrkraft
10. (+)	26 (vgl. Wolf, 2002)	Im Biologieunterricht mache ich gerne mit
Intrinsische Motivation	Geschichte	
Kodierung	**Variable im Fragebogen**	**Itemtext**
11. (+)	18	Der Geschichtsunterricht macht mir Spaß
12. (+)	29 (vgl. Wolf, 2002)	Ich interessiere mich in meiner Freizeit für Geschichte
13. (+)	6 (vgl. Graner, 2015)	Im Geschichtsunterricht herrscht bei uns eine gute Atmosphäre
14. (+)	12 (vgl. Graner, 2015)	Ich habe eine gute Beziehung zu meiner Geschichtslehrkraft
15. (+)	23 (vgl. Wolf, 2002)	Im Geschichtsunterricht mache ich gerne mit

Intrinsische und extrinsische Motivation / offene Fragen		
Kodierung	**Variable im Fragebogen**	**Itemtext**
16.	13 (vgl. Graner, 2015)	Ich habe mich für die bilinguale Klasse entschieden, weil:
17.	7 (vgl. Graner, 2015)	Möchtest du in deinem zukünftigen Beruf etwas mit Englisch machen? (ja/nein)
18.	19 (vgl. Graner, 2015)	Was möchtest du werden? Berufswunsch:
19.	9 (vgl. Graner, 2015)	Denkst du, dass sich bilingualer Unterricht positiv auf die Zukunft einer Schülerin / eines Schülers auswirkt? Ja / Nein
Selbstkonzept		
Kodierung	**Variable im Fragebogen**	**Itemtext**
20. (+)	27 (vgl. Arens, 2011; Marsh, 1990)	Englisch fällt mir leicht
21. (+)	31 (vgl. Finkbeiner, 2005)	Im Englischunterricht bin ich gut
22. (+)	30 (vgl. Arens, 2011; Marsh, 1990)	Biologie fällt mir leicht
23. (+)	28 (vgl. Finkbeiner, 2005)	Im Biologieunterricht bin ich gut
24. (+)	8 (vgl. Arens, 2011; Marsh, 1990)	Geschichte fällt mir leicht
25. (+)	14 (vgl. Finkbeiner, 2005)	Im Geschichtsunterricht bin ich gut
26. (+)	20 (vgl. Arens, 2011; Marsh, 1990)	Schule allgemein fällt mir leicht
27. (+)	24 (vgl. Finkbeiner, 2005)	In der Schule bin ich gut
Zukunftsaussichten / offene Fragen		
Kodierung	**Variable im Fragebogen**	**Itemtext**
28.	15 (vgl. Graner, 2015)	Würdest du noch einmal einen Schultyp mit bilingualem Unterricht besuchen? Ja / Nein
Allgemein		
Kodierung	**Variable im Fragebogen**	**Itemtext**
29.	1	Geschlecht: weiblich, männlich, divers
30.	2	Schulklasse: MoLi, BiLi
31.	3	Meine Erstsprache/n ist/sind?

2. The questionnaire



Goethe-Schule Jahrgang 7

Universität Kassel - Fachbereich 02 - Institut für Anglistik/Amerikanistik - Fremdsprachenlehr und -lernforschung & Interkulturelle Kommunikation

* Erforderlich

Geschlecht: *

- weiblich
- männlich
- divers

Schulklasse: *

- Monolingual
- Bilingual

Meine Erstsprache ist / meine Erstsprachen sind (Mehrfachnennungen möglich): *

Meine Antwort

Der Englischunterricht macht mir Spaß *

	1	2	3	4	
Trifft nicht zu	○	○	○	○	Trifft voll zu

Ich interessiere mich in meiner Freizeit für Biologie *

	1	2	3	4	
Trifft nicht zu	○	○	○	○	Trifft voll zu

Im Geschichtsunterricht herrscht bei uns eine gute Atmosphäre *

	1	2	3	4	
Trifft nicht zu	○	○	○	○	Trifft voll zu

Möchtest du in deinem zukünftigen Beruf etwas mit Englisch machen? (ja/nein) *

	1	2	
Ja	○	○	Nein

Geschichte fällt mir leicht *

	1	2	3	4	
Trifft nicht zu	○	○	○	○	Trifft voll zu

Denkst du, dass sich bilingualer Unterricht positiv auf die Zukunft einer Schülerin / eines Schülers auswirkt? Ja / Nein *

	1	2	
Ja	○	○	Nein

Ich interessiere mich in meiner Freizeit für Englisch *

	1	2	3	4	
Trifft nicht zu	○	○	○	○	Trifft voll zu

Der Biologieunterricht macht mir Spaß *

	1	2	3	4	
Trifft nicht zu	○	○	○	○	Trifft voll zu

Ich habe eine gute Beziehung zu meiner Geschichtslehrkraft *

	1	2	3	4	
Trifft nicht zu	○	○	○	○	Trifft voll zu

Ich habe mich für die bilinguale Klasse entschieden, weil (nur bilinguale Klasse):

Meine Antwort

Im Geschichtsunterricht bin ich gut *

	1	2	3	4	
Trifft nicht zu	○	○	○	○	Trifft voll zu

Würdest du noch einmal einen Schultyp mit bilingualem Unterricht besuchen? (nur bilinguale Klasse) Ja / Nein

	1	2	
Ja	○	○	Nein

Im Englischunterricht herrscht bei uns eine gute Atmosphäre *

	1	2	3	4	
Trifft nicht zu	○	○	○	○	Trifft voll zu

Ich habe eine gute Beziehung zu meiner Biologielehrkraft *

	1	2	3	4	
Trifft nicht zu	○	○	○	○	Trifft voll zu

Der Geschichtsunterricht macht mir Spaß *

	1	2	3	4	
Trifft nicht zu	○	○	○	○	Trifft voll zu

Was möchtest du werden? Berufswunsch: *

Meine Antwort

Schule allgemein fällt mir leicht *

	1	2	3	4	
Trifft nicht zu	○	○	○	○	Trifft voll zu

Ich habe eine gute Beziehung zu meiner Englischlehrkraft *

	1	2	3	4	
Trifft nicht zu	○	○	○	○	Trifft voll zu

Im Biologieunterricht herrscht bei uns eine gute Atmosphäre *

	1	2	3	4	
Trifft nicht zu	○	○	○	○	Trifft voll zu

Im Geschichtsunterricht mache ich gerne mit *

	1	2	3	4	
Trifft nicht zu	○	○	○	○	Trifft voll zu

In der Schule bin ich gut *

	1	2	3	4	
Trifft nicht zu	○	○	○	○	Trifft voll zu

Im Englischunterricht mache ich gerne mit *

	1	2	3	4	
Trifft nicht zu	○	○	○	○	Trifft voll zu

Im Biologieunterricht mache ich gerne mit *

	1	2	3	4	
Trifft nicht zu	○	○	○	○	Trifft voll zu

Englisch fällt mir leicht *

	1	2	3	4	
Trifft nicht zu	○	○	○	○	Trifft voll zu

Im Biologieunterricht bin ich gut *

	1	2	3	4	
Trifft nicht zu	○	○	○	○	Trifft voll zu

Ich interessiere mich in meiner Freizeit für Geschichte *

	1	2	3	4	
Trifft nicht zu	○	○	○	○	Trifft voll zu

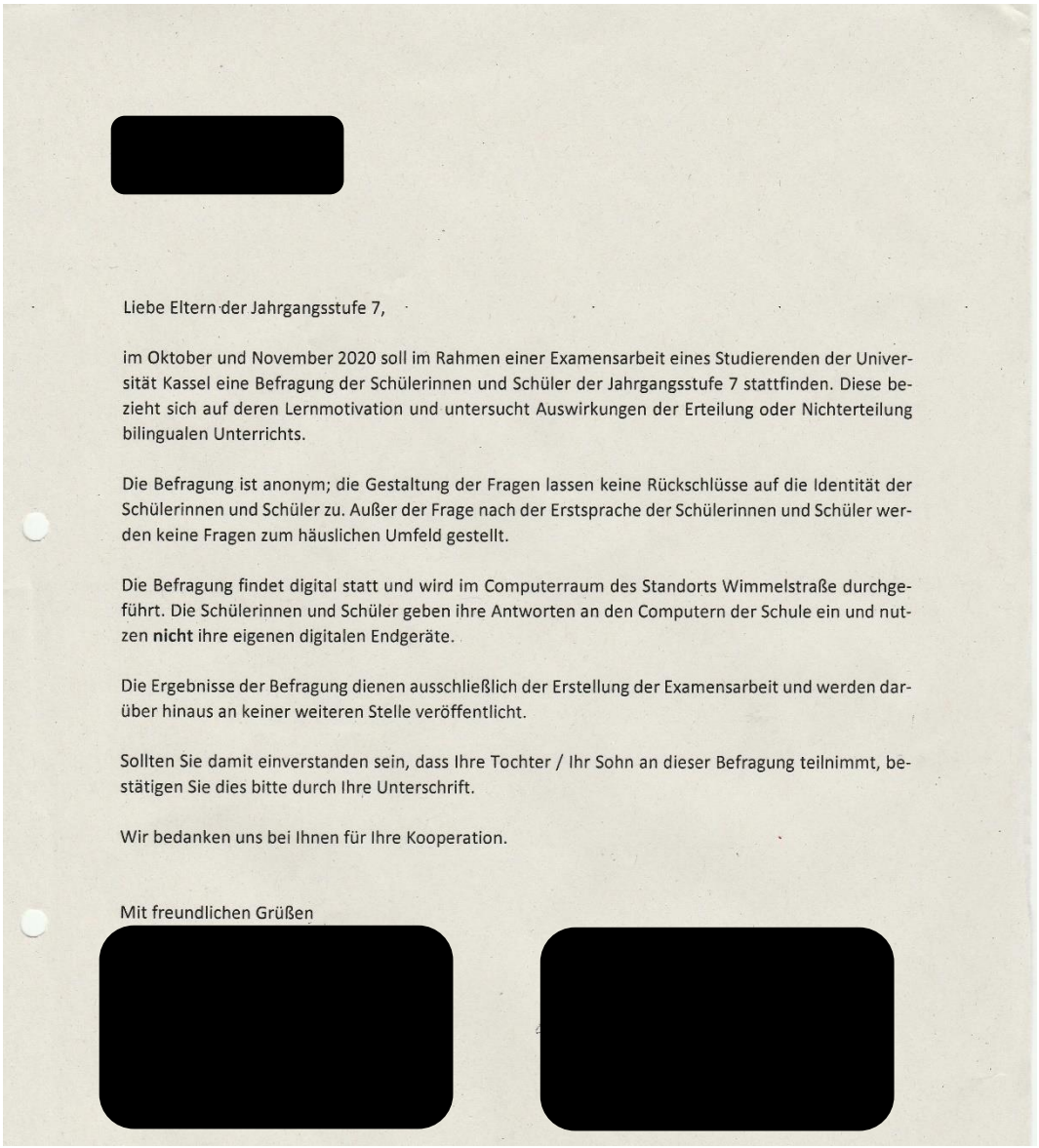
Biologie fällt mir leicht *

	1	2	3	4	
Trifft nicht zu	○	○	○	○	Trifft voll zu

Im Englischunterricht bin ich gut *

	1	2	3	4	
Trifft nicht zu	○	○	○	○	Trifft voll zu

3. Letter of information for parents and students; declaration of consent



[redacted]

