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THE RELATIONSHIP BETWEEN READING AND LISTENING SKILLS WITH THE SELF-CONCEPT IN STUDYING OF RUSSIAN AND ENGLISH IN AZERBAIJAN

PhD Dissertation

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Szeged, Hungary, 2021

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Acknowledgements

I would have never imagined that one day I could realize my childhood dream. Dreams do not work unless actions are taken. Genuinely, life is complete of coincidences that opened new opportunities and challenges. Before starting this doctoral thesis, I could not assume that I would have the opportunity to apply for scholarship and study in Hungary. As this study could not be conducted without bilateral educational cooperation agreements signed between the Ministries responsible for education, I want to thank Tempus Public Foundation for launching the Stipendium Hungaricum scholarship programme that allowed me to study in Hungary. I hope this Foundation will launch other, new projects that will change and play a pivotal role in young and creative minds.

First, I want to thank my supervisor, Professor Dr. Benő Csapó. It has been an honour to work with you for such a long time. Despite your requirements being very high, you provided me with valuable advice, suggestions, encouragement, and supported me by believing in these four years. I highly appreciate it. Thank you very much. Although I was not a good successor, I wish if I would be able to do excellent work that you are doing. I am highly proud to be your student and work with you. And yet, I am proud I was a student at the Doctoral School of Education at the University of Szeged, but not any University in Hungary. Throughout my study, I understood the critical truth of life. The higher requirements person has the more professional s/he can be. I should not be afraid of higher requirements but rather try to do my best to achieve high quality that in the end it will lead to self-confidence and improve me either as professional or as a human being. The doctoral school gave me the future as a researcher and taught me the truth of life. I recognized and wanted to express my gratitude for that.

I would like to thank my family, especially, my mom. I know you also had difficulties with me and assisted me in every challenge that I had. Thank you!

Indeed, the way that young, junior researcher would like to take to be a professional researcher was not easy, but it is more complicated and difficult when you have not to support. Therefore, conducting this doctoral study could be difficult without support. I would like to thank Prof. Dr. Csaba Csíkos, Prof Dr. Tibor Vidákovich, Prof. Dr. Krisztián Józsa and Dr. László Kinyó for courses that they provided. I also would like to thank Prof. Dr. Gyöngyvér Molnár for her course and being a role model for everyone. I am grateful to my fellow PhD students, especially to those who reviewed my seminar papers and manuscript drafts and gave me valuable comments and suggestions. I also thank my colleagues, to my classmates, you always were there for me when I needed, and we were like a family. It was an amazing and unforgettable journey. I appreciate every suggestion that you provided to me.

I am also grateful for my reviewers in the home defense process, Dr. Beáta Szenczi and Dr. Éva Bacsa, who dedicated their priceless time for my dissertation and gave their valuable suggestions and feedback to improve the thesis.

Abbreviations

ACL	Autoregressive Cross-Lag models
ALT	Autoregressive Latent Trajectory models
ASC	Academic Self-Concept
CEFR	Common European Framework of Reference for Language
CFA	Comparative Factor Analysis
CFI	Comparative Fit Index
CoE	Council of Europe
eDia	Electronic Diagnostic Assessment
EFL	English Foreign Language
FIML	Full Information Maximum Likelihood
FL	Foreign Language
I/E	Internal/External
ICC	Item Characteristic Curve
IRT	Item Response Theory
IFL	Italian Foreign Language
L1	First Language
L2	Second Language
L3	Third Language
LGC	Latent Growth Curve models
LOI	Language of Instruction
ML	Maximum Likelihood
MLR	the Robust Maximum Likelihood Estimator
N.S.	No Significant
OECD	The Organisation for Economic Co-operation and Development
PISA	The Programme for International Student Assessment
RMSEA	Root Mean Square Error of Approximation
RSC	Reading Self-Concept

SEM	Structural Equitation Modeling
SD	Standard Deviation
SDQ	Self Description Questionnaire
SLA	Second Language Acquisation
SRMR	Standardized Root Mean Squared Residual
SSC	The State Statistical Committee
TIMSS	Trends in International Mathematics and Science Study
TLI	Tucker-Lewis Index
WLEs	Weighted Likelihood Estimates

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Chapter 1

Introduction

1.1 Context of the study

Throughout centuries researchers studied versatile constructs which can impact on students' behavior and attitudes in educational settings. One of these constructs is self-belief, which influences students' behavior, motivation, and attitudes (Dörnyei, 2001). Many researchers (e.g., Ehrman et al., 2003; Dörnyei & Ushioda, 2009; Horwitz et al., 2004; Woodrow, 2006) acknowledge that learners' attitudes and behavior are determined by their sense of self which is difficult to predict. Frequently, teachers experience that students' activities are depended on their thoughts and feelings that variate in terms of subject. Each student possesses his/her self-beliefs that impact his/her actions, decisions, goals they set for the future, and past experiences (Mercer, 2011). Language learners' performances are varied according to their beliefs and attitudes towards the foreign language, which are also influenced by their experience. Therefore, self-related constructs (self-concept, self-esteem and self-efficacy) provide better comprehension to understand students' feelings and abilities. As learners' self-beliefs are essential in achieving academic success, most academic motivation studies focused on these constructs (Pajares & Schunk, 2005). Mainly, self-related constructs play a central role in language research, such as motivation (Dörnyei & Ushioda, 2009), strategies (Woodrow, 2006), beliefs (Horwitz et al., 2004), an individual difference (Ehrman et al., 2003).

Among these constructs, self-concept plays a significant role in academic settings, particularly language learning (Denissen et al., 2007). Self-concept is not only related to one's

beliefs about oneself and his or her abilities, particularly cognitive domain but also one's feelings about oneself in evaluative, affective domain (Marsh, 1993; Marsh & Martin, 2011; Mercer, 2011). Being powerful psychological construct, it provides students with insights of their behavior helping them to be academically successful, be more encouraged, set high goals and possess more positive attitudes towards their academic studies (Green et al., 2006; Marsh, 2006) and interprets students' various behaviors and approaches for teachers to facilitate the learning process. Students form their self-concepts through social interaction and reflection with others (Marsh & Scalas, 2010). Moreover, their self-beliefs varied due to the subject domain. Knowing their capacities to be reflective, autonomous, self-directed, have willing to increase effort, students' awareness of themselves should be raised (Sheerin, 1997). This construct conceptualizes students as language learners or users.

1.2 Statement of the Problem

Recent research (Marsh & Hau, 2004; Xu et al., 2013) has focused on the domain-specificity of academic self-concept. The focus of domain-specific research mainly found out that there are separate self-concept constructs for each school subject which demonstrated high positive relations with their achievements in the corresponding domain. Marsh and Hau (2004) stated multidimensionality of academic self-concept pointing "that individuals have different frames of reference, the same objective indicators of academic achievement will lead to different academic self-concepts" (p. 57). In the context of research on self-concept, there is a shortage of the studies which extended domain-specificity of academic self-concept to skill-specific self-concepts contrasting them with mathematics. Moreover, few studies (Arens & Jansen, 2016) examined self-concept in the verbal domain indicating separate skill-specific self-concepts. Thus, the focus of this study is placed on the receptive self-concepts and their

relationship with achievements in Russian and English in Azerbaijan. Considering classical I/E model that implies negative effect of high performance in one school domain on the opposite domain of academic self-concept, most studies have limited this prediction to classical domains (math and native language) of academic self-concepts (Marsh & Shavelson, 1985).

As learners using two or more languages, verbal-self-concept that most researchers referred to as learners' native language may not be specific for portraying their self-concepts in various language domains. Multidimensional nature of language self-concept has been disregarded by studies in self-concept research (Yeung & Wong, 2004). This study investigates separate self-concepts for each language and their relations with the corresponding domain.

Furthermore, as Arens et al. (2011) indicated "in contemporary self-concept theory, it is a controversial question as to whether each separate domain of academic self-concept is further differentiable into a cognitive and affective component." (p. 971, 972), it is essential to reveal self-concept structure, regarding cognitive and affective dimensions of self-concept. Moreover, there was a shortage in studies that showed verbal self-concept structure regarding cognitive and affective components, and their relations with matching and nonmatching domains; learners' verbal self-concept should be investigated.

There are also few studies (Arens & Jansen, 2016; Lau et al., 1999; Yeung et al., 2000) which focused on domain-specificity of self-concept, particularly skill-specific self-concepts in foreign languages, indicating multidimensionality and hierarchy. Thus, there is shortage of studies which examined the structure of multidimensionality and hierarchy within two target languages (English and Russian). Furthermore, most studies contrasted math self-concept with

a verbal self-concept that this study tried to contrast two target languages' skill-specific domains (reading and listening) to get a broad picture of academic self-concept.

1.3 Research Aim

Although numerous studies (Arens & Jansen, 2016; Yeung et al., 2000) have been conducted to reveal multidimensionality and hierarchy for specific languages, it remains implicit if these differ across different foreign languages. This study aims to reveal the structure of verbal self-concept examining the structure of multidimensionality and hierarchy within the verbal domain, whether this structure generalizes or varies across two target languages. In this study students' perceptions were analyzed to confirm if they would distinguish between skill-specific self-concepts associated with reading and listening. Further, achievement measures were utilized to reveal the structures of verbal self-concepts (Arens & Jansen, 2016; Lau et al., 1999; Xu et al., 2013; Yeung et al., 2000) indicating hierarchy and multidimensionality of verbal self-concepts. Achievement tests enable comparisons among different classes and schools, even though they are weakly related to self-concept. The present study integrates self-concept and achievement scales of English and Russian.

1.4 Research Objectives

Given the importance of academic self-concept construct which plays a vital role in education, a considerable number of studies that revealed the relation of self-concept with achievement, and the scarcity of research on the relation of self-concept and language; the present study is conducted to reveal how students construct their verbal self-concepts and their association with achievement. In particular, the current study aims to (1) examine affective and cognitive components of English and Russian self-concept to define separation or

conflation of these components; validate the construct of verbal self-concept structure indicating impossibility of single verbal self-concept to represent multilingual learners; evaluate cognitive and affective components in terms of gender; (2) explore students' academic self-concept by extending classical I/E model for opposing domains, the math subject with two target languages; (3) investigate hierarchical and multidimensional structure of self-concepts within foreign languages, and to facilitate the understanding of factorial structure of self-concept domains; (4) find out academic self-concept structure by contrasting more skill-specific domains (reading and listening) of verbal self-concept with math self-concept; (5) assess students' performances in receptive skills in two target languages; find out whether there is difference between gender in their language performance; (6) examine the separation or conflation of cognitive and affective components of English and Russian self-concepts.

1.5 Significance of the Study

Findings of the present study may contribute to self-concept research, enhance the theory and practice of language education and instruction, and provide relevance for improving students' performances in foreign language domains. First, the study will enrich the theory and practice of self-concept, exceptionally verbal self-concept from the perspective examining cognitive and affective components and their relationship with achievement. There are few studies in terms of revealing cognitive and affective components of verbal self-concepts. As the study suggests an affective component of self-concept is related to cognitive self-concept which is also related to achievement, in other words, students' perception of their ability in a given school subject is related to their cognitive state and drives their behavior and academic achievement; schools should foster cooperative learning and individualized

instruction, especially in foreign language domain. Therefore, since language learners' performances are varied according to their beliefs and attitudes towards the foreign language which are influenced by their experience, teachers need to be aware of their students' differences to improve the learning process because classroom practices can impact the self-development process and students' achievement.

Second, this study will extend classical I/E model by opposing the math subject with English and Russian to reveal relations between corresponding and noncorresponding domains and find out the structure of verbal self-concept for each target language, which will provide a relatively whole image of student's academic self-concept. It provides supplemental information to research on the relation of self-concept and its association with achievement indicating multidimensional nature. This study contributes to the self-concept theory and practice due to the expansion of the I/E frame of reference of traditional academic self-concept (math and English as native tongue) to two target foreign languages. Moreover, exploring different verbal self-concepts for various foreign languages, the verbal self-concept structure may require reconsideration of the language self-concept construct. Most of the studies assumed this construct to represent language learners' self-concept in their mother tongue, disregarding various self-concepts in various language domains.

Third, the study will be conducive to practitioners and researchers in obtaining useful information about intervention strategies that should be specifically designed to address the listening and reading skills of self-concept in English and Russian. The study's findings will reveal several models of verbal and academic self-concept, how students construct their self-concepts in different languages, whether the multidimensionality and hierarchy structure of verbal self-concept various across two target languages. It will shed light on the relation of receptive skills with self-concept in English and Russian. It will also expose implications for

language educators to increase student achievement. Students can be successful language learners only when they and their instructors know their beliefs, behavior and attitudes towards language.

1.6 Organization of the dissertation

This dissertation consists of six chapters. Chapter One launches the research, indicating its context and its motivation.

Chapter Two introduces a review of the literature related to the study. The literature that reviewed focused on the three primary constructs studied, i.e., academic self-concept, verbal self-concept, and skill-specificity of self-concept. The consensus from the literature is that educators should be conscious of their students' self-concepts that are formed in domain-specific ways. Interventions that focus on students' self-concept should be related to the particular domain due to being effective.