Liebe Eltern der Jahrgangsstufe 7,

im Oktober und November 2020 soll im Rahmen einer Examensarbeit eines Studierenden der Universität Kassel eine Befragung der Schülerinnen und Schüler der Jahrgangsstufe 7 stattfinden. Diese bezieht sich auf deren Lernmotivation und untersucht Auswirkungen der Erteilung oder Nichterteilung bilingualen Unterrichts.

Die Befragung ist anonym; die Gestaltung der Fragen lassen keine Rückschlüsse auf die Identität der Schülerinnen und Schüler zu. Außer der Frage nach der Erstsprache der Schülerinnen und Schüler werden keine Fragen zum häuslichen Umfeld gestellt.

Die Befragung findet digital statt und wird im Computerraum des Standorts Wimmelstraße durchgeführt. Die Schülerinnen und Schüler geben ihre Antworten an den Computern der Schule ein und nutzen **nicht** ihre eigenen digitalen Endgeräte.

Die Ergebnisse der Befragung dienen ausschließlich der Erstellung der Examensarbeit und werden darüber hinaus an keiner weiteren Stelle veröffentlicht.

Sollten Sie damit einverstanden sein, dass Ihre Tochter / Ihr Sohn an dieser Befragung teilnimmt, bestätigen Sie dies bitte durch Ihre Unterschrift.

Wir bedanken uns bei Ihnen für Ihre Kooperation.

Mit freundlichen Grüßen

[redacted]

4. Results of the descriptive statistics

4.1 Gender * Learner Group (own figure)

*Geschlecht * Schulklasse Crosstabulation*

			Schulklasse		
			Bilingual	Monolingual	Total
Geschlecht	männlich	Count	12	30	42
		% within Schulklasse	40,0%	68,2%	56,8%
	weiblich	Count	18	14	32
		% within Schulklasse	60,0%	31,8%	43,2%
Total		Count	30	44	74
		% within Schulklasse	100,0%	100,0%	100,0%

4.2 First language/s * Learner Group (own figure)

*l3: Erstsprache/n * Schulklasse Crosstabulation*

			Schulklasse		
			Bilingual	Monolingual	Total
l3: Erstsprache/n	Deutsch	Count	21	32	53
		% within Schulklasse	70,0%	72,7%	71,6%
	Englisch	Count	1	1	2
		% within Schulklasse	3,3%	2,3%	2,7%
	andere	Count	8	11	19
		% within Schulklasse	26,7%	25,0%	25,7%
Total		Count	30	44	74
		% within Schulklasse	100,0%	100,0%	100,0%

4.3 Item 27: English comes easily to me * Learner Group (own figure)

*l27: Englisch fällt mir leicht * Schulklasse Crosstabulation*

			Schulklasse		
			Bilingual	Monolingual	Total
l27: Englisch fällt mir leicht	trifft nicht zu	Count	0	7	7
		% within Schulklasse	0,0%	15,9%	9,5%
	trifft eher nicht zu	Count	2	10	12
		% within Schulklasse	6,7%	22,7%	16,2%
	trifft eher zu	Count	11	20	31
		% within Schulklasse	36,7%	45,5%	41,9%
	trifft voll zu	Count	17	7	24
		% within Schulklasse	56,7%	15,9%	32,4%
Total		Count	30	44	74
		% within Schulklasse	100,0%	100,0%	100,0%

4.4 Item 31: I am good at English (own figure)

*l31: Im Englischunterricht bin ich gut * Schulklasse Crosstabulation*

			Schulklasse		
			Bilingual	Monolingual	Total
l31: Im Englischunterricht bin ich gut	trifft nicht zu	Count	0	2	2
		% within Schulklasse	0,0%	4,5%	2,7%
	trifft eher nicht zu	Count	4	11	15
		% within Schulklasse	13,3%	25,0%	20,3%
	trifft eher zu	Count	9	18	27
		% within Schulklasse	30,0%	40,9%	36,5%
	trifft voll zu	Count	17	13	30
		% within Schulklasse	56,7%	29,5%	40,5%
Total		Count	30	44	74
		% within Schulklasse	100,0%	100,0%	100,0%

4.5 Scale: English Self-Concept * Learner Group (own figure)

*Englisch Selbstkonzept * Schulklasse Crosstabulation*

			Schulklasse		
			Bilingual	Monolingual	Total
Englisch Selbstkonzept	1,00	Count	0	2	2
		% within Schulklasse	0,0%	4,5%	2,7%
	1,50	Count	0	3	3
		% within Schulklasse	0,0%	6,8%	4,1%
	2,00	Count	2	9	11
		% within Schulklasse	6,7%	20,5%	14,9%
	2,50	Count	2	4	6
		% within Schulklasse	6,7%	9,1%	8,1%
	3,00	Count	7	13	20
		% within Schulklasse	23,3%	29,5%	27,0%
	3,50	Count	4	6	10
		% within Schulklasse	13,3%	13,6%	13,5%
	4,00	Count	15	7	22
		% within Schulklasse	50,0%	15,9%	29,7%
Total		Count	30	44	74
		% within Schulklasse	100,0%	100,0%	100,0%

4.6 Item 4: English lessons are fun * Learner Group (own figure)

*I4: Englischunterricht macht Spaß * Schulklasse Crosstabulation*

			Schulklasse		
			Bilingual	Monolingual	Total
I4: Englischunterricht macht Spaß	trifft nicht zu	Count	0	4	4
		% within Schulklasse	0,0%	9,1%	5,4%
	trifft eher nicht zu	Count	5	18	23
		% within Schulklasse	16,7%	40,9%	31,1%
	trifft eher zu	Count	9	15	24
		% within Schulklasse	30,0%	34,1%	32,4%
	trifft voll zu	Count	16	7	23
		% within Schulklasse	53,3%	15,9%	31,1%
Total		Count	30	44	74
		% within Schulklasse	100,0%	100,0%	100,0%

4.7 Item 10: I am interested in English in my spare time * Learner Group (own figure)

*I16: Im Englischunterricht herrscht bei uns eine gute Atmosphäre * Schulklasse Crosstabulation*

			Schulklasse		
			Bilingual	Monolingual	Total
I16: Im Englischunterricht herrscht bei uns eine gute Atmosphäre	trifft nicht zu	Count	0	1	1
		% within Schulklasse	0,0%	2,3%	1,4%
	trifft eher nicht zu	Count	3	9	12
		% within Schulklasse	10,0%	20,5%	16,2%
	trifft eher zu	Count	9	9	18
		% within Schulklasse	30,0%	20,5%	24,3%
	trifft voll zu	Count	18	25	43
		% within Schulklasse	60,0%	56,8%	58,1%
Total		Count	30	44	74
		% within Schulklasse	100,0%	100,0%	100,0%

4.8 Item 16: We have a positive classroom atmosphere in our English lessons * Learner Group (own figure)

*I10: Ich interessiere mich in meiner Freizeit für Englisch * Schulklasse Crosstabulation*

			Schulklasse		
			Bilingual	Monolingual	Total
I10: Ich interessiere mich in meiner Freizeit für Englisch	trifft nicht zu	Count	1	4	5
		% within Schulklasse	3,3%	9,1%	6,8%
	trifft eher nicht zu	Count	6	22	28
		% within Schulklasse	20,0%	50,0%	37,8%
	trifft eher zu	Count	8	14	22
		% within Schulklasse	26,7%	31,8%	29,7%
	trifft voll zu	Count	15	4	19
		% within Schulklasse	50,0%	9,1%	25,7%
Total		Count	30	44	74
		% within Schulklasse	100,0%	100,0%	100,0%

4.9 Item 21: I have a positive relationship with my English teacher * Learner Group (own figure)

*I21: Ich habe eine gute Beziehung zu meiner Englischlehrkraft * Schulklasse Crosstabulation*

			Schulklasse		
			Bilingual	Monolingual	Total
I21: Ich habe eine gute Beziehung zu meiner Englischlehrkraft	trifft nicht zu	Count	1	5	6
		% within Schulklasse	3,3%	11,4%	8,1%
	trifft eher nicht zu	Count	1	11	12
		% within Schulklasse	3,3%	25,0%	16,2%
	trifft eher zu	Count	8	20	28
		% within Schulklasse	26,7%	45,5%	37,8%
	trifft voll zu	Count	20	8	28
		% within Schulklasse	66,7%	18,2%	37,8%
Total		Count	30	44	74
		% within Schulklasse	100,0%	100,0%	100,0%

4.10 Item 25: I like to participate in English lessons * Learner Group (own figure)

*I25: Im Englischunterricht mache ich gerne mit * Schulklasse Crosstabulation*

			Schulklasse		
			Bilingual	Monolingual	Total
I25: Im Englischunterricht mache ich gerne mit	trifft nicht zu	Count	0	3	3
		% within Schulklasse	0,0%	6,8%	4,1%
	trifft eher nicht zu	Count	4	9	13
		% within Schulklasse	13,3%	20,5%	17,6%
	trifft eher zu	Count	9	23	32
		% within Schulklasse	30,0%	52,3%	43,2%
	trifft voll zu	Count	17	9	26
		% within Schulklasse	56,7%	20,5%	35,1%
Total		Count	30	44	74
		% within Schulklasse	100,0%	100,0%	100,0%

4.11 Item 11: Biology lessons are fun * Learner Group (own figure)

*I11: Biologieunterricht macht Spaß * Schulklasse Crosstabulation*

			Schulklasse		Total
			Bilingual	Monolingual	
I11: Biologieunterricht macht Spaß	trifft nicht zu	Count	9	5	14
		% within Schulklasse	30,0%	11,4%	18,9%
	trifft eher nicht zu	Count	9	21	30
		% within Schulklasse	30,0%	47,7%	40,5%
	trifft eher zu	Count	6	10	16
		% within Schulklasse	20,0%	22,7%	21,6%
	trifft voll zu	Count	6	8	14
		% within Schulklasse	20,0%	18,2%	18,9%
Total		Count	30	44	74
		% within Schulklasse	100,0%	100,0%	100,0%

4.12 Item 5: I am interested in biology in my spare time * Learner Group (own figure)

*I5: Ich interessiere mich in meiner Freizeit für Biologie * Schulklasse Crosstabulation*

			Schulklasse		Total
			Bilingual	Monolingual	
I5: Ich interessiere mich in meiner Freizeit für Biologie	trifft nicht zu	Count	12	20	32
		% within Schulklasse	40,0%	45,5%	43,2%
	trifft eher nicht zu	Count	6	13	19
		% within Schulklasse	20,0%	29,5%	25,7%
	trifft eher zu	Count	10	9	19
		% within Schulklasse	33,3%	20,5%	25,7%
	trifft voll zu	Count	2	2	4
		% within Schulklasse	6,7%	4,5%	5,4%
Total		Count	30	44	74
		% within Schulklasse	100,0%	100,0%	100,0%

4.13 Item 22: We have a positive classroom atmosphere in our biology lessons * Learner Group (own figure)

*I22: Im Biologieunterricht herrscht bei uns eine gute Atmosphäre * Schulklasse Crosstabulation*

			Schulklasse		Total
			Bilingual	Monolingual	
I22: Im Biologieunterricht herrscht bei uns eine gute Atmosphäre	trifft nicht zu	Count	6	1	7
		% within Schulklasse	20,0%	2,3%	9,5%
	trifft eher nicht zu	Count	12	8	20
		% within Schulklasse	40,0%	18,2%	27,0%
	trifft eher zu	Count	9	26	35
		% within Schulklasse	30,0%	59,1%	47,3%
	trifft voll zu	Count	3	9	12
		% within Schulklasse	10,0%	20,5%	16,2%
Total		Count	30	44	74
		% within Schulklasse	100,0%	100,0%	100,0%

4.14 Item 17: I have a positive relationship with my biology teacher * Learner Group (own figure)

*I17: Ich habe eine gute Beziehung zu meiner Biologielehrkraft * Schulklasse Crosstabulation*

			Schulklasse		Total
			Bilingual	Monolingual	
I17: Ich habe eine gute Beziehung zu meiner Biologielehrkraft	trifft nicht zu	Count	4	3	7
		% within Schulklasse	13,3%	6,8%	9,5%
	trifft eher nicht zu	Count	10	6	16
		% within Schulklasse	33,3%	13,6%	21,6%
	trifft eher zu	Count	9	12	21
		% within Schulklasse	30,0%	27,3%	28,4%
	trifft voll zu	Count	7	23	30
		% within Schulklasse	23,3%	52,3%	40,5%
Total		Count	30	44	74
		% within Schulklasse	100,0%	100,0%	100,0%

4.15 Item 26: I like to participate in biology lessons * Learner Group (own figure)

*I26: Im Biologieunterricht mache ich gerne mit * Schulklasse Crosstabulation*

			Schulklasse		
			Bilingual	Monolingual	Total
I26: Im Biologieunterricht mache ich gerne mit	trifft nicht zu	Count	5	4	9
		% within Schulklasse	16,7%	9,1%	12,2%
	trifft eher nicht zu	Count	12	9	21
		% within Schulklasse	40,0%	20,5%	28,4%
	trifft eher zu	Count	8	20	28
		% within Schulklasse	26,7%	45,5%	37,8%
	trifft voll zu	Count	5	11	16
		% within Schulklasse	16,7%	25,0%	21,6%
Total		Count	30	44	74
		% within Schulklasse	100,0%	100,0%	100,0%

4.16 Item 18: History lessons are fun * Learner Group (own figure)

*I18: Geschichtsunterricht macht Spaß * Schulklasse Crosstabulation*

			Schulklasse		
			Bilingual	Monolingual	Total
I18: Geschichtsunterricht macht Spaß	trifft nicht zu	Count	2	12	14
		% within Schulklasse	6,7%	27,3%	18,9%
	trifft eher nicht zu	Count	5	11	16
		% within Schulklasse	16,7%	25,0%	21,6%
	trifft eher zu	Count	12	17	29
		% within Schulklasse	40,0%	38,6%	39,2%
	trifft voll zu	Count	11	4	15
		% within Schulklasse	36,7%	9,1%	20,3%
Total		Count	30	44	74
		% within Schulklasse	100,0%	100,0%	100,0%

4.17 Item 29: I am interested in history in my spare time * Learner Group (own figure)

*I29: Ich interessiere mich in meiner Freizeit für Geschichte * Schulklasse Crosstabulation*

			Schulklasse		
			Bilingual	Monolingual	Total
I29: Ich interessiere mich in meiner Freizeit für Geschichte	trifft nicht zu	Count	10	26	36
		% within Schulklasse	33,3%	59,1%	48,6%
	trifft eher nicht zu	Count	7	16	23
		% within Schulklasse	23,3%	36,4%	31,1%
	trifft eher zu	Count	11	1	12
		% within Schulklasse	36,7%	2,3%	16,2%
	trifft voll zu	Count	2	1	3
		% within Schulklasse	6,7%	2,3%	4,1%
Total		Count	30	44	74
		% within Schulklasse	100,0%	100,0%	100,0%

4.18 Item 6: We have a positive classroom atmosphere in our history lessons * Learner Group (own figure)

*I6: Im Geschichtsunterricht herrscht bei uns eine gute Atmosphäre * Schulklasse Crosstabulation*

			Schulklasse		
			Bilingual	Monolingual	Total
I6: Im Geschichtsunterricht herrscht bei uns eine gute Atmosphäre	trifft nicht zu	Count	0	14	14
		% within Schulklasse	0,0%	31,8%	18,9%
	trifft eher nicht zu	Count	7	11	18
		% within Schulklasse	23,3%	25,0%	24,3%
	trifft eher zu	Count	11	15	26
		% within Schulklasse	36,7%	34,1%	35,1%
	trifft voll zu	Count	12	4	16
		% within Schulklasse	40,0%	9,1%	21,6%
Total		Count	30	44	74
		% within Schulklasse	100,0%	100,0%	100,0%

4.19 Item 12: I have a positive relationship with my history teacher * Learner Group (own figure)

*I12: Ich habe eine gute Beziehung zu meiner Geschichtslehrkraft * Schulklasse Crosstabulation*

			Schulklasse		
			Bilingual	Monolingual	Total
I12: Ich habe eine gute Beziehung zu meiner Geschichtslehrkraft	trifft nicht zu	Count	2	14	16
		% within Schulklasse	6,7%	31,8%	21,6%
	trifft eher nicht zu	Count	4	14	18
		% within Schulklasse	13,3%	31,8%	24,3%
	trifft eher zu	Count	10	11	21
		% within Schulklasse	33,3%	25,0%	28,4%
	trifft voll zu	Count	14	5	19
		% within Schulklasse	46,7%	11,4%	25,7%
Total		Count	30	44	74
		% within Schulklasse	100,0%	100,0%	100,0%

4.20 Item 23: I like to participate in history lessons * Learner Group (own figure)

*I23: Im Geschichtsunterricht mache ich gerne mit * Schulklasse Crosstabulation*

			Schulklasse		
			Bilingual	Monolingual	Total
I23: Im Geschichtsunterricht mache ich gerne mit	trifft nicht zu	Count	2	10	12
		% within Schulklasse	6,7%	22,7%	16,2%
	trifft eher nicht zu	Count	4	8	12
		% within Schulklasse	13,3%	18,2%	16,2%
	trifft eher zu	Count	10	19	29
		% within Schulklasse	33,3%	43,2%	39,2%
	trifft voll zu	Count	14	7	21
		% within Schulklasse	46,7%	15,9%	28,4%
Total		Count	30	44	74
		% within Schulklasse	100,0%	100,0%	100,0%

4.21 Item 13: I chose the bilingual learner group because (only for CLIL students) (own figure)

I13: Ich habe mich für die bilinguale Klasse entschieden, weil:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	ich Englisch mag	10	13,5	33,3	33,3
	ich gut Englisch spreche	4	5,4	13,3	46,7
	ich mein Englisch verbessern möchte	8	10,8	26,7	73,3
	es besser ist für Zukunft/Studium/Beruf	6	8,1	20,0	93,3
	ich besser Englisch kann als Deutsch	1	1,4	3,3	96,7
	ich Freunde in der Klasse habe	1	1,4	3,3	100,0
	Total	30	40,5	100,0	
Missing	System	44	59,5		
Total		74	100,0		

4.22 Item 7: Do you pursue a profession connected to the English language? (own figure)

I7: Möchtest du in deinem zukünftigen Beruf etwas mit Englisch machen?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	ja	33	44,6	44,6	44,6
	nein	41	55,4	55,4	100,0
	Total	74	100,0	100,0	