Chapter Three demonstrates the research aims and structure of the study. The research questions and hypotheses are also introduced in this chapter. Chapter Four summarized the methodologies used to create, plan, and conduct the present research. It depicts the study's research paradigm, as well. A cross-sectional quantitative approach was considered proper for this study. Sampling, research conducting, and other issues related to the methodology are discussed in more detail. Data collection techniques are also depicted. Likewise, data analysis and validation were described in this study.

Chapter Five introduces the analyzed data from the five consistent studies and one separate study employed for this research. The discussion of each part of the study is based on the research question and hypothesis. In the first part of the study, research will reveal the verbal structure of self-concept, whether two-dimensional separating affective and cognitive

components as two different constructs or unidimensional. As one single verbal self-concept for different languages is not enough to represent multilingual learners and can result in misleading interpretations, analysis of the I/E model of two language self-concepts will determine how achievements in two foreign languages correlated with cognitive and affective self-concepts in the corresponding target language. Moreover, it will reveal whether the relationship between two components of self-concept in two foreign languages and their correlation with achievements are invariant or not. The second part of this study will provide information about academic self-concept.

The present study aims to expand the classical I/E model by opposing the mathematics with two target languages (English and Russian). The confirmatory analysis will reveal the relationship between mathematics and two foreign languages, and their achievements in corresponding and noncorresponding domains. The third study will examine the hierarchical and multidimensional structure of self-concepts within foreign languages and facilitate understanding the factorial structure of self-concept domains. Since the structure of academic self-concept has been defined as a multifaceted and hierarchical, most studies focused on distinguishing between verbal and math domains. Only three studies investigated self-concept structure within the verbal domain. Confirmatory factor analyses will reveal how multidimensional and unidimensional models will fit the data, how skill-specific facets of self-concept will relate to the corresponding achievement domain and whether the hierarchical and multidimensional structure of verbal self-concept generalizes between two target languages or vary. The fourth focuses on extending academic self-concept in more skill-specific facets by contrasting them with mathematics self-concept. This study will find out the relationships between mathematics and two receptive skills and their achievements. The study will also explore differences between two foreign languages indicating whether students perceive

different foreign languages differently or similarly. The research findings will be discussed regarding their implications in language education and to inform for further research on language self-concept. The fifth part of this study assesses students' language performances to reveal a difference between gender. The last part of this research also consisted of a separate study investigating the twofold multidimensionality of reading self-concept in English and Russian. Further, this part examines the relationships between cognitive and affective components with achievement scores and the invariance structure of reading self-concept in two foreign languages across gender.

Eventually, Chapter Six depicts the limitations, provides information for further research, and gives educational implications. The references list followed the conclusion chapter, and the appendices of the measurement tools used to collect the data are attached.

Chapter 2

Literature Review

2.1 A Brief History of Self-Concept Development

Since positive self-concept is highly regarded as a valuable outcome in various disciplines of psychology and social sciences, there were numerous definitions have been put forward by researchers (e.g., Burns, 1979; Shavelson, Hubner & Stanton, 1976) in terms of clarification and understanding the self-concept construct. Being an ancient construct traced back to Socrates's and Plato's time in the 4th Century BC (Hattie, 1992), self-concept is a contentious phenomenon. Despite having a long controversial history, this phenomenon has been recognized as an essential construct from the earliest studies of famous American psychologists such as James (1890/1983) and Cooley (1902). James stated self as a stream of consciousness (Hattie, 1992). Developing distinction between I (self-as-knower or active agent) and Me (self-as-known or the content of experience), James in his famous textbook of Psychology had put forward a multifaceted, hierarchical nature of self-concept in the longest chapter (The principles of psychology) in the first introductory textbook in Psychology that corresponds to the dynamic process in present self-concept research.

Since this phenomenon has attracted attention from various prominent researchers, it was investigated by multiple empirical studies. However, 1980s, when behaviourism had become a pinnacle of time, the improvement of self-concept research and measurement was slow. There was a shortage of theoretical basis in studies and instruments for assessment self-concept were poorly developed (Burns, 1979; Shavelson, Hubner & Stanton, 1976; Wells & Marwell, 1976; Wylie, 1974, 1979 cited in Marsh, Xu, & Martin, 2012). Considering a lack of

studies in self-concept research and inappropriate definitions of this phenomenon, Shavelson's et al. (1976) classic review article had given rise to the new renaissance period in self-concept research. By reviewing existing definitions, they brought about a construct definition of self-concept based on theoretical study and a structural model of self-concept that impacted upcoming research studies in our century (Marsh & Hattie, 1996). Self-concept in social sciences is significant since humans who have positive self-beliefs inclined to be happier (Swann, 1990), better adjusted (Dumont & Provost, 2001), possess a better subjective sense of well-being (DeNeve & Cooper, 1998; McCullough, Huebner, & Laughlin, 2000), induce greater life satisfaction (Diener, 1984; Diener & Diener, 1995; Huebner, 1994; Huebner, Gilman, & Laughlin, 1999; Terry & Huebner, 1995).

2.2 Definition of Self-Concept

Being desirable for as a factor that can help increase the sort of student performance assessed in PISA, most researches (OECD, 2003) in self-regulated learning have shown that individuals' who can regulate their learning, they can achieve success in school that impacts on the degree of engagement in their further learning. Indeed, interest in a specific subject affects both degree and continuity of engagement in learning. An individual is interested in particular subject domain inclines to be diligent that may vary in terms of the degree of general learning motivation. Therefore, the nature of students' interests in different subjects is essential for finding out significant strengths and weaknesses that education systems attempt to foster, particularly motivated to learn in different school domains among various groups of learners. Depicting individuals' self-beliefs about their intellectual strengths and weaknesses, self-concept is a subjective belief about the qualities that describe those (Trautwein & Möller, 2016).

Since there was a huge amount of literature about self-related constructs (Boekaerts, 1991; Byrne, 1996; Eccles et al., 1993; Hattie, 1992; Silverthorn et al., 2005; Wylie, 1979) and popularity of them that in the first glance it seemed it would lead to better understanding, but it might result in confusion and difficulties. Overlapping definitions and terminology of various self-terms and inconsistent usage impede comprehension process (Brinthaupt & Lipka, 1992). Different fields and disciplines investigated it. In psychology, self-concept is "the composite of ideas, feelings, and attitudes people have about themselves" (Hilgard et al., 1979, cited in Woolfolk, 2004). While it has been regarded essential in education (Bong & Skaalvik, 2003; Guay, Ratelle, Roy, & Litalien, 2010), currently, self-concept is a centre of interest in foreign language learning (Csizér & Magid, 2014; Dörnyei & Ushioda, 2009; Mercer, 2011; Mercer & Williams, 2014).

Csizér and Kálmán (2019) examined ten participants of English language teachers as former foreign language learners and twelve students of English current learners and found that foreign language learning experience is a complex construct involving present aspects and self-related components and attributions. Language learning success, the teacher's personality, contact experiences and attitudes towards the L2 are crucial components for both groups of learners. Moreover, Csizér and Illés (2019) investigated the most important L2 motivation theories and their contributions to learner motivation and the challenges that make motivating students difficult in the 21st century. They found that student motivation can be increased by engaging learners on their own way and by integrating their reality and creativity in the language learning process.

Shavelson et al. (1976) determined seventeen different definitions of self-concept. Self-concept is a collection of beliefs about oneself (Leflot, Onghena & Colpin, 2010) that involves academic performance (Bong & Clark, 1999), gender roles (Hoffman, Hattie &

Borders, 2005), racial identity (Aries, Olver, Blount, Christaldi, Fredman, & Lee, 1998) and has to be taken into consideration as one of the essential factors in human learning (Marsh & Martin, 2011). Hamlyn (1983, p.241) indicates it, as "the picture of oneself". Shavelson et al. (1976) pointed out that a one's self-beliefs are constructed via experience and interpretations of own environment that impact nature human acts, and these acts impact one's self-perception. This reciprocal relation is vital as both an outcome and a mediating variable that facilitates the explanation of other outcomes. Intervention that inadvertently erodes self-concept can be hard to have long-lasting effects on implied outcomes compared to that intervention, strengthening self-concept and its outcome that leads to long-lasting effects (Marsh & Peart, 1988). Moreover, interventions that target specific self-concept domains are considered the most successful (O'Mara et al., 2006). She revealed the largest effect size of studies which targeted a specific self-concept domain and assessed that specific domain indicating global scales might obscure real benefits of self-concept interventions.

Recently, as a domain-specific function of self-concept is revealed by several studies (e.g., Marsh et al., 1988), it is crucial to determine the term "domain" means and understanding. The term "domain" is mostly considered to indicate a subject area, while it might also denote a type of skill. In other words, domain-specificity should not be considered scales of measurement, but it may also imply specific skill areas such as reading comprehension in English to more general areas such as social science (Bong & Skaalvik, 2003, p.17).

Since many researchers (e.g., Pajares & Schunk, 2005) recognized individuals' self-beliefs as a basis of academic success, self-constructs play pivotal role in academic motivation, therefore, self-concept is the primary construct which plays a vital role in all academic domains (Denissen et al., 2007; Hattie, 1992; Marsh & Yeung, 1997). Most

practitioners (Breen, 2001; Dörnyei, 2001; Williams & Burden, 1997) acknowledged that learners' dynamic self-beliefs are primary factors that contribute to the development of complexity and variation in language learning. Further, most language self-concept studies (e.g., Arens & Jansen, 2016) defined self-concept as a psychological construct that focused on foreign language learners' self-description of competence and evaluative feelings about themselves. Currently, skill-specific level of a specific target language is the core of the discussion, which corresponds to this dissertation.

Indeed, since language is a special domain for language learners to develop a multifaceted language self-concept regarding versatile language skills and sub-skills that one can be highly competent in reading but not so successful in listening, Horwitz et al. (1986) stated that the highest degree of self-concept was entailed by language study which cannot be observed in any other domain. However, while a large number of SLA studies focused on self-related constructs, such as effect (Arnold & Brown, 1999), motivation (Dörnyei, 2005; Dörnyei & Ushioda, 2009), strategies (Woodrow, 2006), autonomy (Kenny, 1993), beliefs (Horwitz et al., 2004), metacognition (Wenden, 2001), identity (Noels et al., 1996; Norton, 2000, 2001), individual differences (Ehrman et al., 2003), there is a shortage in studies that profoundly concentrate their attention on self-concept, mainly, on verbal self-concept domain

2.3 Self-Concept and Various Self-Related Constructs

Since self-concept has commonalities between different self-constructs and can be susceptible to each other, the similarities and differences of these constructs should be considered to clarify self-concept. Despite all three constructs (self-efficacy, self-concept and self-esteem) hold a common perspective that is an one's beliefs about own abilities and attributes as an individual (Valentina & DuBois, 2005), these constructs have a difference in

the degree of specificity and the significance of cognitive and affective self-beliefs (Marsh & Craven, 2006; Swann et al., 2007; Valentina et al., 2004). While self-esteem is related to individual's value system, more evaluative and can be used interchangeably with self-worth (Harter, 1999a), self-concept is less contingent on context than self-efficacy and includes cognitive and affective components.

Self-concept can be applied to an individual's self-perception in a specific domain when self-efficacy refers to expectancy beliefs about an individual's ability to accomplish a particular task in a specific domain (Bandura, 1997). Therefore, making a top-down conclusion to specificity, self-esteem is the most general, while self-efficacy is highly specific and contingent on context. Unlike self-efficacy, self-concept does not depend on context, but rather domain specific. However, as both constructs can be measured in the same domain and expand specificity, it is not easy to distinguish them (Bong & Skaalvik, 2003). Nevertheless, they recognize self-efficacy as an essential component in building one's self-concept.

Pajares and Schunk (2005) defined self-concept views as a feeling in a particular domain. These two distinctive but concurrently distinguishable aspects of the self-concepts can develop differently (Marsh et al., 1999) However, the further distinguishability of self-concept is the main topic for researchers of this century, indicating that the question of separation of the cognitive and affective components of self-concept has not been solved yet (Bonk & Skaalvik, 2003).

2.4 A Brief History of Instrument Development Used in This Study

2.4.1 Background of Self-Concept Questionnaire

Despite Shavelson et al. (1976) conceptualized self-concept as a multidimensional, hierarchical model of self-concept in which general self-concept was separated into specific domains such as social, physical, academic, hypothesized models had been supported

moderately. Even eclectic domains such as academic, social, and physical were not distinguished by instruments used in their review. However, their model was the basement for the development of new theory, instruments, and study. In previous SDQ research, the scales' internal consistency from three SDQ instruments was .80s and .90s (Marsh et al., 2012). Test-retest correlations were ranged from .77 to .94 above a month for late-adolescents (Marsh, Richards & Barnes, 1986a, b). The SDQ measures results revealed the distinction between self-concept domains revealing correlations among SDQ scale that ranged between .1 and .2. Therefore, as there were weak correlations among the various SDQ factors, there was a need to revise a hierarchical representation of self-concept and global measures of self-concept instrument. Besides, these low correlations indicate misleading conclusions of early studies that put forward the unidimensional model.