4.23 Item 19: What career do you pursue? * Learner Group (own figure)

*I19: Berufswunsch * Schulklasse Crosstabulation*

			Schulklasse		
			Bilingual	Monolingual	Total
I19: Berufswunsch	Rechtswissenschaften	Count	3	4	7
		% within Schulklasse	10,0%	9,1%	9,5%
	Medizin	Count	5	7	12
		% within Schulklasse	16,7%	15,9%	16,2%
	Sport	Count	3	11	14
		% within Schulklasse	10,0%	25,0%	18,9%
	anderer Beruf ohne Studium	Count	4	11	15
		% within Schulklasse	13,3%	25,0%	20,3%
	anderer Beruf mit Studium	Count	8	4	12
		% within Schulklasse	26,7%	9,1%	16,2%
	Weiß ich nicht	Count	7	7	14
		% within Schulklasse	23,3%	15,9%	18,9%
Total		Count	30	44	74
		% within Schulklasse	100,0%	100,0%	100,0%

4.24 Item 19: What career do you pursue? (w/o Sports & I don't know) * Learner Group (own figure)

*I19: Berufswunsch (ohne "Sport" und "weiß ich nicht") * Schulklasse Crosstabulation*

			Schulklasse		
			Bilingual	Monolingual	Total
I19: Berufswunsch (ohne "Sport" und "weiß ich nicht")	Beruf ohne Studium	Count	4	11	15
		% within Schulklasse	20,0%	42,3%	32,6%
	Beruf mit Studium	Count	16	15	31
		% within Schulklasse	80,0%	57,7%	67,4%
Total		Count	20	26	46
		% within Schulklasse	100,0%	100,0%	100,0%

5. Results of statistical testing

5.1 Reliability – Scale: English Self-Concept (own figure)

Reliability Statistics

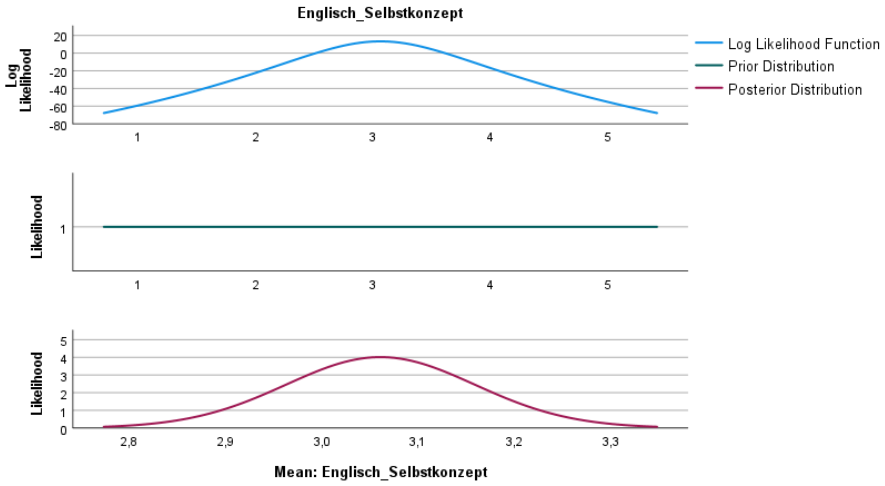
Cronbach's Alpha	N of Items
,880	2

5.2 Bayesian Normality Test – Scale: English Self-Concept (own figure)

Posterior Distribution Characterization for One-Sample Mean

		Posterior			95% Credible Interval	
	N	Mode	Mean	Variance	Lower Bound	Upper Bound
Englisch_Selbstkonzept	74	3,0608	3,0608	,010	2,8634	3,2582

Prior on Variance: Diffuse. Prior on Mean: Diffuse.



5.3 Student's T-Test – Scale: English Self-Concept (own figure)

Group Statistics

	Schulklasse	N	Mean	Std. Deviation	Std. Error Mean
Englisch Selbstkonzept	Bilingual	30	3,4667	,64237	,11728
	Monolingual	44	2,7841	,85180	,12841

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Englisch Selbstkonzept	Equal variances assumed	2,957	,090	3,723	72	<,001	,68258	,18333	,31712	1,04804
	Equal variances not assumed			3,925	71,199	<,001	,68258	,17391	,33583	1,02933

5.4 Reliability – Scale: Biology Self-Concept (own figure)

Reliability Statistics

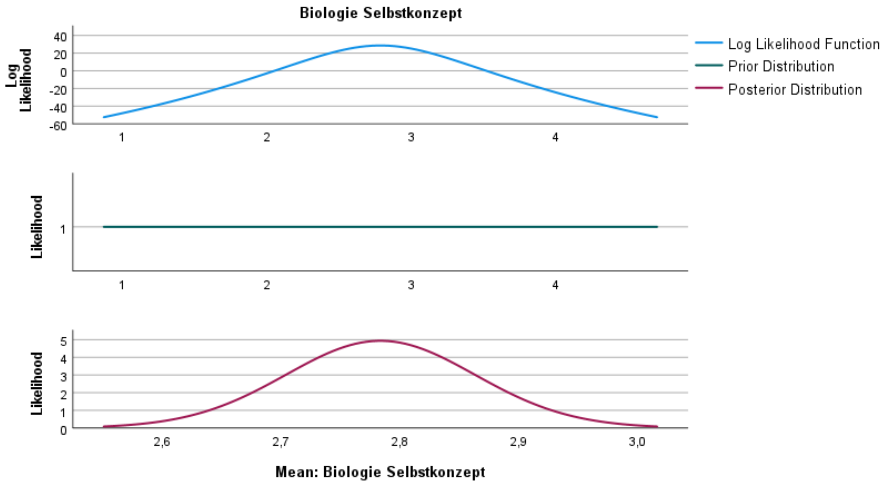
Cronbach's Alpha	N of Items
,839	2

5.5 Bayesian Normality Test – Scale: Biology Self-Concept (own figure)

Posterior Distribution Characterization for One-Sample Mean

		Posterior			95% Credible Interval	
	N	Mode	Mean	Variance	Lower Bound	Upper Bound
Biologie Selbstkonzept	74	2,7838	2,7838	,007	2,6233	2,9443

Prior on Variance: Diffuse. Prior on Mean: Diffuse.



5.6 Student's T-Test – Scale: Biology Self-Concept (own figure)

Group Statistics

	Schulklasse	N	Mean	Std. Deviation	Std. Error Mean
Biologie Selbstkonzept	Bilingual	30	2,9000	,63518	,11597
	Monolingual	44	2,7045	,70972	,10699

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Biologie Selbstkonzept	Equal variances assumed	,688	,410	1,213	72	,229	,19545	,16116	-,12582	,51673
	Equal variances not assumed			1,239	66,760	,220	,19545	,15778	-,11951	,51041

5.7 Reliability – Scale: History Self-Concept (own figure)

Case Processing Summary

		N	%
Cases	Valid	74	96,1
	Excluded[a]	3	3,9
	Total	77	100,0

[a] Listwise deletion based on all variables in the procedure.

Reliability Statistics

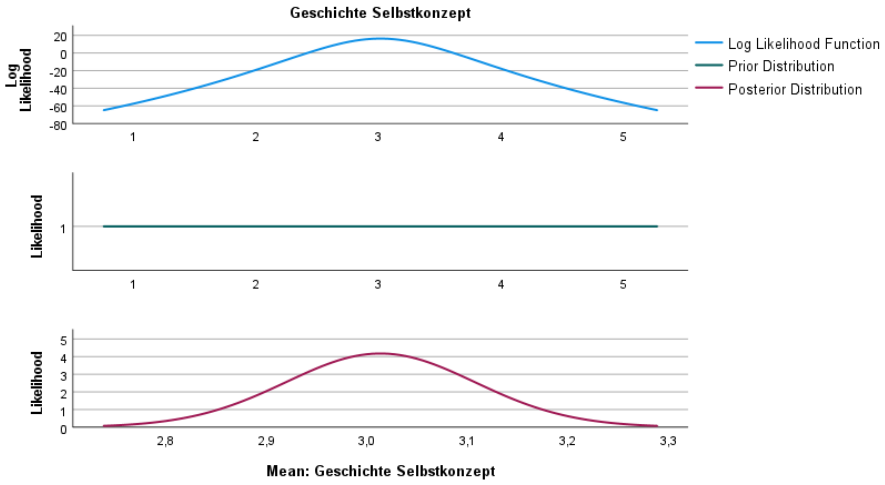
Cronbach's Alpha	N of Items
,765	2

5.8 Bayesian Normality Test – Scale: History Self-Concept (own figure)

Posterior Distribution Characterization for One-Sample Mean

		Posterior			95% Credible Interval	
	N	Mode	Mean	Variance	Lower Bound	Upper Bound
Geschichte Selbstkonzept	74	3,0135	3,0135	,009	2,8240	3,2031

Prior on Variance: Diffuse. Prior on Mean: Diffuse.



5.9 Student's T-Test – Scale: History Self-Concept (own figure)

Group Statistics

	Schulklasse	N	Mean	Std. Deviation	Std. Error Mean
Geschichte Selbstkonzept	Bilingual	30	3,1500	,72099	,13163
	Monolingual	44	2,9205	,85551	,12897

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Geschichte Selbstkonzept	Equal variances assumed	,060	,807	1,206	72	,232	,22955	,19037	-,14996	,60905
	Equal variances not assumed			1,246	68,703	,217	,22955	,18429	-,13812	,59722

5.10 Reliability – Scale: General School Self-Concept (own figure)

Reliability Statistics

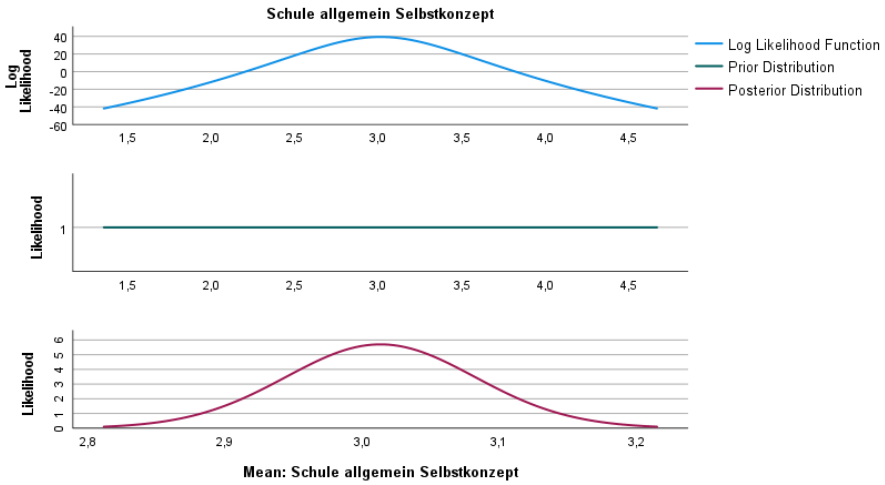
Cronbach's Alpha	N of Items
,818	2

5.11 Bayesian Normality Test – Scale: General School Self-Concept (own figure)

Posterior Distribution Characterization for One-Sample Mean

		Posterior			95% Credible Interval	
	N	Mode	Mean	Variance	Lower Bound	Upper Bound
Schule allgemein Selbstkonzept	74	3,0135	3,0135	,005	2,8746	3,1524

Prior on Variance: Diffuse. Prior on Mean: Diffuse.



5.12 Student's T-Test – Scale: General School Self-Concept (own figure)

Group Statistics

	Schulklasse	N	Mean	Std. Deviation	Std. Error Mean
Schule allgemein Selbstkonzept	Bilingual	30	3,0333	,58624	,10703
	Monolingual	44	3,0000	,60039	,09051

Independent Samples Test

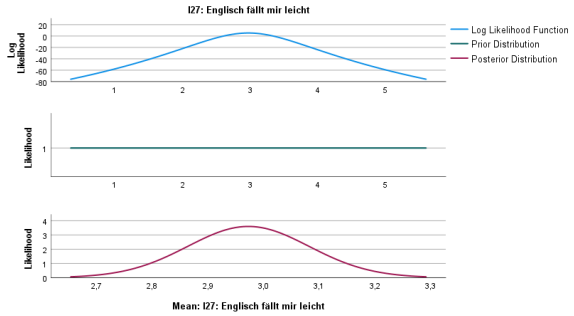
		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Schule allgemein Selbstkonzept	Equal variances assumed	,028	,867	,237	72	,814	,03333	,14081	-,24738	,31404
	Equal variances not assumed			,238	63,431	,813	,03333	,14017	-,24674	,31341

5.13 Bayesian Normality Test – All Items: Self-Concept (own figure)

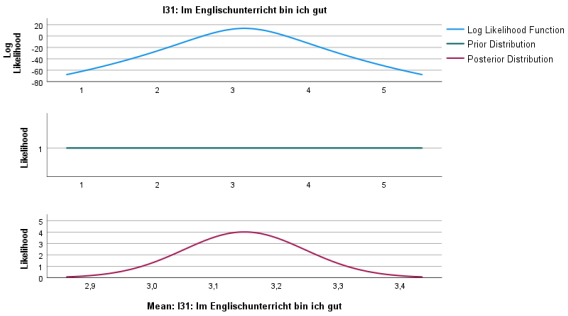
Posterior Distribution Characterization for One-Sample Mean

	N	Posterior			95% Credible Interval	
		Mode	Mean	Variance	Lower Bound	Upper Bound
I27: Englisch fällt mir leicht	74	2,97	2,97	,013	2,75	3,19
I31: Im Englischunterricht bin ich gut	74	3,15	3,15	,010	2,95	3,35
I30: Biologie fällt mir leicht	74	2,77	2,77	,008	2,59	2,95
I28: Im Biologieunterricht bin ich gut	74	2,80	2,80	,007	2,63	2,96
I8: Geschichte fällt mir leicht	74	2,95	2,95	,012	2,73	3,16
I14: Im Geschichtsunterricht bin ich gut	74	3,08	3,08	,011	2,87	3,29
I20: Schule allgemein fällt mir leicht	74	2,91	2,91	,006	2,75	3,06
I24: In der Schule bin ich gut	74	3,12	3,12	,006	2,97	3,27

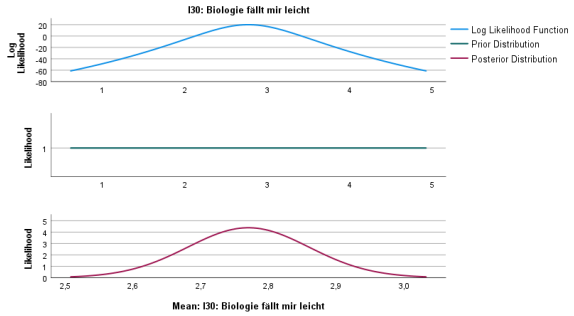
Prior on Variance: Diffuse. Prior on Mean: Diffuse.



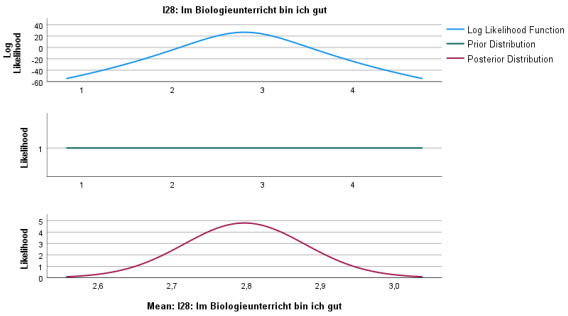
Mean: I27: Englisch fällt mir leicht



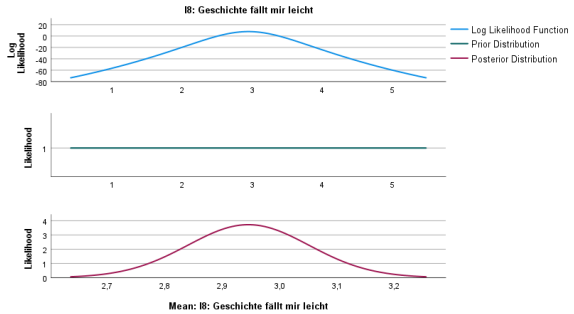
Mean: I31: Im Englischunterricht bin ich gut



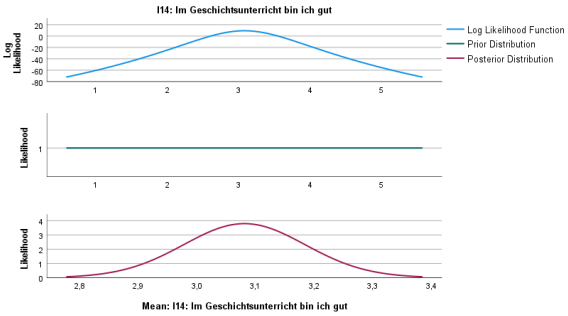
Mean: I30: Biologie fällt mir leicht



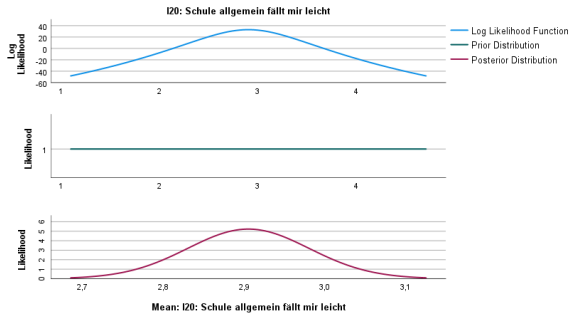
Mean: I28: Im Biologieunterricht bin ich gut



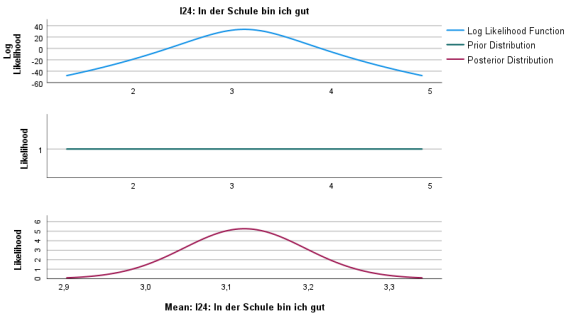
Mean: I8: Geschichte fällt mir leicht



Mean: I14: Im Geschichtsunterricht bin ich gut



Mean: I20: Schule allgemein fällt mir leicht



Mean: I24: In der Schule bin ich gut

5.14 Student's T-Test – All Items: Self-Concept (own figure)

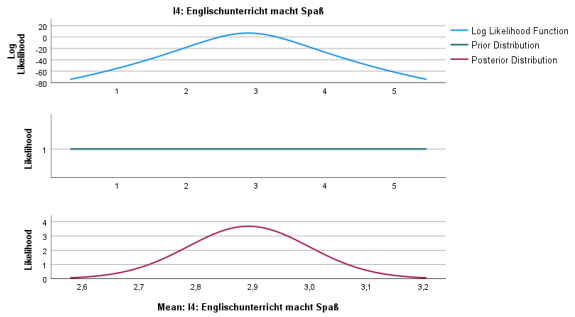
Group Statistics

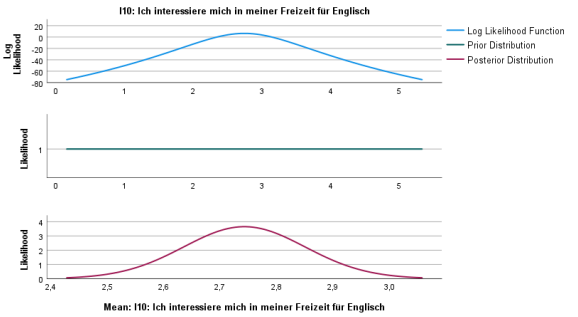
	Schulklasse	N	Mean	Std. Deviation	Std. Error Mean
I27: Englisch fällt mir leicht	Bilingual	30	3,50	,630	,115
	Monolingual	44	2,61	,945	,143
I31: Im Englischunterricht bin ich gut	Bilingual	30	3,43	,728	,133
	Monolingual	44	2,95	,861	,130
I30: Biologie fällt mir leicht	Bilingual	30	2,93	,691	,126
	Monolingual	44	2,66	,805	,121
I28: Im Biologieunterricht bin ich gut	Bilingual	30	2,87	,681	,124
	Monolingual	44	2,75	,719	,108
I8: Geschichte fällt mir leicht	Bilingual	30	3,13	,776	,142
	Monolingual	44	2,82	,971	,146
I14: Im Geschichtsunterricht bin ich gut	Bilingual	30	3,17	,874	,160
	Monolingual	44	3,02	,902	,136
I20: Schule allgemein fällt mir leicht	Bilingual	30	2,93	,691	,126
	Monolingual	44	2,89	,618	,093
I24: In der Schule bin ich gut	Bilingual	30	3,13	,571	,104
	Monolingual	44	3,11	,689	,104