The self-concept construct has been analyzed mostly by Marsh and his fellow researchers and examines, validates conceptual models, empirically analyses and understands they put forward complex structure of self-concept and the series of self-description questionnaires main instruments that measure the multifaceted and hierarchical self-concept in various age categories. SDQI for preadolescents (Marsh, 1990b), SDQII adolescents (Marsh, 1990c), SDQIII for old adolescents (Marsh & O'Neill, 1984). These measures consist of domain-specific (math and verbal) academic self-concept scales and a scale for evaluating overall school self-concept. Studies (Byrne, 1984, 1996a, 1996b; Hattie, 1992; Marsh & Shavelson, 1985; Marsh, 1990d, 1993) based on the set of Self Description Questionnaire (SDQ) measures to support the multidimensional structure of self-concept and stated the importance of multidimensionality inadequate understanding of self-concept phenomenon. These instruments are regularly used in self-concept research and have been recognized as the best instruments due to psychometric properties and construct validation (Hattie, 1992, 1996).

Psychometric properties were good showing the high reliability of self-concept scales (.75 - .89; Md =.83). First and higher-order confirmatory factor models showed a good fit to the data, and there was a moderate correlation among scales (-.03 - .73; Md =.29). While there was a moderate correlation between achievement test scores and academic self-concept factors (*r*s .15 to .40), achievement test scores were nonsignificant or significant negatively associated with non-academic self-concept scales.

2.4.2 Background of Reading and Listening Tests

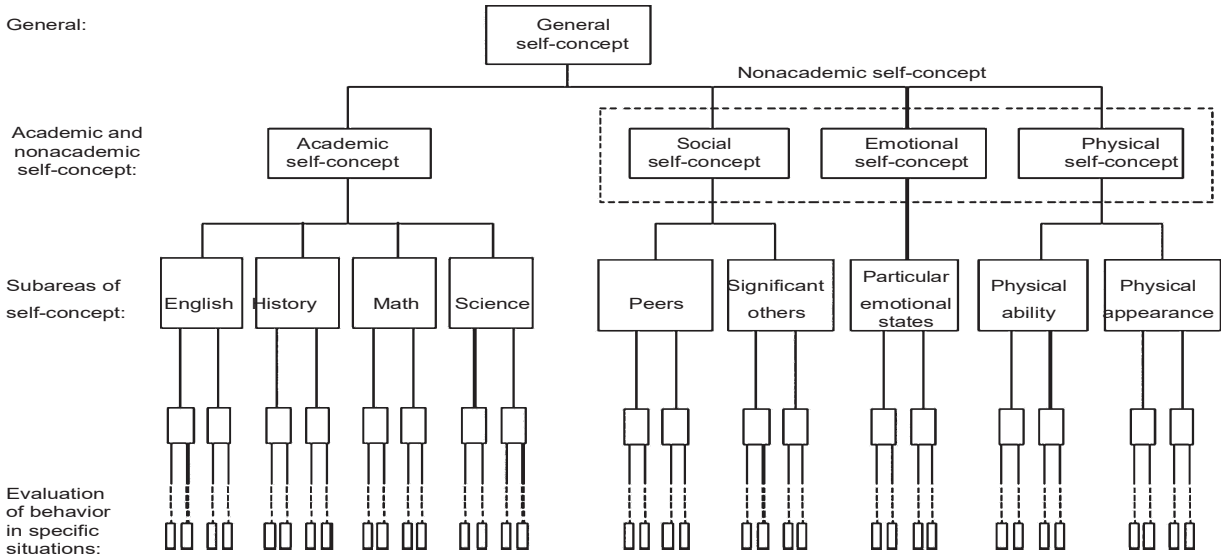
The measuring instruments created for the project assess students' communicative abilities in listening and reading (Csapó & Nikolov, 2009; Nikolov & Szabó, 2015). The examination had the purpose of assessing students' abilities to determine which extent they can use the foreign language in contexts. Csapó and Nikolov (2009) conducted research and found a weak or moderate correlation between two skills indicating different development trajectories of these skills. As they found distinct trajectories, they suggested a separate assessment of these skills. Nikolov and Szabó researched students who learnt English (N = 1502) and German (N = 418) using the same instruments. Students did not require creativity or specific background knowledge. Receptive skills consisted of discrete items and were assessed objectively. Two tests assessed all skills, and each had 10 points, students could obtain a maximum of 20 points in each skill and a total of 40 points. Using the same instruments, Nikolov and Csapó (2018) examined eighth grade students' English and German L1 reading comprehension, inductive reasoning and SES, and found that background variables had different influence development in English and German. Inductive reasoning is important in studying English, while L1 reading comprehension achievements have influence German reading.

The reliability coefficients (Cronbach's alpha) that Nikolov and Szabó (2015) found were high, acceptable (.79) for listening and good (.88) for reading in English; and good (.82) for listening and excellent (.91) for reading in German.

2.5 Structure of Self-Concept

To clarify the definition of self-concept construct, studies in psychology about self-concept have been regarded as notional and associated with conceptual models. Previous research in the 1960s that was published by Coopersmith and Piers has defined self-concept as a global, unidimensional construct (Coopersmith, 1967; Piers, 1969) that led to conflicting findings and severe criticism from other researchers (cited in Vispoel et al., 2000) in favour of multidimensional self-concept theories (Harter, 1985; Marsh & MacDonald-Holmes, 1990). As stated in latter approaches, individuals might have positive self-beliefs in some domains (physical appearance or social interaction) when they may possess negative self-beliefs in others (general school ability). Moreover, individuals may have different beliefs about themselves regarding the specific domain or subject area (Marsh, 1990a; Marsh & Yeung, 1996). Wylie (1974, 1979) has also criticized initial instruments and stated that these measures had been unsuccessful in a meaningful contribution to our understanding of self-concept and judged psychometric qualities (Bracken & Mills, 1994; Byrne, 1996; Davis-Kean & Sandler, 2001; Keith & Bracken, 1996).

Classical self-concept theories which (seminal model) were put forward by Shavelson, Hubner and Stanton (1976) theorized the structure of self-concept as multifaceted and hierarchical in which general self-concept was distinguished into academic and non-academic self-concepts. These self-concepts were also distinguished into subject domains (Figures 1; 2). Most studies (Harter, 1982; Marsh, Byrne, & Shavelson, 1988; Shavelson et al., 1976) had a



hypothesis of further division of specific self-concepts that could relate to cognition or behaviour in a particular context, considered different types of self-efficacy.

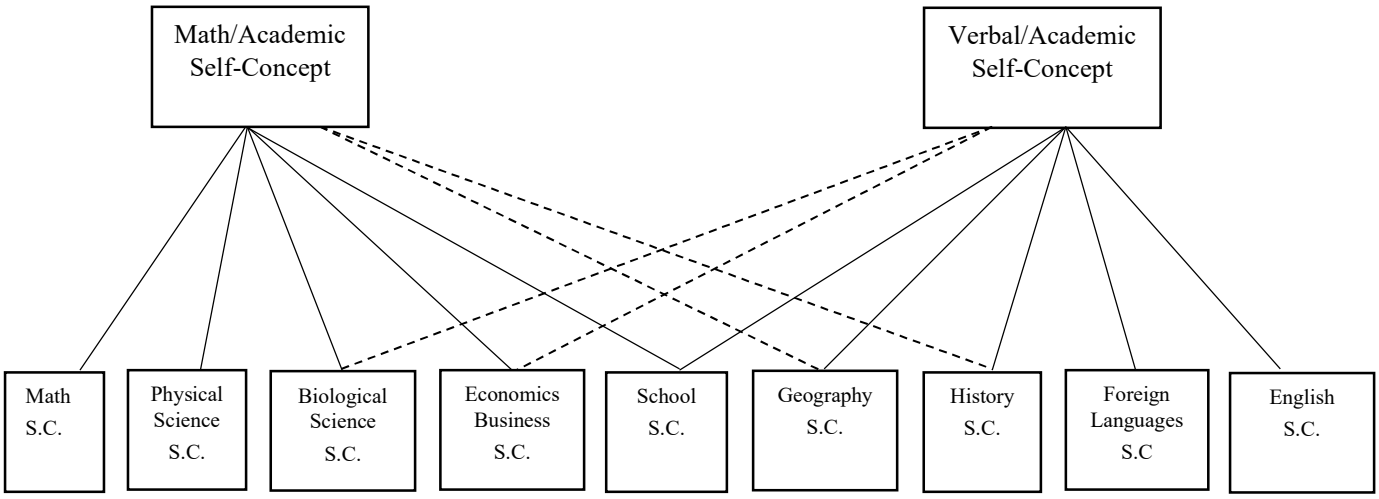


Figure 1. The academic portion of Shavelson, Hubner, and Stanton's (1976) original model (A) and an elaboration of Marsh and Shavelson's (1985) revision (Marsh et al., 1988) that includes a wider variety of specific academic facets, (S.C. = self-concept.).

Figure 2. "Pictorial representation of the multidimensional, hierarchical model of self-concept posited by Shavelson et al. (1976) and Marsh and Shavelson (1985). The box consisting of dashed lines around the nonacademic self-concept factors is used to distinguish these from the academic self-concept factors but does not imply that there is a single higher-order nonacademic factor, as is hypothesized for the academic factors. The unlabeled boxes in the bottom of the hierarchy are used to show that the model posits additional levels in the hierarchy and even more domain-specific components of self-concept than those that are explicitly presented (e.g., mathematical self-concept might be broken into different mathematical topics such as algebra, trigonometry, or calculus, and each of these could be further subdivided into specific components relevant to each of the mathematical subjects). Reprinted from Shavelson, R. J., Hubner, J. J., & Stanton, G. C. (1976). Validation of construct interpretations. *Review of Educational Research 46*, 413." Cited from Marsh & Scalas (2010).

Further revision of this model that re-examined some aspects of correlations between different elements have studied by Marsh and Shavelson (1985). Although self-concept was multifaceted, Marsh and Shavelson (1985) revealed the hierarchical structure of the preadolescent self-concept with substantial and significant correlations among the multiple self-concept factors. Later, this division was reaffirmed by further study (Marsh et al., 1988), exploring specific domains in more depth. Moreover, they stated that as self-beliefs are associated with domain-specific achievements, it would be conducive to study self-concept within specific-domains and separate components of academic self-concept. Including foreign languages self-concept, this model demonstrated a wide range of specific domains and their correlations. Therefore, revealing the multifaceted self-concept structure that can differ in specific-domain led several researchers (Hattie & Marsh, 1996; Marsh & Yeung, 1998; Yeung et al., 2000) re-examine the adequacy of self-concept construct revealing the complex nature of this phenomenon. As expected, the validation of the present theoretical models (Byrne,

1996; Marsh, 1990a; Marsh, 1993; Marsh & Craven, 1997) was the center of attention of a substantial number of self-concept studies.

Undoubtedly, the multidimensional nature of self-concept was the object and success of most studies (e.g., Hattie, 2008) in the past century to understand this phenomenon's construct. As Marsh (2006) stated inadequate reflection of the unidimensional approach on the diverse, specific self-concept domains and their correlations with various criteria and outcomes; research within self-concept needs to conduct in domain-specific ways. Indeed, being dynamic and depending on the various circumstances of an individual's life, the self is not stable, but rather transforming. Individuals attempt to interpret themselves in different ways. Their self-image can vary from domain to domain, indicating that the unidimensional approach cannot provide much information about the more complex individuals' world. To understand the complex structure of self in various subjects, to address adequate predictions of a broad range of behavior, to generate also proper results measures for manifold interventions and to achieve profound comprehension in the relationship of self-concept with different constructs; multidimensional perspective to self-concept can be better for the complex construct of self in various contexts (Marsh, 2006, p.24). He expounds self-concept research in a particular domain by indicating the importance of self-concept measurement for specific scales that correspond to those subjects.

Therefore, most studies, such as attitudes (Azjen & Fishbein, 2005), affect (Pekrun et al., 2002) have revealed close relation of achievement to a specific domain and high, predictable function of a particular factor. As the correlations between global and subject-specific self-concepts with achievement demonstrated a weak relationship between global self-concept and academic performance, compared to the relationship between achievement and subject-specific self-concept (Huang, 2011) domain-specific factor is measured, and the strong

correlation found with achievement. This phenomenon has explained in specificity matching principle that a specific self-concept such as mathematics self-concept should predict a particular outcome: mathematics achievement (Swan et al., 2007; Williams et al., 2010). On the contrary, narrow results should not predict by powerful predictors but strongly related to broader outcome. The level of the expected outcome should correspond to the level of specificity of the predictor. However, analysis of current literature on self, Swan et al. (2007) revealed a violation of the specificity of-matching principle by many researchers.