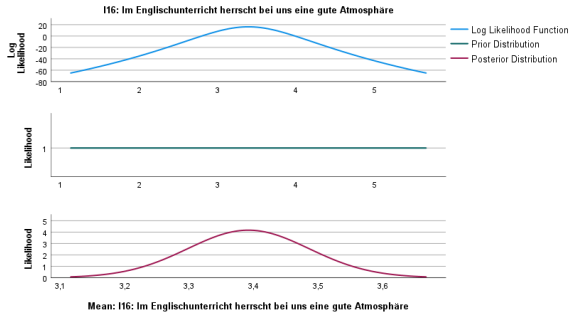
Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
I27: Englisch fällt mir leicht	Equal variances assumed	5,162	,026	4,495	72	<,001	,886	,197	,493	1,279
	Equal variances not assumed			4,840	71,978	<,001	,886	,183	,521	1,251
I31: Im Englischunterricht bin ich gut	Equal variances assumed	,013	,910	2,496	72	,015	,479	,192	,096	,861
	Equal variances not assumed			2,577	68,625	,012	,479	,186	,108	,850
I30: Biologie fällt mir leicht	Equal variances assumed	2,854	,096	1,521	72	,133	,274	,180	-,085	,634
	Equal variances not assumed			1,566	68,137	,122	,274	,175	-,075	,624
I28: Im Biologieunterricht bin ich gut	Equal variances assumed	,223	,639	,700	72	,486	,117	,167	-,216	,449
	Equal variances not assumed			,707	64,641	,482	,117	,165	-,213	,446
I8: Geschichte fällt mir leicht	Equal variances assumed	1,531	,220	1,483	72	,142	,315	,213	-,109	,739
	Equal variances not assumed			1,547	70,092	,126	,315	,204	-,091	,721
I14: Im Geschichtsunterricht bin ich gut	Equal variances assumed	,528	,470	,682	72	,497	,144	,211	-,277	,564
	Equal variances not assumed			,686	63,725	,495	,144	,210	-,275	,563
I20: Schule allgemein fällt mir leicht	Equal variances assumed	,269	,605	,306	72	,761	,047	,154	-,259	,353
	Equal variances not assumed			,299	57,667	,766	,047	,157	-,267	,361
I24: In der Schule bin ich gut	Equal variances assumed	1,415	,238	,129	72	,898	,020	,153	-,284	,324
	Equal variances not assumed			,134	69,175	,894	,020	,147	-,274	,313

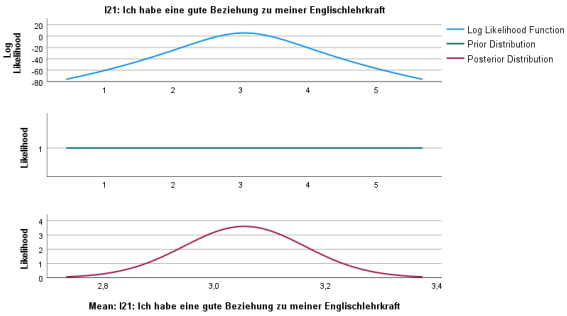
5.15 Bayesian Normality Test – All 5 Items: Intrinsic Motivation English (own figure)



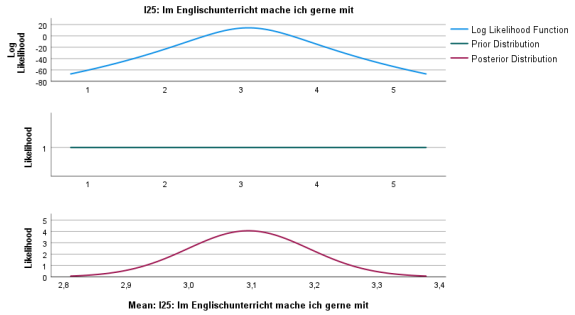




Mean: I16: Im Englischunterricht herrscht bei uns eine gute Atmosphäre



Mean: I21: Ich habe eine gute Beziehung zu meiner Englischlehrkraft



Mean: I25: Im Englischunterricht mache ich gerne mit

5.16 Student's T-Test – All 5 Items: Intrinsic Motivation English (own figure)

Group Statistics

	Schulklasse	N	Mean	Std. Deviation	Std. Error Mean
I4: Englischunterricht macht Spaß	Bilingual	30	3,37	,765	,140
	Monolingual	44	2,57	,873	,132
I10: Ich interessiere mich in meiner Freizeit für Englisch	Bilingual	30	3,23	,898	,164
	Monolingual	44	2,41	,787	,119
I16: Im Englischunterricht herrscht bei uns eine gute Atmosphäre	Bilingual	30	3,50	,682	,125
	Monolingual	44	3,32	,883	,133
I21: Ich habe eine gute Beziehung zu meiner Englischlehrkraft	Bilingual	30	3,57	,728	,133
	Monolingual	44	2,70	,904	,136
I25: Im Englischunterricht mache ich gerne mit	Bilingual	30	3,43	,728	,133
	Monolingual	44	2,86	,824	,124

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
I4: Englischunterricht macht Spaß	Equal variances assumed	,629	,430	4,057	72	<,001	,798	,197	,406	1,191
	Equal variances not assumed			4,160	67,499	<,001	,798	,192	,415	1,182
I10: Ich interessiere mich in meiner Freizeit für Englisch	Equal variances assumed	1,024	,315	4,177	72	<,001	,824	,197	,431	1,218
	Equal variances not assumed			4,074	56,838	<,001	,824	,202	,419	1,229
I16: Im Englischunterricht herrscht bei uns eine gute Atmosphäre	Equal variances assumed	3,991	,050	,950	72	,345	,182	,191	-,200	,563
	Equal variances not assumed			,997	70,797	,322	,182	,182	-,182	,545
I21: Ich habe eine gute Beziehung zu meiner Englischlehrkraft	Equal variances assumed	2,048	,157	4,347	72	<,001	,862	,198	,467	1,258
	Equal variances not assumed			4,528	69,923	<,001	,862	,190	,482	1,242
I25: Im Englischunterricht mache ich gerne mit	Equal variances assumed	,097	,756	3,059	72	,003	,570	,186	,198	,941
	Equal variances not assumed			3,132	67,201	,003	,570	,182	,207	,933

5.17 Reliability – Scale: Aspects of Intrinsic Motivation English (own figure)

Reliability Statistics

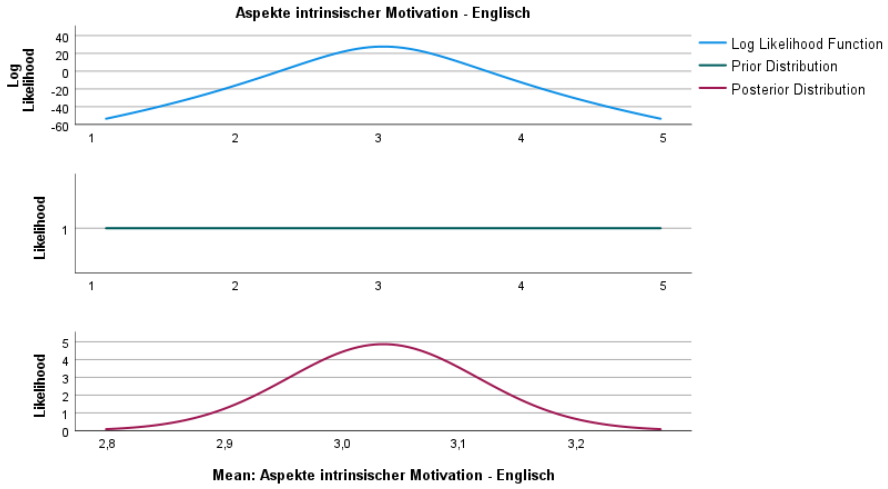
Cronbach's Alpha	N of Items
,843	5

5.18 Bayesian Normality Test – Scale: Aspects of Intrinsic Motivation English (own figure)

Posterior Distribution Characterization for One-Sample Mean

		Posterior			95% Credible Interval	
	N	Mode	Mean	Variance	Lower Bound	Upper Bound
Aspekte intrinsischer Motivation - Englisch	74	3,0351	3,0351	,007	2,8724	3,1979

Prior on Variance: Diffuse. Prior on Mean: Diffuse.



5.19 Student's T-Test – Scale: Aspects of Intrinsic Motivation English (own figure)

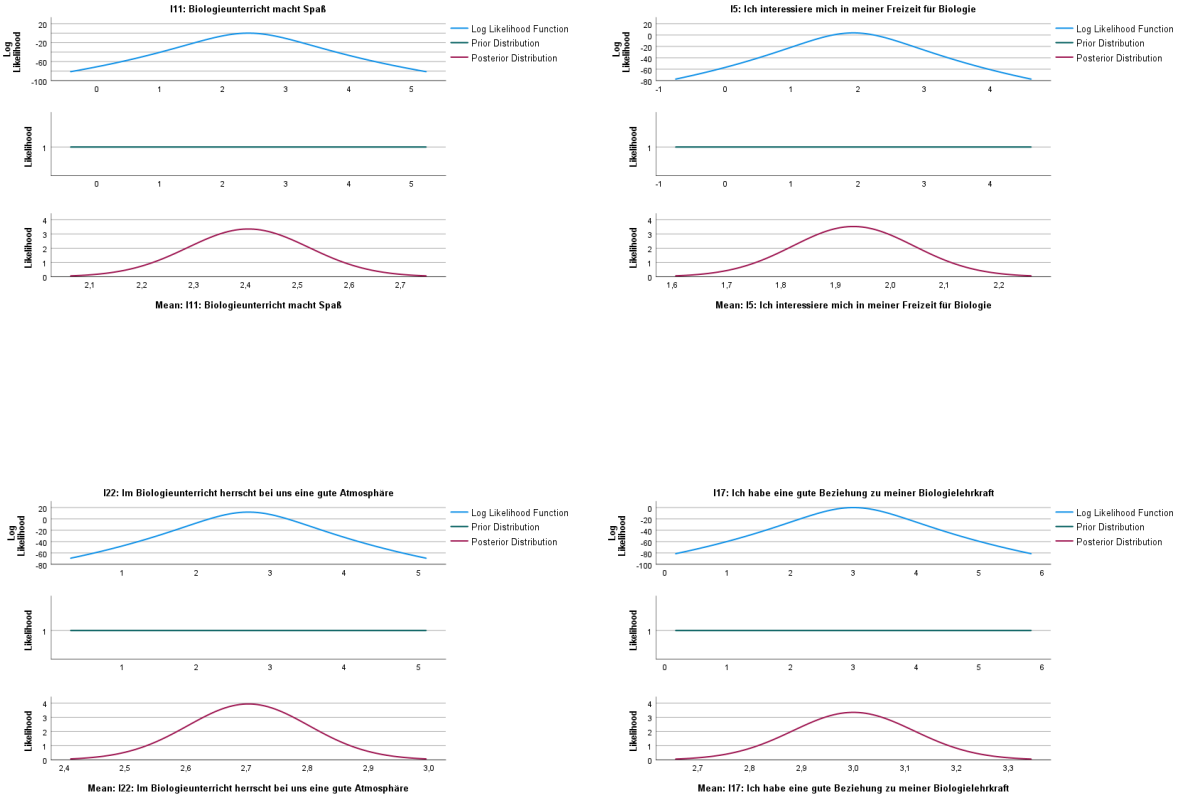
Group Statistics

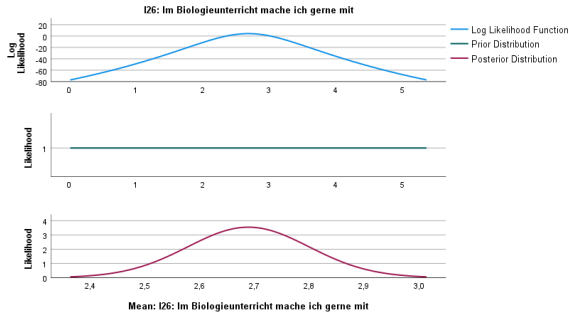
	Schulklasse	N	Mean	Std. Deviation	Std. Error Mean
Aspekte intrinsischer Motivation - Englisch	Bilingual	30	3,4200	,59038	,10779
	Monolingual	44	2,7727	,63625	,09592

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Aspekte intrinsischer Motivation - Englisch	Equal variances assumed	,037	,848	4,422	72	<,001	,64727	,14637	,35549	,93905
	Equal variances not assumed			4,486	65,439	<,001	,64727	,14429	,35915	,93540

5.20 Bayesian Normality Test – All items: Aspects of Intrinsic Motivation Biology (own figure)





5.21 Student's T-Test – All Items: Aspects of Intrinsic Motivation Biology (own figure)

Group Statistics

	Schulklasse	N	Mean	Std. Deviation	Std. Error Mean
I11: Biologieunterricht macht Spaß	Bilingual	30	2,30	1,119	,204
	Monolingual	44	2,48	,927	,140
I5: Ich interessiere mich in meiner Freizeit für Biologie	Bilingual	30	2,07	1,015	,185
	Monolingual	44	1,84	,914	,138
I22: Im Biologieunterricht herrscht bei uns eine gute Atmosphäre	Bilingual	30	2,30	,915	,167
	Monolingual	44	2,98	,698	,105
I17: Ich habe eine gute Beziehung zu meiner Biologielehrkraft	Bilingual	30	2,63	,999	,182
	Monolingual	44	3,25	,943	,142
I26: Im Biologieunterricht mache ich gerne mit	Bilingual	30	2,43	,971	,177
	Monolingual	44	2,86	,905	,136

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
I11: Biologieunterricht macht Spaß	Equal variances assumed	2,021	,159	-,742	72	,460	-,177	,239	-,653	,299
	Equal variances not assumed			-,716	54,470	,477	-,177	,248	-,673	,319
I5: Ich interessiere mich in meiner Freizeit für Biologie	Equal variances assumed	1,020	,316	,998	72	,322	,226	,226	-,225	,677
	Equal variances not assumed			,978	57,965	,332	,226	,231	-,236	,688
I22: Im Biologieunterricht herrscht bei uns eine gute Atmosphäre	Equal variances assumed	6,618	,012	-3,607	72	<,001	-,677	,188	-1,052	-,303
	Equal variances not assumed			-3,429	51,157	,001	-,677	,198	-1,074	-,281
I17: Ich habe eine gute Beziehung zu meiner Biologielehrkraft	Equal variances assumed	,385	,537	-2,696	72	,009	-,617	,229	-1,073	-,161
	Equal variances not assumed			-2,666	59,992	,010	-,617	,231	-1,079	-,154
I26: Im Biologieunterricht mache ich gerne mit	Equal variances assumed	1,066	,305	-1,950	72	,055	-,430	,221	-,870	,010
	Equal variances not assumed			-1,923	59,417	,059	-,430	,224	-,878	,017

5.22 Reliability – Scale: Aspects of Intrinsic Motivation Biology (own figure)

Reliability Statistics

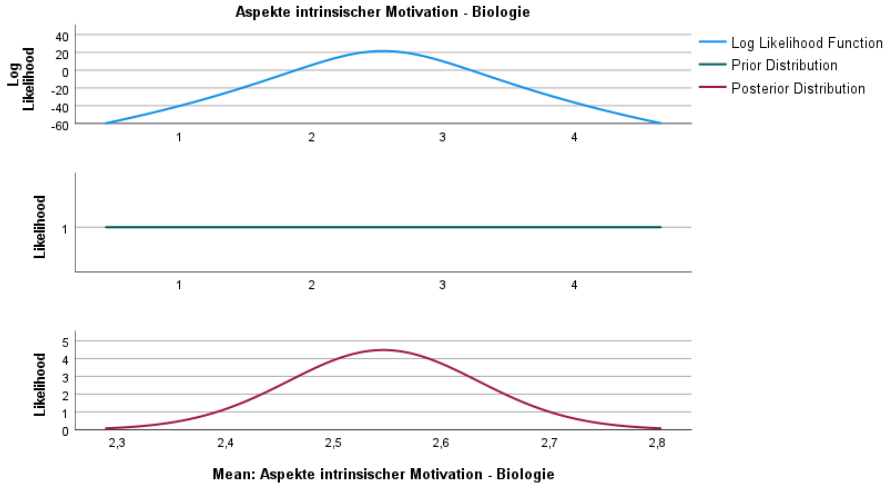
Cronbach's Alpha	N of Items
,846	5

5.23 Bayesian Normality Test – Scale: Aspects of Intrinsic Motivation Biology (own figure)

Posterior Distribution Characterization for One-Sample Mean

		Posterior			95% Credible Interval	
	N	Mode	Mean	Variance	Lower Bound	Upper Bound
Aspekte intrinsischer Motivation - Biologie	74	2,5459	2,5459	,008	2,3692	2,7227

Prior on Variance: Diffuse. Prior on Mean: Diffuse.



5.24 Student's T-Test – Scale: Aspects of Intrinsic Motivation Biology (own figure)

Group Statistics

	Schulklasse	N	Mean	Std. Deviation	Std. Error Mean
Aspekte intrinsischer Motivation - Biologie	Bilingual	30	2,3467	,83696	,15281
	Monolingual	44	2,6818	,66447	,10017

Independent Samples Test

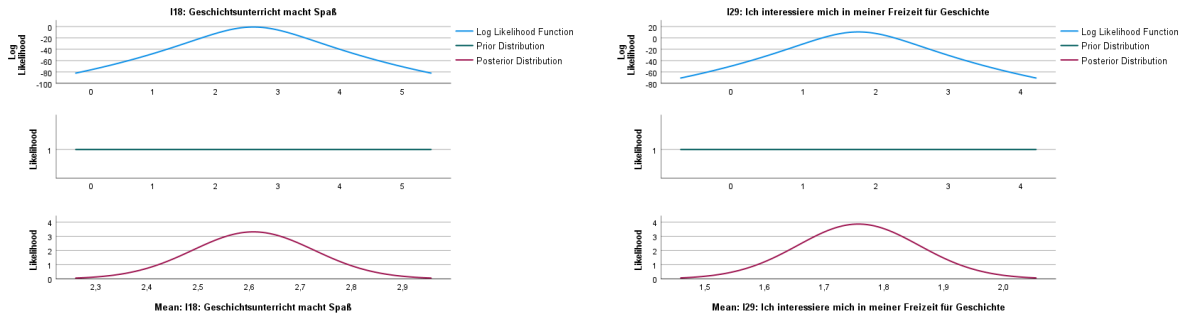
		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Aspekte intrinsischer Motivation - Biologie	Equal variances assumed	4,285	,042	-1,916	72	,059	-,33515	,17493	-,68386	,01356
	Equal variances not assumed			-1,834	52,715	,072	-,33515	,18272	-,70168	,03137