Although many studies (e.g., Arens, 2011) have conducted to clarify the construct of self-concept, there is a shortage of domain-specific studies in the language domain. Notably, the controversial question is the further differentiability of each separate academic self-concept domain into cognitive and affective components. As Yeung and Wong (2004) revealed low correlations between three language constructs to form a single verbal factor for multiple language speakers, the vital question is whether or not the simultaneous operation of multidimensionality and hierarchy within language self-concepts generalizes or varies across students' languages (Arens & Jansen, 2016) which are the focus of current language self-concept studies.

2.6 Academic Self-Concept

Since academic self-concept is located at the apex of the hierarchy in self-concept model and to reveal students' self-concept structure, how students construct their self-concept in a verbal domain; primarily, it is necessary to examine their general self-concept structure, and explore the correlation of verbal and mathematics self-concepts. Academic self-concept defined as students' self-perceptions in the school domain, which was a crucial construct in educational research. It revealed to be associated with a wide variety of outcomes involving performance (Chen, Yeh, Hwang, & Lin, 2013; Hattie, 2008; Huang, 2011; Marsh & Craven,

2006; Marsh & Martin, 2011), interest (Marsh, Trautwein, Lüdtke, Köller, & Baumert, 2005) and aspirations (Nagengast & Marsh, 2012). Therefore, a high academic self-concept level is considered a beneficial outcome and a mediator resulting in other favorable educational outcomes. Revealing the multidimensional and hierarchical structure of self-concept, Shavelson et al. (1976) conceptualized academic self-concept as a general factor indicating self-concepts for various school domains. Marsh and Shavelson (1985) proposed a revised self-concept model comprised of two higher-order academic self-concept factors (verbal and math) and higher-order non-academic self-concept factors. According to the model, academic achievements in various school subjects (e.g., mathematics, verbal) are positively correlated while the corresponding academic self-concepts are uncorrelated (Marsh & Shavelson, 1985). For clarification, the paradoxical correlation within and between specific academic self-concept domains and achievements, they (Marsh, 1986; Marsh, Martin, & Hau, 2006) developed the Internal and External (I/E) reference model.

Arens et al. (2020) examined German tenth-grade students' academic self-concept and reviewed methodologies which considered the most central models depicting the structure of academic self-concept (Figure 3): higher-order factor model, the Marsh/Shavelson model, the nested Marsh/Shavelson model, a bifactor representation grounded on exploratory structural equation modeling, and a first-order factor model. They reported these models' elaborations representing the theoretical assumptions on academic self-concept structure and indicated their inherent psychometric properties. Arens et al. (2020) found that each academic self-concept model had its advantages and limitations depending on different research questions and recommended careful consideration in selecting a specific academic self-concept model. Therefore, most studies (e.g., Arens et al., 2020; Marsh & Craven, 2006; Marsh & Martin,

2011) on self-concept research focused on academic self-concept, structure, and relationships with achievement, disregarding more subject-specific academic self-concept domains.

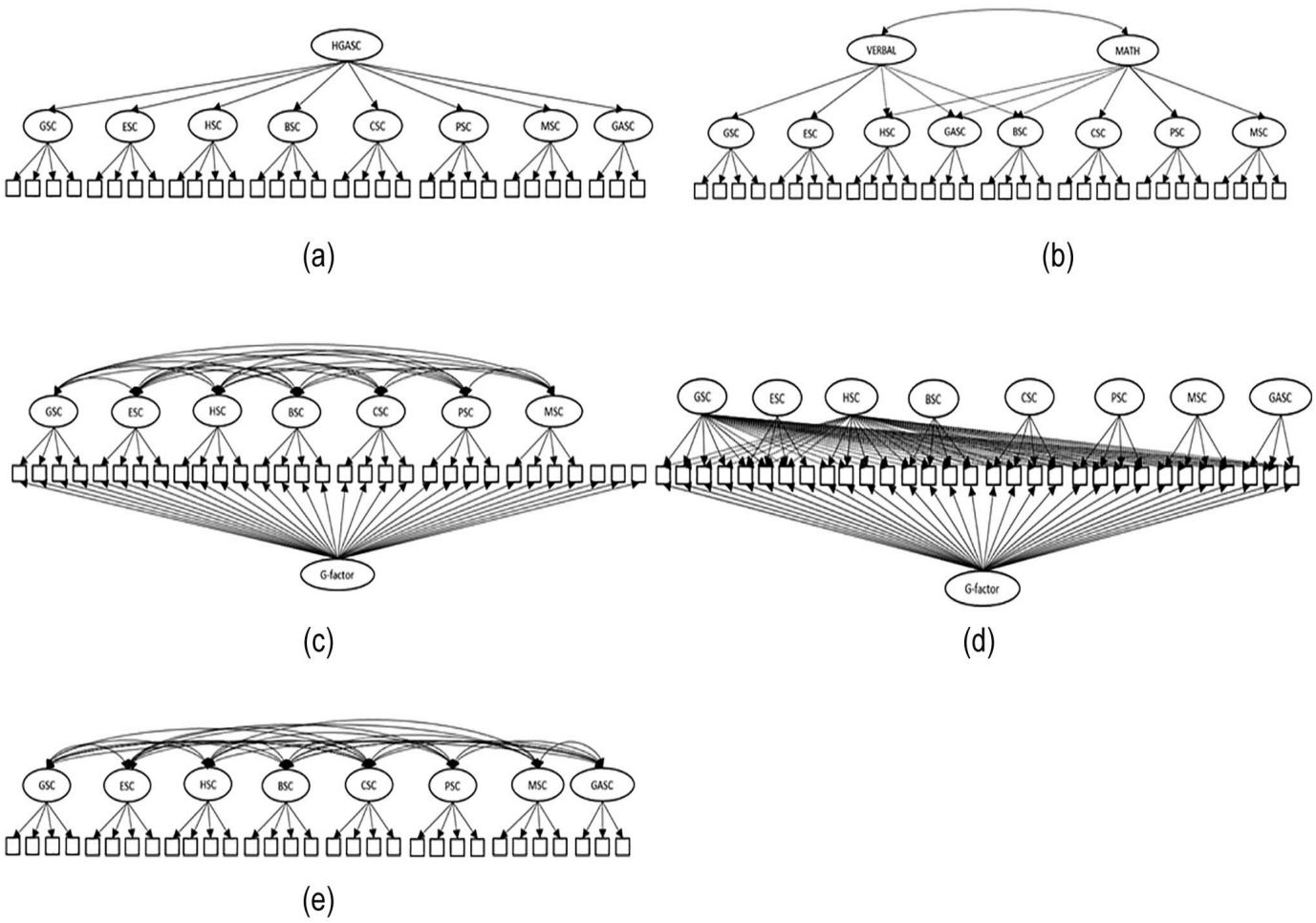


Figure 3. Structural models of academic self-concept: (a) Higher-order factor model; (b) Marsh/Shavelson model; (c) Nested Marsh/ Shavelson model; (d) Bifactor-ESEM representation; and (e) First-order factor model. Residual terms as well as residual correlations between items using the same wordings were omitted for reasons of clarity. The three items in the nested Marsh/Shavelson model that load only on the G-factor refer to GASC. In the bifactor-ESEM model, only cross-loadings for GSC and HSC are illustrated to reduce complexity of the figure. Dashed lines represent cross-loadings. ESEM = exploratory structural equation modeling; HGASC = higher-order factor of general academic self-concept; MATH = higher-order math self-concept; VERBAL = higher-order verbal self-concept; GSC = German self-concept; ESC = English self-concept; HSC = history self-concept; BSC = biology self-concept; CSC = chemistry self-concept; PSC = physics self-concept; MSC = math self-concept; GASC = general academic self-concept.

Marsh et al. (2020) studied psychological comparison processes by integrating social and dimensional comparison theories which synthesized five paradoxical frame-of-reference and contextual effects in self-concept construction that occurred at various levels over 68 countries and provided theoretical and empirical contribution for psychological comparison processes that influenced self-beliefs and their relation to distal outcomes (Figure 4). Figure 4 describes: (a) internal/external frame-of-reference model (I/E model) implies the positive effect of mathematics achievement on mathematics self-concept but negative for verbal self-concept; the same pattern is true for verbal self-concept entailing that the effect of verbal achievement on verbal self-concept is positive but negative for mathematics self-concept; (b) dimensional comparison theory (DCT) implies the positive effect of mathematics achievement on mathematics self-concept, but the negative effect of verbal achievement on mathematics self-concept. Enhancing the I/E model, DCT implies the less (closer to zero) negative effect of science achievement on mathematics self-concept than the negative effect of reading achievement on mathematics and less positive (closer to zero) than the positive effects of mathematics achievement on mathematics self-concept. (c) Big-fish-little-pond effect (BFLPE) implies the negative effect of school-average achievement on mathematics self-concept. (d) 'Bright student' hypothesis implies that bright students will not be distressed the BFLPE, while BFLPE theory implies the close to zero interaction. (e) paradoxical cross-cultural effect implies the negative effect of country-average mathematics achievement on mathematics self-concept. (f) relative year in school effect (red shirting) implies the negative effect of being old in school on mathematics self-concept. (g) incorporation of BFLPE and dimensional comparison theory (big-fish-little-pond compensatory effect, BFLPE-compensatory effect) implies the similar effects as in the I/E and DCT models (A and B) and the BFLPE model (1C). Involving the concept of the DCT and BFLPE models related to

school-average achievement, the effects are expected to contradict those for individual achievement; negative for mathematics achievement (SA1), positive for verbal achievement (SA2), and in between for science achievement (SA3 > SA1 and SA3 < SA2). (H) Fully incorporated social and dimensional comparison models. All effects presented in (A–G) are incorporated into a single three-level model.

Figure 4. Individual and integrated frame-of-reference effects. Reprinted from wileyonlinelibrary.com

2.7 Self-Concept in Verbal Domain

Majority of studies (Marsh & Yeung, 1998; Pajares & Valiante, 1997; Pajares et al., 2000; Schunk, 2003) in psychology concentrated their attentions on self-constructs within L1 and foreign language subject (Lau et al., 1999; Marsh et al., 2000; Yeung & Wong, 2004). However, only three studies (Arens & Jansen, 2016; Lau et al., 1999; Yeung et al., 2000) analyzed the structure of self-concept within specific languages. Earlier studies (Epstein, 1991; Hattie, 1992; cited in Harter, 2006) confirmed students' possession of complex, developed self-concepts within a particular domain, by getting older and developing ability. Therefore, most students tend to have a adequate distinction within their native language (L1) self-concept and their specific foreign verbal self-concepts (L2) that leads to further separation between L1 and L2 within verbal self-concept of the academic domain (Marsh & Yeung, 2001). Despite their abilities can be comparable across languages because of the overall domain that is the basement of comparison; students tend to have separate self-beliefs for each language. Thus, advanced learners are inclined to form more domain-specific self-concepts than others (Harter, 1999, 2006; Jacobs et al., 2002; Marsh & Ayotte, 2003).

Considering multidimensional nature of academic self-concept, it gives rise to an essential question about domain-specificity of the verbal domain, how to further verbal self-concept can be domain-specific to capture multilingual learners' perceptions in all verbal areas. Many years, most researchers (e.g., Yeung & Lee, 1999) regarded the verbal domain as representing students' native language. Thus, the terms of verbal and English self-concepts were used interchangeably. However, Yeung and Wong (2004) studied teachers' English, math, Cantonese and Mandarin self-concepts and found four different domain-specific self-concepts. Revealing low correlations English self-concept with Mandarin self-concept (r =

.09) and negative correlation with Cantonese (r = -.19) which in its turn negatively correlated with Mandarin (r = -.11), they argued with the assumption of a single verbal factor could be formed from three language constructs. Examining the association of academic achievement with academic self-concept in verbal and mathematics domains, Bong (1998) included two foreign languages (English and Spanish). It found a weak correlation (r = .20) between them. The same data were re-examined by Marsh and Yeung (2001) and emphasized the impossibility of one single verbal self-concept factor represent English and Spanish. Therefore, the verbal domain's domain-specificity in various languages is vital due to misleading interpretation that global verbal self-concept can define learner's self-concept in different languages. Teachers and parents assume that if students perceive they are competent in one language, they will have a positive feeling toward another language of similar nature.

Mercer (2011) explored a global foreign language self-concept that unities self-views about target languages in general, showing the interrelation between L2 and L3. However, she found a distinction between the mother tongue (L1) self-concept and general overall languages self-concept (Figure 5).

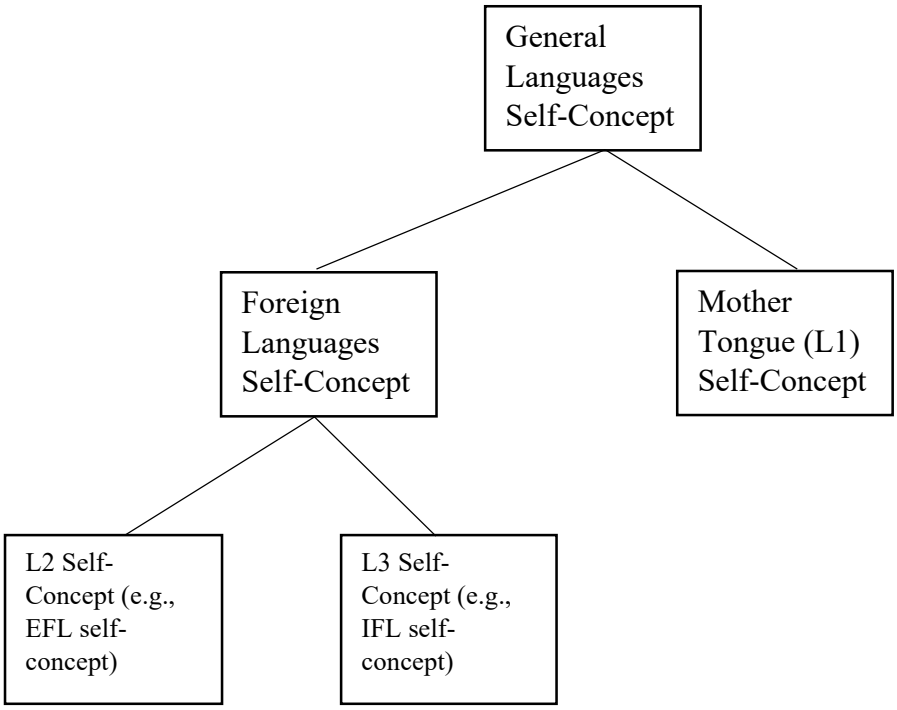


Figure 5. The potential position of a "foreign languages self-concept" in a hierarchical model.

Lau et al. (1999) examined the hierarchical and multidimensional structure of English self-concept of University students (N = 321) who responded to survey items on listening, speaking, reading and writing self-concepts and a global English self-concept. This study found four distinct English skill-specific self-concept constructs, indicating the multidimensional nature of self-concepts in different skill areas. The high correlation (r = .97) between the higher-order and global self-concept factors demonstrate that they cannot differentiate as two separate constructs. Therefore, since Lau et al. (1999) conceptualized English self-concept as hierarchical and multidimensional, a specific subject domain self-concept can be hierarchical and multifaceted. Mercer (2011) investigated Joana's language self-concept and stated that "learners may hold distinct self-concepts related to the skill within each separate language, rather than self-concepts for the skill per se across all languages". She found that Joana perceived her spoken English competency at a very high level compared to

written and she feels very confident in terms of pronunciation, which is significant for Joana.However, she accepted herself as having well-written competency in her mother tongue. Mercer (2011) revealed that while Joana had positive English self-concept (EFL), her Italian (IFL) self-concept was not positive. Two skill areas (speaking and reading) are mentioned to most constantly across both foreign languages. From the longitudinal study, it was clear that Joana's Italian self-concept was dynamic comparing EFL self-concept that was quite sophisticated, immensely improved and substantial throughout two years. From the inception of two years, her IFL self-concept was less factorized, simple in content but is robust, and grew eventually in depth and complexity. It was clear that learner had different self-concepts in her two foreign languages. Harter (1999) emphasized the development of learners' self-concept in the corresponding domain in terms of complexity if learners increase in proficiency.

These findings provide evidence that despite some similarities or commonalities throughout learners' foreign language self-concepts, they can differentiate their different foreign language self-concepts. Moreover, regarding EFL self-concept, learners differ in the complication of their self-concepts. Certain learners have featured self-views, but others have general self-description in the domain. Some learners can profoundly describe their self-concept in skill domains of specific language but have global in their self-description in other skill areas.

2.8 Internal and External Frame of Reference Model

Internal and External frame of reference of academic self-concept in a particular academic subject formed in association with an external (social comparison) reference in which learners compare their self-perceived achievements in specific academic subject with the perceived achievements of other learners in the same academic school subject, and an

internal (ipsative-like) reference in which learners compare their achievements in the particular academic subject with their achievement in other academic subjects (Marsh, 1986; Marsh, Martin, & Hau, 2006; Marsh, Xu, & Martin, 2012). Therefore, although they do not perform well in mathematics subject comparing to other students (an external comparison), learners may possess a favourable mathematics self-concept if they have a high preference for math subject (an internal comparison).

Recently, there are large number of empirical studies (Köller, Klemmert, Möller, & Baumert, 1999; Marsh, Byrne, & Shavelson, 1988; Marsh & Köller, 2004; Marsh, Kong, & Hau, 2001; Marsh et al., 2014; Marsh, Xu, & Martin, 2012; Marsh & Yeung, 1998; Möller & Köller, 2001; Möller et al., 2011) that support the I/E model in both cross-sectional and longitudinal settings. Several studies (Möller, Streblow, & Pohlmann, 2009) have been focused on generalizability of the I/E model across students' ability levels, self-concept, and achievement measures (Marsh et al., 2001; Xu et al., 2013) and has also been confirmed in experimental designs (Möller & Köller, 2001; Pohlmann & Möller, 2009)

These two joint operative processes are constant with the near-zero correlation between mathematics and verbal self-concepts resulting in the revision of the Shavelson et al. (1976) model. The external comparison process states good mathematics skills result in higher mathematics self-concept and good verbal skills result in higher verbal self-concept. On the contrary, internal comparison predicts lower verbal self-concept if the learner has good mathematics skills. Therefore, learners tend to perceive themselves as either a mathematics person or a verbal person, but not both. This distinction between verbal and mathematics academic self-concepts contributed to the proposition of I/E model (Marsh, 1986) to clarify understanding of internal and external frames of reference to form different self-concepts while having similar levels of skills. In this study, he summarized 13 studies regarding the

correlation between mathematics and verbal achievements and self-concepts in the matching domains. Marsh (1986a) revealed weak or even negative relation between mathematics and verbal self-concepts (-.10 to +.19) while there were high correlations between mathematics and verbal achievements (.42 to .94). Moreover, the paths from mathematics achievement to mathematics self-concept and verbal achievement to verbal self-concept were significant and positive in the I/E path diagram. The paths from mathematics achievement to verbal self-concept and verbal achievement to mathematics self-concept were significant but negative.

However, external factors such as feedback, grades and experience had been the center of most studies' attention (Marsh & Yeung, 1998; Skaalvik & Rankin, 1992, 1995) compared to the internal frame of reference. Marsh et al. (2001) emphasized that like the external frame, students applied knowledge about their performances in different academic domains to form their self-concept in a specific subject. In most studies (Marsh et al., 1986; Marsh, 1990e; Marsh & Yeung, 1998; Skaalvik & Rankin, 1992, 1995) that used the I/E model verbal skills were represented by L1 to compare their mathematics skills. Nevertheless, the internal comparison of mathematics and verbal domains of self-concept is not an innate characteristic of the I/E model that other domains could be included in the extension of internal comparison (Marsh & Craven, 1997). Although most studies (Marsh, Hau, & Kong, 2001; Möller et al., 2006; Yeung & Lee, 1999) investigated English as L1, I/E model was expanded in other non-native languages, particularly discovering relationships between achievements and self-concepts. Marsh and Yeung (2001) reexamined Bong (1998) study and found clear contribution for traditional I/E predictions, by expanding academic self-concept to mathematics and two languages (Spanish and English) and their achievements. The study revealed positive impacts of language achievement on English, history and general language self-concepts, opposing to negative impacts on Spanish, algebra, geometry and chemistry

academic self-concepts when mathematics performance had negative impact on English, history, language and Spanish self-concepts, but had positive impact on algebra, geometry, general, mathematics and chemistry. Since I/E model based on contrasting domains that increase in native language could result in a slight decrease in the foreign language self-concept or conversely; these studies (Bong, 1998; Marsh, Hau, & Kong, 2001; Marsh & Yeung, 2001) emphasized the vital inclusion of mother tongue and foreign language subjects as separate domains.

Marsh et al. (2001) conducted a longitudinal study that a large (9,482) representative sample was driven from Hong Kong high schools to assess the generalizability of predictions based on the I/E model in a non-Western culture. They found strong support for the I/E model in a separate analysis of each of the three data waves. Correlations among Chinese, English and mathematics self-concept scales were small (-.07 to .13) comparing to correlations among corresponding Chinese, English, and mathematics achievements scores (.67 to .79). While mathematic achievement has a significant positive effect on mathematics self-concept (.63 to .79), small adverse effects on English and Chinese self-concept (-.35 to -.14) were revealed. They found the same pattern for English and Chinese achievements. While English achievement had a positive effect on English self-concept (.48 to .62) but a small negative impact on Math and Chinese self-concepts (-.26 to -.10), Chinese achievement had a positive effect on Chinese self-concept (.50 to .61) but small effects on mathematics and English self-concepts (-.40 to -.06).

Möller, Streblow, Pohlmann and Köller (2006) studied self-concept in mathematics, physics, German and English and revealed that there were negative paths from German and English achievements to mathematics and physics self-concepts, and from mathematics and physics achievements to German and English self-concepts. However, the suggested the I/E

model impacts found in the Marsh, Kong and Hau (2001) study in terms of non-native and native languages was not confirmed in this study. Möller, Streblow, Pohlmann and Köller (2006) explained the reason behind of this finding with the similarity of German (L1) and English (L2) comparing to Marsh, Kong and Hau (2001) research that Chinese (L1) and English (L2) were perceived to be more different. This feature of the internal cross-domain juxtaposition by students that depended on perceived analogy of the domains by learners has crucial implication for the foreign language domain. Möller et al. (2009) conducted a meta-analysis of 69 data sets (125,308) that supported the I/E model with positive paths from achievement to the matching self-concepts (mathematics: .61, verbal: .49), and negative paths from achievement to self-concept nonmatching domains (from mathematics achievement on verbal self-concept: -.21; from verbal achievement to mathematics self-concept: -.27) (Figure 6).

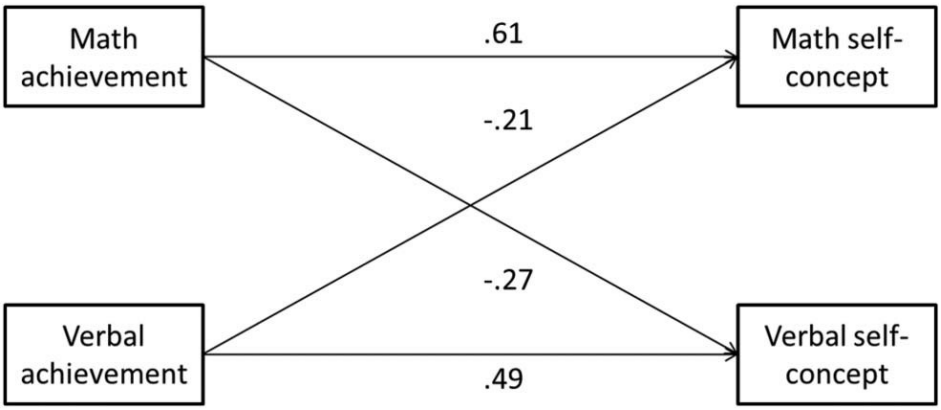


Figure 6. The model, with strong positive effects within domains and weaker contrast effect between domains. The standardized path coefficients are from the meta-analysis by Möller et al. (2009) (N = 125,308).

Xu et al. (2013) investigated the classical two-domain and three-domain models to examine the effect of LOI (Language of Instruction) on I/E model relationships, and explored

weak frame of reference effects of all three subjects (mathematics, Chinese and English) in the I/E model while the study supported the traditional two-subject I/E models. Verbal and mathematics domains demonstrated the expected frame of reference consistent with the Marsh and Shavelson (1985) hypothesis. Being similar to each other, English and Chinese contrasted with mathematics. The correlations between mathematics and verbal were positive (mathematics and English, .19; mathematics and Chinese, .24). Xu et al. (2013) reported the correlation between native and nonnative language self-concepts (r = .45), indicating students' ability to differentiate between native and foreign languages.

Moreover, statistically insignificant paths from English/Chinese achievement to Chinese/English self-concepts demonstrated the impossibility of applying the internal frame of reference to English and Chinese domains. In other words, students performances in English will not have a detrimental impact on their Chinese self-concept. Likewise, well-performing students in Chinese will not demonstrate poor English self-concept. Parker et al. (2014) conducted a longitudinal study using several models such as (a) autoregressive cross-lag (ACL) models to reveal how self-concept in one domain can be used to predict the degree and direction of alteration in another domain of self-concept; (b) latent growth curve models (LGC) to find out the association between growth trajectories in math and English self-concept; (c) autoregressive latent trajectory models (ALT) to reveal growth and alteration in English and mathematical self-concept at the trait and residual state level. Parker et al. (2014) explored that while cross-lagged and growth curve models have not demonstrated an ipsative relationship between English and math self-concept, ALT models revealed the growth in one self-concept domain led to decrease in another domain.