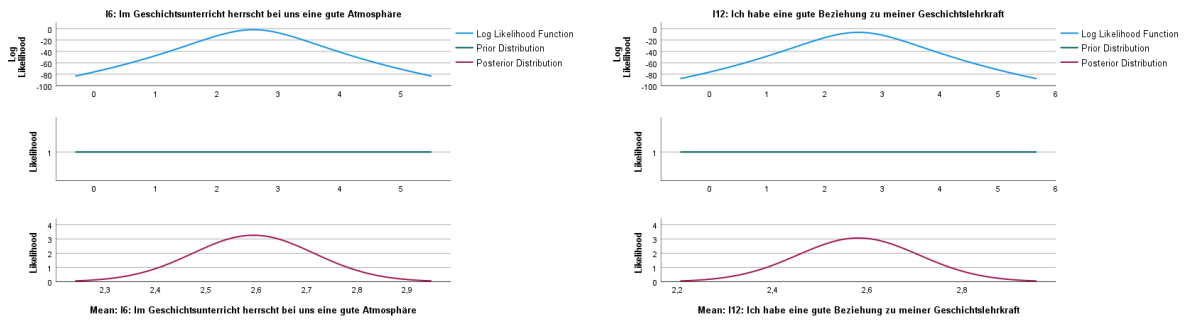
5.25 Bayesian Normality Test – All items: Aspects of Intrinsic Motivation History (own figure)

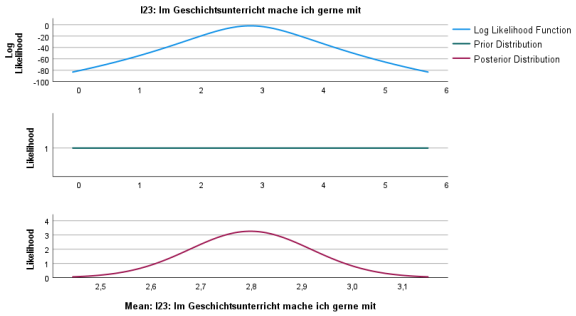
Posterior Distribution Characterization for One-Sample Mean

	N	Posterior			95% Credible Interval	
		Mode	Mean	Variance	Lower Bound	Upper Bound
I18: Geschichtsunterricht macht Spaß	74	2,61	2,61	,015	2,37	2,85
I29: Ich interessiere mich in meiner Freizeit für Geschichte	74	1,76	1,76	,011	1,55	1,96
I6: Im Geschichtsunterricht herrscht bei uns eine gute Atmosphäre	74	2,59	2,59	,015	2,35	2,84
I12: Ich habe eine gute Beziehung zu meiner Geschichtslehrkraft	74	2,58	2,58	,017	2,32	2,84
I23: Im Geschichtsunterricht mache ich gerne mit	74	2,80	2,80	,015	2,55	3,04

Prior on Variance: Diffuse. Prior on Mean: Diffuse.







5.26 Student's T-Test – All Items: Aspects of Intrinsic Motivation History (own figure)

Group Statistics

	Schulklasse	N	Mean	Std. Deviation	Std. Error Mean
I18: Geschichtsunterricht macht Spaß	Bilingual	30	3,07	,907	,166
	Monolingual	44	2,30	,978	,147
I29: Ich interessiere mich in meiner Freizeit für Geschichte	Bilingual	30	2,17	,986	,180
	Monolingual	44	1,48	,664	,100
I6: Im Geschichtsunterricht herrscht bei uns eine gute Atmosphäre	Bilingual	30	3,17	,791	,145
	Monolingual	44	2,20	1,002	,151
I12: Ich habe eine gute Beziehung zu meiner Geschichtslehrkraft	Bilingual	30	3,20	,925	,169
	Monolingual	44	2,16	1,010	,152
I23: Im Geschichtsunterricht mache ich gerne mit	Bilingual	30	3,20	,925	,169
	Monolingual	44	2,52	1,023	,154

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
I18: Geschichtsunterricht macht Spaß	Equal variances assumed	1,966	,165	3,427	72	,001	,771	,225	,323	1,220
	Equal variances not assumed			3,477	65,466	<,001	,771	,222	,328	1,214
I29: Ich interessiere mich in meiner Freizeit für Geschichte	Equal variances assumed	9,757	,003	3,598	72	<,001	,689	,192	,307	1,071
	Equal variances not assumed			3,348	46,728	,002	,689	,206	,275	1,104
I6: Im Geschichtsunterricht herrscht bei uns eine gute Atmosphäre	Equal variances assumed	3,550	,064	4,403	72	<,001	,962	,219	,527	1,398
	Equal variances not assumed			4,603	70,349	<,001	,962	,209	,545	1,379
I12: Ich habe eine gute Beziehung zu meiner Geschichtslehrkraft	Equal variances assumed	,520	,473	4,501	72	<,001	1,041	,231	,580	1,502
	Equal variances not assumed			4,578	65,948	<,001	1,041	,227	,587	1,495
I23: Im Geschichtsunterricht mache ich gerne mit	Equal variances assumed	1,255	,266	2,906	72	,005	,677	,233	,213	1,142
	Equal variances not assumed			2,962	66,396	,004	,677	,229	,221	1,134

5.27 Reliability – Scale: Aspects of Intrinsic Motivation History (own figure)

Reliability Statistics

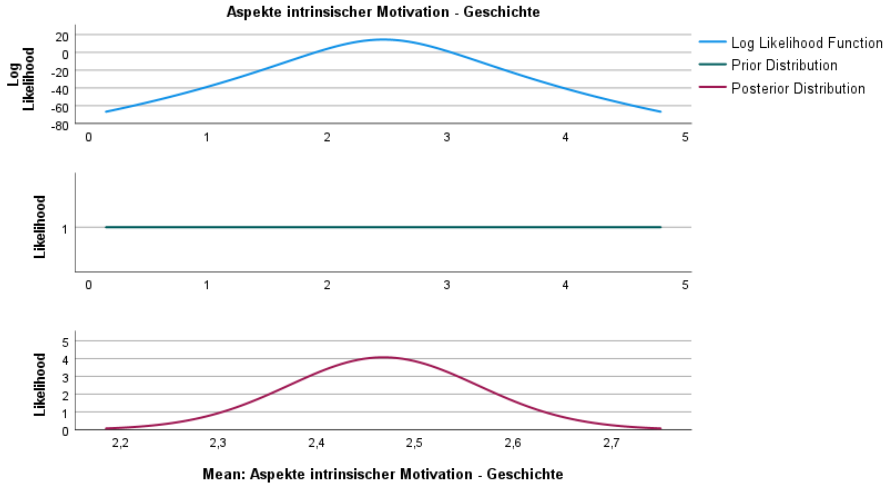
Cronbach's Alpha	N of Items
,875	5

5.28 Bayesian Normality Test – Scale: Aspects of Intrinsic Motivation History (own figure)

Posterior Distribution Characterization for One-Sample Mean

		Posterior			95% Credible Interval	
	N	Mode	Mean	Variance	Lower Bound	Upper Bound
Aspekte intrinsischer Motivation - Geschichte	74	2,4676	2,4676	,010	2,2730	2,6621

Prior on Variance: Diffuse. Prior on Mean: Diffuse.



5.29 Student's T-Test – Scale: Aspects of Intrinsic Motivation History (own figure)

Group Statistics

	Schulklasse	N	Mean	Std. Deviation	Std. Error Mean
Aspekte intrinsischer Motivation - Geschichte	Bilingual	30	2,9600	,71516	,13057
	Monolingual	44	2,1318	,73065	,11015

Independent Samples Test

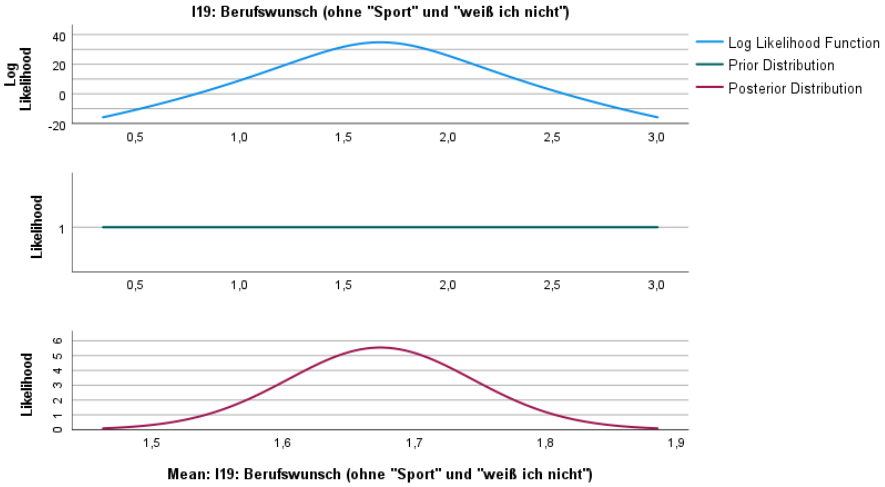
		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Aspekte intrinsischer Motivation - Geschichte	Equal variances assumed	,054	,817	4,828	72	<,001	,82818	,17153	,48625	1,17012
	Equal variances not assumed			4,848	63,332	<,001	,82818	,17082	,48685	1,16951

5.30 Bayesian Normality Test – Item 19 w/o "Sports" & "I don't know" (own figure)

Posterior Distribution Characterization for One-Sample Mean

	N	Posterior			95% Credible Interval	
		Mode	Mean	Variance	Lower Bound	Upper Bound
I19: Berufswunsch (ohne "Sport" und "weiß ich nicht")	46	1,6739	1,6739	,005	1,5297	1,8181

Prior on Variance: Diffuse. Prior on Mean: Diffuse.



5.31 Student's T-Test – Item 19 w/o "Sports" & "I don't know" (own figure)

Group Statistics

	Schulklasse	N	Mean	Std. Deviation	Std. Error Mean
I19: Berufswunsch (ohne "Sport" und "weiß ich nicht")	Monolingual	26	1,5769	,50383	,09881
	Bilingual	20	1,8000	,41039	,09177

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
I19: Berufswunsch (ohne "Sport" und "weiß ich nicht")	Equal variances assumed	10,802	,002	-1,610	44	,114	-,22308	,13854	-,50228	,05613
	Equal variances not assumed			-1,654	43,825	,105	-,22308	,13485	-,49488	,04872

5.32 Welch's T-Test – Item 19 w/o "Sports" & "I don't know" (own figure)

Robust Tests of Equality of Means

I19: Berufswunsch (ohne "Sport" und "weiß ich nicht")

	Statistic[a]	df1	df2	Sig.
Welch	2,737	1	43,825	,105
Brown-Forsythe	2,737	1	43,825	,105

[a] Asymptotically F distributed.

Versicherung

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