2.8.1 Internal Frame

Most studies (Marsh, 1986; Skaalvik & Rankin, 1992, 1995) implied I/E model based on comparing classical domains (mathematics and native language) of academic self-concept. However, the model could extend to incorporate internal comparisons through other domains, such as foreign language domain (Marsh & Craven, 1997; Mercer, 2011, Xu et al., 2013). As several research (Marsh & Yeung, 2001; Möller, Streblow, Pohlmann and Köller , 2006) revealed, based on students' perceptions about similarity or difference among domains; students select subjects as frames of reference that may impact their different self-concepts in various ways. Rost, Sparfeldt, Dickhauser and Schilling (2005) stated that the similar domains' impossibility results in the contrast effects observed for the verbal/mathematics domains in I/E research. This vital characteristic has a crucial implication for researchers and educators to profoundly understand their learners' beliefs of school subjects in terms of similarity or difference.

Firstly, the beliefs are essential in terms of subjects that students select to use as an internal frame of reference for a specific subject, secondly, in terms of cross-subject comparisons that may affect their corresponding domain-specific self-concept. Individuals may vary due to their perceptions concerning one student may perceive similarities between subjects, while another student may regard them differently. This finding would suggest either the impact of target language self-concepts to each other in multiple ways or opposite impacts entailed by the I/E model among distinct target languages. Therefore, the ways that learners perceive specific foreign languages as being similar or different, such as Roman and Slavic are essential to understand and clarify the extent of variation in the cross-foreign language domain comparisons (Mercer, 2011). Moreover, if students perceived better grades in language

domain comparing perceived low grades in math, students may develop stronger self-concepts in the language domain than math.

Furthermore, most students tend to compare their abilities across skill domains such as writing, listening, reading, and speaking within a distinct language. Mercer (2011) stated the inexistence of studies focused on the comparison of internal structure of skill domain level, which could be a reasonable contribution for research on internal comparison across subjects to a higher level of domain specificity. The distinction in skill domain level in terms of I/E model could be between speaking and writing skill-specific self-concepts at an advanced level. Although students could have similar abilities in both skill-specific self-concepts, they might develop moderately weak writing and moderately strong speaking self-concepts. The skill-domain level and task-level such as writing an email contrasted to academic paper can be significant for internal skill cross-domain comparison to understand students' self-concept across task domains. Thus, this phenomenon of internal skill domain comparison could be the further aim of future studies to determine whether the possibility of distinction of self-concepts at the skill-specific level within a language at the advanced level. Concluding internal comparison across domains within the self-concept, the comparison can be considered on several levels: (a) across subjects, (b) across languages, (c) across skills, (d) across tasks (Mercer, 2011).

2.8.2 External Frame

External is referred to the social comparison of an individual's performance with the other (Marsh, 1986). Mostly grades can serve as indicators of a comparison of standardized external expression of ability in the school domain. However, such outside factors like an individual's learning environment, feedback and other factors can be measures for external comparison. Most of the students differentiate themselves with their peers in the class (Marsh

& Parker, 1984; Skaalvik & Skaalvik, 2002). As social comparison is not new, even traced back to Plato and Aristotle times, the first usage belonged to Festinger (1954). However, this term can be found in American psychologists' workings such as Cooley (1902), and James (1890). Students' involvement in social comparison formation and their feedback evaluation about their environment can be contingent on their self-related needs (Markus & Cross, 1990). Gilbert et al. (1995) revealed a spontaneous, automatic nature of social comparison leading to affective and cognitive components of self-concept that an individual possesses.

Swann (1997) stated in his theory of self-verification that individuals search for those evaluations that support their self-views. Bosson and Swann (1999) proposed separation between self-competence (cognitive) and self-licking (affective) components of self. If students have a low level of self-licking, they will seek confirmation of their unlikable self. However, if students possess low-level self-competence, they will seek proof of their incompetence. These two separate processes may function across domains and cognitive and affective components of one's self-concept. Therefore, the controversial issue whether each particular domain of academic self-concept is further differentiable into cognitive and affective components is the main research area to resolve in contemporary self-concept theory (Arens, Yeung, Craven, & Hasselhorn., 2011; Marsh, Craven, & Debrus, 1999).

Although in Shavelson's et al. (1976) seminal model self-concept structure was conceptualized as multifaceted and hierarchical, they stated the impossibility of self-concept scale to differentiate between self-evaluation and self-description dimensions empirically. Items from both components, competence-related and affective-related, were regarded as unified factors for each self-concept domain such as general school, math and reading indicating any further differentiation into competence and affective elements within these domains.

2.9 Cognitive and Affective Components of Academic Self-Concept

Wigfield and Karpathian (1991) examined self-concept to find whether there are additional subcomponents within areas of the domains. Some studies (Deci & Ryan, 1985; Eccles, 1983; Eccles, Wigfield, Harold, & Blumenfeld, 1993; Stipek, 1993) provide a clear theoretical rationale for the distinction of competency self-perceptions from affect components such as motivation and task value. The development of the SDQ-I consisted of three self-concept scales that reflected on cognitive and affective components of domain-specific academic self-concepts. Self-perceived competency was comprised of items that students answered whether they are good at, learned quickly in, got good marks in, work to be easy in various school subjects. Most studies (Eccles, 1983; Eccles et al., 1993; Wigfield et al., 1997) related to the expectancy-value model of academic choice found that perceptions of competency and value can be separated but become more correlated with age.

Tafarodi and Swann (1995) revealed that global self-esteem consisted of different components, such as liking, and competence measured by a new instrument. Chapmen and Tunmer (1995) defined and revealed the integrity of three subcomponents within the reading domain of academic self-concepts such as perceptions of competence in reading, perceptions of difficulty with reading, and attitudes toward reading. Perceptions of competence in their research referred to beliefs about ability and proficiency in reading tasks; perception of difficulty referred to beliefs that reading tasks are hard. Attitudes referred to the affective component of reading self-concept.

Irwing (1996) studied students' academic self-concept and achievement in English and mathematics. He found high positive correlations between mathematics self-concept and achievement, and between English self-concept and achievement were .66 and .64, respectively. Some studies in which cognitive and affective components were conflated were

.55 and .24 (Marsh et al., 1988), .58 and .42 (Marsh & O'Neill, 1984), and .35 and .34 (Marsh et al., 1985). These results demonstrated that predicted performance by the cognitive dimension of the self-concept led to large correlations rather than a conflation of cognitive and evaluative items. Deci and Ryan (1985, 1991) investigated the separation between perceived self-competence and intrinsic motivation in their cognitive evaluation theory. They posited that "we would expect a close relationship between perceived competence and intrinsic motivation such that the more competent a person perceives him- or herself to be at some activity, the more intrinsically motivated he or she will be at that activity" (p. 58). Thus, Irwing (1996) proposed the subdivision of self-concept into cognitive and affective elements specifying that while the cognitive component of self-concept corresponds to social influence from where students construct their self by comparing their qualities and abilities with others within reference group, affective component corresponds to personal or psychological influences from where students construct their self by comparing their abilities and qualities in one domain with their qualities and skills in the other domain.

German (Tanzer, Simm, & Marsh, 1997) and Norwegian (Skaalvik et al., 1995) studies contributed to the separation of the cognitive and affective components by adapting the SDQ-I. Although both studies found academic self-concept two dimensional, the former authors defined the as "self-perceived competence" and "interest," and the latter defined them as "perceived ability" and "motivational/emotional." A more interesting fact is that mean levels of responses were comparable across cultures to affect answers but not cognitive answers. Wigfield et al. (1997) separated interest and importance/usefulness scales of subjective task value, indicating high correlations between competency and interest in the early childhood period (Grade 1-6). However, there were low correlations for the first graders (*rs* of .23 to .57) and the second graders (*r*s of .32 to 59) than older children (*rs* of .46 to .77).

As Marsh et al. (1999) found out the distinction of competence and affective dimensions of self-concept that would result in better fitting models rather than the two components would be integrated, researchers suggested that researchers investigate the competence and affect subscales for each domain of academic self-concept. The multidimensionality of academic self-concept can be considered as being two-dimensional that can function at two levels. The first level is the cross-domain level that entails the distinction of academic self-concept into different content-specific domains, and the second level is the separation between competence and affect dimensions within each content-specific domain. Correlations between corresponding cognitive and affective components within each domain are substantial .70 or higher but less than 1.0 for each academic self-concept domain. The average correlation between these components is about .75 for reading and math. Bong and Skaalvik (2003) stated the unresolved issue of distinction between the competence and affective elements of self-concept.

However, Marsh and Köller (2003) pointed out the separation between cognitive and affective dimensions of self-concept stating that learners would possess favorable math self-concept, even learners are not good at math, but their best subject. Nevertheless, the high correlations between cognitive and affective components of self-concept each self-concept domain (general school $r = .729$; math $r = .813$; German $r = .778$), Arens et al. (2011) found out different correlations between math and language subjects of academic achievement with two components of self-concept. The cognitive component of general school self-concept demonstrated high correlations to the cognitive component of self-concepts in math ($r = .643$) and German ($r = .708$). This trend was found for the affective component of general school self-concept that showed strong correlations to the affective components of both math ($r = .618$) and German ($r = .693$) self-concepts. However, there were lower correlations between

the cognitive components of self-concepts in math and German (r = .256) and between their affective components (r = .228). Math achievement showed a higher correlation with a cognitive component of math self-concept (r = .612) than affective component (r = .369). The same pattern was found for verbal achievement, demonstrating stronger correlations to the cognitive component self-concept in German (r = .634) compared with affective component (r = .327).

Moreover, similar to the corresponding domains of self-concept, cognitive components of academic self-concept of noncorresponding domains were strongly correlated to academic self-concept compared with affective components, such as a cognitive component of math self-concept showed higher relation to verbal achievement (r = .218) compared with affective component math self-concept (r = .051). The same pattern was seen for German, the cognitive component of self-concept in German demonstrated higher correlation with math achievement (r = .285) compared with math achievement (r = .062). Therefore, similar findings of Marsh et al. (1999), Arens (2011) stated the model that would have better fit if two dimensions were distinguished than they were conflated.

The distinction of between competence and affective dimensions of academic self-concept can be found in other theoretical models in the research area on academic motivation. Eccles et al. (1995) introduced an expectancy-value model stating the separation of competence and task value facets of self-perception. However, these facets of academic motivation are positively related to each other. As learners would have a sense of distinguishing competence from their sense of effect, mainly, competence facet of academic motivation is essential for the affective state of intrinsic motivation (Deci & Ryan, 2000). Harter (1990) emphasized the importance of perceived competence as central to self-evaluation and recognized cognitive and affective aspects of self-concept. Moreover, some

non-western studies (Abu-Hilal, 2005; Abu-Hilal & Darweesh, 2004) investigated the separation and conflation of cognitive and affective dimensions of academic self-concept and found that the models with two separated dimensions demonstrated better fit than the models with conflated components. Abu-Hilal and Darweesh (2004) examined 343 students' verbal and math self-concepts and revealed four distinct factors (Figure 7).

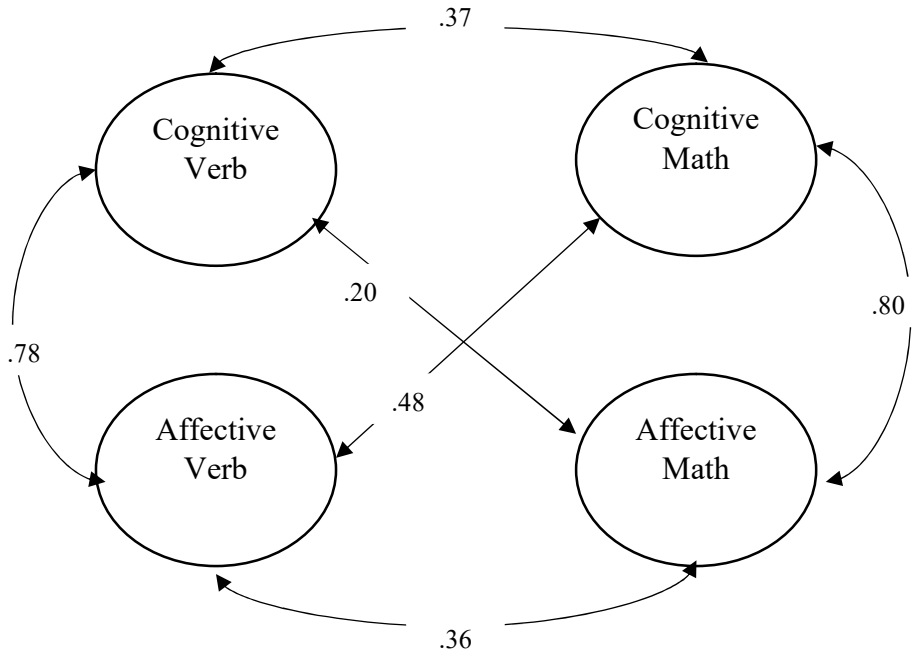


Figure 7. Hilal and Darweesh (2004) model.

Abu-Hilal (2005) reanalyzed the same data from the previous study (Abu-Hilal & Darweesh, 2004) and found significant support for all predictions of the I/E model. They examined the effect of verbal achievement on cognitive, verbal self-concept and revealed a dramatic increase from .30 to .64 when insignificant effect (r = .18) of verbal achievement on affective verbal self-concept. The same pattern was found for the math domain, indicating increase the impact of math achievement on cognitive math self-concept while the effect on affective math self-concept decreased to (r = .66). Path coefficients showed the interesting result, revealing negative effects of verbal achievement on cognitive (-.31) and affective (-.29)

components of math self-concept, and the effect of math achievement on cognitive (-.39) and affective (-.20) components of verbal self-concept.

Marsh et al. (2012) examined the psychometric properties of the international Trends in International Mathematics and Science Study (TIMSS, 2007) math and science motivation scales in 4 Arab-speaking countries and 4 English-speaking Anglo-Saxon countries. They found higher correlations between enjoyment and educational aspirations than between perceived competence and academic aspirations. Correlations for math competence beliefs ranged from .27 to 49, while math enjoyment ranged from .49 to .70.

Abu-Hilal et al. (2013) examined the separation and conflation of cognitive and affective components of self-concept among Saudi eighth-grade students in terms of two school subjects (mathematics and science). They found that cognitive and affective self-concepts were independent but strongly related constructs. The study found that correlations between achievement and separated model for both school subjects were stronger than between achievement and conflated model self-concept. The structure of self-concept construct demonstrated clarity when two components were separated than conflated. Correlations between achievements in math and science with their corresponding domains (r = .163 with mathematics self-concept (r = .232 with science) and noncorresponding domains (r = .073 with science; r = .116 with mathematics) are low or near zero compared with separated model. Correlations between achievement and corresponding cognitive components of separate self-concept model were stronger (r = .582 for mathematics; r = .573 for science) compared with affective components. Similar relations were found for noncorresponding domains of self-concept and achievement in both school subjects, such as the cognitive components of noncorresponding domains of self-concept demonstrated higher relations with

achievement (r = .407 for mathematics self-concept; r = .464 for science self-concept) compared with affective components.

Pinxten et al. (2014) conducted a study on cognitive and affective components of self-concept with 3-7 grade Belgian students and found that while there is a large effect of math competence on math achievement comparing to math affect, which was revealed to have a massive impact on expenditure. This characteristic of self-concept structure can be observed for the student from different countries and cultures such as German (Arens et al., 2011), French-Canadian (Marsh & Ayotte, 2003), Australian (Marsh et al., 1999), and Belgian (Pinxten et al., 2014), Chinese (Yang et al., 2016).

Researchers have recently focused on two longitudinal extensions of the traditional I/E frame of reference model (I/EM): The reciprocal I/EM (RI/EM) depicts the reciprocal effects between students' mathematics and verbal achievements, and self-concepts (Figure 8). The 2I/EM depicts the effects of students' mathematics and verbal achievement levels and alteration on their mathematics and verbal self-concepts (Figure 9). Wolff et al. (2020) integrated these two approaches into the reciprocal 2I/EM (R2I/EM), which depicted the effects of students' mathematics and verbal achievement levels and alterations on their mathematics and verbal self-concepts and the effects of their mathematics and verbal self-concept levels and alterations on their mathematics and verbal achievements (Figure 10). They found strong support for the R2I/EM indicating positive (negative) effects of students' achievements on their self-concepts within (between) subjects which mean that the effects of students' achievement alterations on their self-concepts within (between) subjects were positive (near 0) and showing positive (negative or near) effects of students' self-concept levels on their achievements within (between) subjects which mean that these effects were positive (positive or near 0) within (between) subjects.

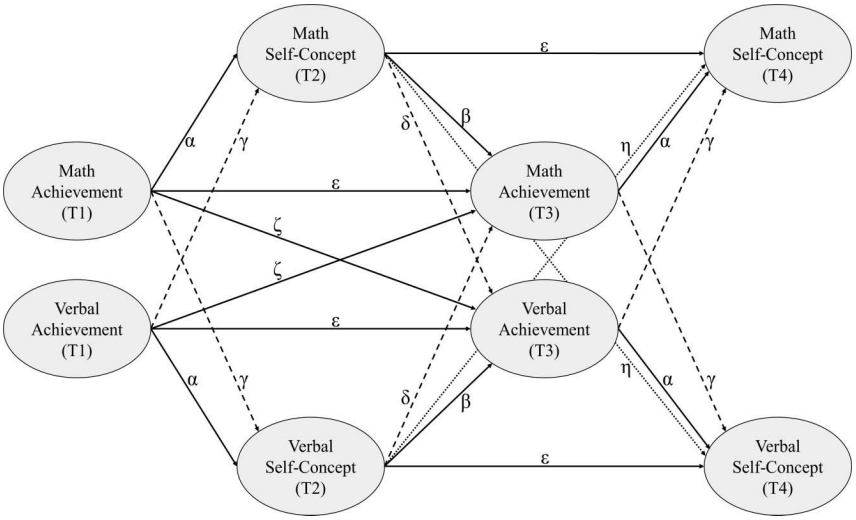


Figure 8. The reciprocal internal/external frame of reference model (RI/EM; Möller, Retelsdorf, Köller, & Marsh, 2011). The continuous lines depict effects predicted to be positive. The dashed lines depict effects predicted to be negative. The dotted lines depict effects predicted to be close to zero. Path labels are adapted from Niepel, Brunner, and Preckel (2014): α = social comparison effects / skill-development effects; β = self-enhancement effect; γ = dimensional achievement comparison effects; δ = dimensional self-concept comparison effects; ε = autoregressive effects; ζ = cross-domain effects between achievements; η = cross-domain effects between self-concepts. T = Time.

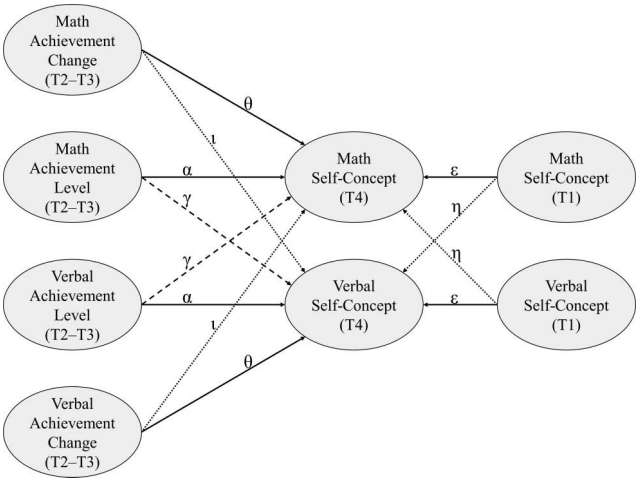


Figure 9. The two internal/external frame of reference model (2I/EM; Wolff, Nagy, et al., 2019), controlling for prior self-concepts. The continuous lines depict effects predicted to be positive. The dashed lines depict effects predicted to be negative. The dotted lines depict

effects predicted to be close to zero. Path labels are adapted from Niepel, Brunner, and Preckel (2014) and extended for the purpose of this research: α = social comparison effects/ skill-development effects; γ = dimensional achievement comparison effects; ε = autoregressive effects; η = cross-domain effects between self-concepts; 0 = temporal achievement comparison effects; ι = effects of dimensional comparisons between achievement changes. T = Time.

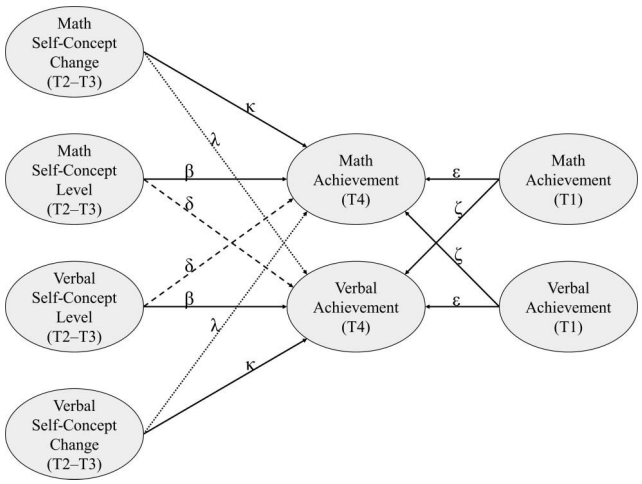


Figure 10. The reverse two internal/external frame of reference model (r2I/EM), controlling for prior achievements. The continuous lines depict effects predicted to be positive. The dashed lines depict effects predicted to be negative. The dotted lines depict effects predicted to be close to zero. Note that after the revision of the r2I/EM, the dashed lines depict effects predicted to be either negative or close to zero, while the dotted lines depict effects predicted to be either close to zero or positive. Path labels are adapted from Niepel, Brunner, and Preckel (2014) and extended for the purpose of this research: β = self-enhancement effect; δ = dimensional self-concept comparison effects; ε = autoregressive effects; ζ = cross-domain effects between achievements; κ = temporal self-concept comparison effects; λ = effects of dimensional comparisons between self-concept changes. T = Time.

2.9 Domain Specificity of Self-Concept and Relation with Achievement

Across years different studies have been carried out to investigate the relationship between academic achievement and academic self-concept (Erten & Burden, 2014; Marsh & Hatties, 1996). Academic self-concept is a crucial outcome and a vital predictor of other school outcomes (Guay, Marsh, & Boivin, 2003; Marsh, 1991, 2007). For instance, Tay et al. (1995) revealed a strong correlation (r = .45 to .70) between self-concept and achievement of corresponding subject domains (between science self-concept and science achievement). Previous studies (Hansford & Hattie, 1982; Hattie, 1992; Shavelson et al., 1976) have revealed a weak association between academic achievement and academic self-concept. Hansford and Hattie (1982) reported an overall r = .20 correlation, and Muller, Gullung and Bocci (1982) found a lower correlation, an average of r = .18. Holden, Moncher and Schinke (1990) found even lowest correlation .13. However, specific self-concept domains have stronger correlations such as academic self-concept domains tend to have higher correlations (Marsh, 1986, 1988, 1989; Marsh, Byrne, & Shavelson 1988). Marsh (1988) found out the average correlation of r = .39 between reading self-concept and verbal achievement measures and an average of r = .33 between math self-concept and math achievement.

As the relation between academic components of self-concept and achievement was revealed, skill development model and self-enhancement model were introduced. Therefore, the reciprocal correlations among self-concepts and achievements were well established (Marsh & Craven, 2006). While the skill development model entailed achievement that has resulted in self-concept in a specific domain, the self-enhancement suggested self-concept that has given rise to academic achievement. The internal/external frame of reference model (Marsh, 1986; Marsh & Shavelson, 1985) was stemmed from social comparison theory and the skill development model. This model entails that while a specific domain's self-concept may

be positively predicted by achievement in matching domain, this domain may be negatively predicted by nonmatching achievement domain.

Möller et al. (2020) conducted a series of meta-analysis of k = 505 data sets included the six relationships between achievement and self-concept in two subject domains and found negative paths from achievement to nonmatching self-concept, showing dimensional comparison effects were strongest when domains were different regarding to the mathematics-verbal continuum, reduced but substantially negative when both domains related to the verbal domain, and near-zero when both domains related to the mathematics/science subjects. Further, they found stronger positive paths from achievements to matching self-concepts showing social comparison effects.

2.10 Education Structure in Azerbaijan

2.10.1 Basic Education in Azerbaijan

This section provides a brief depiction of the education in Azerbaijan Republic. Education in Azerbaijan is separated into two stages: Basic education which comprised of primary first – fourth grades and general secondary fifth – ninth grades, and complete secondary which comprised of tenth – eleventh grades education. Basic education is mandatory in primary and general secondary stages. have opportunity to select amid various chances: entry into Complete Secondary, vocational education and training, distance learning, or direct admission to employment (MoE, 2010). The Primary phase is the foundation for all further learning. The student develops cognitive abilities such as reading and writing skills in native tongue and numeracy and develops fundamental knowledge about human, society and nature, elements of logical thinking, aesthetic and artistic taste, motor and social skills. Primary education is mostly implemented according to the education program (curriculum). This phase begins from the 6th year of child life and embraces the 1st – 4th grades.

General Secondary education aims to formulate students' oral and written speech, communication ability, comprehension activity and logical thinking; to create specific knowledge and concepts about the world civilization; to develop ability how to use modern information-communication tools and ability how to determine the future direction of activity. This phase consists of the 5th – 9th grades, and it is compulsory. At the end of the General Secondary phase, the final assessment is performed, and students who completed their studies were given state document – certificate. The General Secondary education document is considered necessary for the next phase of education. At the phase of Complete Secondary Education, the realization of students' abilities and talent was ensured.

Moreover, they are expected to be prepared for independent living and select future profession; to acquire several foreign languages. At this phase, it is expected to acquire the education program (curriculum), which embraces all three secondary education stages. Being the final phase of secondary education, the Complete Secondary Education consists of the 10th – 11th grades and final state attestation is implemented to assess knowledge in this phase. According to the result of attestation, graduates receive a state certificate with specific rules. This Complete Secondary education document is considered essential for the next step of education.

2.10.2 Language Education in Azerbaijan

Decade ago, Azerbaijan has launched reform to restructure language education. A new national curriculum of general secondary education was initiated in 2006 (CoM, Cabinet of Ministries, 2012). The new curriculum of state standards of specific subject programs was presented in 2010 (MoE, Ministry of Education, 2010). However, to improve details of the second foreign language program. it was altered after two years in 2012.This amendment was the center preference of highly educated parents who perceive language learning as

advantageous for their descendants. The second foreign language is started to teach from the fifth grade in 2012 (MoE, 2012). The internet's influence, opportunity to study and work in abroad made English predominant compared to other languages. Learning in two foreign languages is compulsory. English is learnt three hours per week at the first grade, but Russian is learnt an hour per week at the fifth grade.

According to decree #233 General Education Concept (National Curriculum) in the Azerbaijan Republic (2006), foreign language learning starts from primary education sublevel that rationale for the subjects are to learn the alphabet, transfer of skills such as listening and understanding, speaking, and initial writing skills, and also improvement of correct and expressive reading skills. General results for a learner in primary education level are that they should be able (a) to name items used in daily and private life, as well as operations and properties related to these items; (b) to establish communication-based on simple speech etiquette, design speech patterns based on topical posturer; (c) to read and write letters and letter combinations of the language that he (she) learns; (d) to distinguish and pronounce different sounds that do not exist in his (her) Mother tongue; (e) to read small texts and explains the content of the texts.

General results for a learner in primary education level are that students should be able (a) to read texts independently, use lexical and grammatical units in the development of dialogue and monologue speech; (b) to observe communication etiquette rules during the team-based study of language, comments on the speech of his (her) teammates; (c) to express his (her) ideas in a simple written format; (d) to plan his (her) speech, express the same idea in different words; (e) to develop dictionary sample, use dictionaries purposefully, supporting aids and technological tools in the course of language learning. General results for a learner in secondary education are that students should be able (a) to read a text expressively, identify its

stylistic character and main idea; (b) to read using dictionary a text introduced with the rate of unknown words of up to 10 per cent of the whole text and explains its content; (c) to design a plan of the read text, express its content in a written thesis and develop independently texts with a simple plot; (d) to use complex sentence structures in his (her) oral and written speech.

Table 1

Language Teaching Hours in Azerbaijan

Language in which subjects are delivered	Weekly workload			
	Primary education level Grades 1-4	Basic education level Grades 5-9	Secondary education level Grades 9-11	Total Grades 1-11
Azerbaijan language	91/8	146/20	66/10	303/38
Other languages	99/8	156/20	70/10	325/38

Note: Numbers in numerators of fractions refer to classroom-based workload, and numbers in denominators of fractions refer to hours allocated for out-of-classroom sessions.

Teaching and learning process is based on cooperation activities between teachers as coordinating, directing, and consulting players and students as researching and creating players, taking into consideration the following principles.

2.11 Summary

This chapter reviewed the literature on the structure of academic and verbal self-concepts and language education in Azerbaijan. Several researchers highlighted the importance of self-concept construct in the social sciences, which dates back to at least the seminal work by William James (1890/1963). The literature revealed that self-concept construct is hierarchical and multidimensional (Sahvelson et al., 1976). As people tend to evaluate themselves in different ways, researchers distinguished academic self-concept from

nonacademic self-concept. Recent research has extended the domain specificity of academic self-concept to a separation between competence and affects components (Arens et al., 2011).

Moreover, researchers (e.g., Marsh, 1986) found a weak correlation between math and verbal self-concepts which led to the development of the internal/external frames of reference model. This model suggested a theoretical explanation for the separation between math and verbal self-concepts and clarified the relations between math and verbal self-concept and achievement measures. Furthermore, studies (e.g., Yeung & Wong, 2004) explored different self-concepts for each language that challenges the assumption of a single verbal self-concept construct for multiple language speakers. Learner will hold different self-concepts for each foreign language and distinct self-concepts related to skill within each language (Mercer, 2011).

However, more research was needed to explore how academic self-concept is domain-specific by extending to a foreign language domain. Moreover, as Bong and Skaalvik (2003) stated that, the "issue of whether or not the competence and affective components of self-concept are empirically distinguishable had not been resolved", further research was necessary to find out the relationship these components with achievement measures. Even it is interesting to reveal if "each separate domain of academic self-concept is further differentiable into a cognitive and affective component" or not (Arens et al., 2011). A few studies (Arens & Jansen, 2016; Lau, Yeung, Jin, Low, 1999; Yeung et al., 2000) have investigated factorial structure of specific verbal self-concept and there is no study which could contrast reading and listening domains with math domain of self-concept within I/E model to reveal more specific self-concept structure of the academic domain.

Chapter 3

Research aims and structure of the empirical studies

3.1 Research aims and structure of the empirical studies

The present study aims to reveal relationship reading and listening skills with self-concept in English and Russian in Azerbaijan. Moreover, we also assessed their mathematics competency to get a clear picture of their academic self-concept. This study connects three main broad areas. First, examining students' academic and verbal self-concepts to enhance their performance in this area is the primary purpose for many countries as improving their self-concept will improve the corresponding domain and reverse is also true. This area's primary purpose is to enhance and upgrade student achievement quality in a particular domain, significantly improving noncognitive skills. Noncognitive traits and behaviors might be more important than cognitive skills in determining academic outcomes. Second, analyzing specific self-concept domains, practitioners, and researchers can obtain more precise information about their students' self-concept. Self-concept construct is receiving immediate attention both in research and in practice. The revelation of self-concept constructs opens a path for setting successful academic models in the academic domain. Third, testing and assessment are transferred to a technological basis, reducing the costs and timeframe but making it more measurable.

This study consists of six empirical sub-studies (1) the examination of affective and cognitive components of English and Russian self-concept to reveal twofold multidimensionality of verbal self-concept contradicting a single verbal self-concept; (2) the exploration of students' academic self-concept by opposing the math subject with two target

languages within I/E model; (3) the investigation of self-concept structure within foreign language domain to examine the interplay of multidimensionality and hierarchy within verbal self-concept across learner's two foreign languages. (4) the revelation of academic self-concept structure by studying more skill-specific domains (reading and listening) of verbal self-concept and contrasting them with math self-concept; (5) assessment of students' performances in two languages, language skills and mathematics; (6) the investigation twofold multidimensionality of reading self-concepts within two foreign languages.

Generally, these studies aim to examine students' language achievement and its relation to self-concept how students perceive themselves as language learners and how they construct their self-concept in the verbal domain. This study's central hypothesis is to reveal the multidimensional and hierarchical structure of verbal self-concept for two target languages and its strong association with achievement scores.

3.2 Research Questions and Hypotheses

Research questions and hypotheses are classified according to the four sub-studies that provided direction in the research. Hypotheses for each sub-study are as follow:

Research questions for part 1

1. How well does the model fit if we separate cognitive and affective components of academic self-concept equally?
2. How well does a single model verbal self-concept fit to the data?
3. How does the model fit differ according to gender?
4. How do competence and affective components of self-concept correlate with achievement?

5. Is there a difference between two foreign languages in terms of a twofold multidimensional self-concept model?

Hypotheses for part 1

H_1. Based on the literature, we expect a good model to fit the data if we separate the cognitive and affective components of academic self-concept equally.

H_2. Following the literature, we hypothesized the poor fit of a single verbal self-concept model to the data.

H_3. Based on the literature, we expect no significant differences between genders in the model fit.

H_4. Following the literature, we hypothesized the high correlations between achievement and competence component of self-concept than affective.

H_5. We expect the generalization of a twofold multidimensional model of self-concept across foreign languages.

Research questions for part 2

1. How does math achievement relate to two nonnative languages (English and Russian)?

2. How do achievements relate to matching and nonmatching domains of self-concept within all I/E models?

3. How well does the first-order model fit the data if we put math self-concept and achievement with two foreign language self-concepts and achievements in a single model?

4. How well does I/E model math, higher-order in verbal self-concept and achievement fit to the data?

Hypotheses for part 2

H_6. We hypothesized the achievements of both nonnative languages (English and Russian) contrast with math achievement.

H_7. We expect high correlations among achievements and matching domains but nonsignificant and near zero, negative correlations among achievements and nonmatching domains in all I/E models.

H_8. We hypothesized the good fit of the first-order model to the data if we put math self-concept and achievement with two foreign language self-concepts and achievements in a single model.

H_9. We expect the poor fit of I/E model math, higher-order in verbal self-concept and achievement to the data.

Research questions for part 3

1. How well do multidimensional and unidimensional models fit the data?

2. How well does the hierarchical model of self-concept fit to the data?

3. How do skill-specific facets of self-concept correlate with higher-order factor and global factor of self-concept?

4. How does global self-concept correlate with grades and achievement tests?

5. How does the higher-order factor of self-concept correlate with grades and achievement tests?

6. How does the multidimensional and hierarchical structure of self-concept within foreign language vary in terms of two nonnative languages?

Hypotheses for part 3

H_{10}. Based on the literature, we hypothesized better levels of fit for multidimensional models than unidimensional models.

H_{11}. Accordance with literature, we expect a good fit of aggregated skill-specific facets of self-concept model indicating hierarchical structure.

H_{12}. We hypothesized the high correlations skill-specific facets of self-concept and higher-order factor with a global factor of self-concept and achievements in corresponding domain, providing further evidence of the multidimensionality and hierarchical structure of self-concept.

H_{13}. Based on the literature, we hypothesized the high correlation between global self-concept and grades but low correlation between global self-concept factor with achievement tests.

H_{14}. Accordance with literature, we expect the high correlations between higher-order self-concept factors with achievement tests but low correlation between higher-order factors with grades.

H_{15}. We hypothesized the generalization of the multidimensional and hierarchical model of self-concept within language domain across two foreign language self-concepts.

Research questions for part 4

1. How do math self-concept and achievement correlate with two skill-specific (listening and reading) self-concepts in nonnative languages (English and Russian)?

2. How do achievements relate to matching and nonmatching domains of language self-concept within I/E models (listening, reading and math)?

3. How well does the first-order model fit the data if we put math self-concept and achievement with two skill-specific facets self-concepts and achievements in a single model?

4. How does the multidimensional nature of self-concept within language domain vary across two foreign languages?

Hypotheses for part 4

H_{16}. We hypothesized the contrast of two skill-specific self-concepts (listening and reading) and their achievements in both nonnative languages (English and Russian) with math self-concept and achievement.

H_{17}. We expect high correlations among achievements and matching domains but nonsignificant and near zero, negative correlations among achievements and nonmatching domains in all I/E models (listening, reading and math).

H_{18}. We hypothesized the good fit of first-order model to the data if we put math self-concept and achievement with two skill-specific facets self-concepts and achievements in a single model.

H_{19}. We expect the generalization of multidimensional nature of self-concept within language domain across two foreign languages.

Research questions for part 5

1. What are the psychometric properties of listening and reading tests in English and Russian for Azerbaijan sample?

2. How well do grade eight students perform on listening and reading tests in English and Russian?

3. How do girls' performance differ from boy students' reading and listening performance in English and Russian?

4. How are the relationships among the subtests of reading and listening skills?

5. Is there a difference in students' performances according to English and Russian?

Hypotheses for part 5

H_{20} The psychometric properties of the tests are acceptable.

H_{21} We expect the eight graders' good performance.

H_{22} We hypothesized significant differences in relations of language skills in English and Russian

H_{23} We hypothesized medium correlations between the subconstructs.

Research questions for part 6 (separate study)

1. How well does the model fit if we separate the cognitive and affective components of reading self-concept equally?
2. How well does the I/E frame of reference applicable to the reading self-concept within English and Russian?
3. How does the model fit differ according to gender?
4. How do competence and affective components of self-concept correlate with achievement?

Hypotheses for part 6

H_1. Based on the literature, we expect a good model to fit the data if we separate the cognitive and affective components of reading self-concept equally.

H_2. Following the literature, we hypothesized the applicability of the I/E frame of reference to the reading self-concept within English and Russian?

H_3. Based on the literature, we expect no significant differences between genders in the model fit.

H_4. Following the literature, we hypothesized the high correlations between achievement and competence component of self-concept than affective.

Chapter 4

Methodology

4.1 Introduction

This study employed a cross-sectional study design to reveal the relationship between English and Russian receptive skills and self-concept in Azerbaijan. Since self-concept is not characteristic for Azerbaijan, in other words, this area was not studied, the cross-sectional study was considered appropriate for future enquiry that provides a single snapshot for researchers with data for future investigation.

4.2 Samples

For exploring the relationship between receptive skills and self-concept, this research required a nationally representative sample. However, since time was limited, this study was not able to achieve an ideal representative sample. Nevertheless, this study needed samples that were large enough to entail the main typical features of education in Azerbaijan. Therefore, samples were drawn from 16 schools of 12 administrative districts of Baku city (the capital of Azerbaijan) to achieve the best representation of schools in this area. Baku Educational Department selected schools. The Baku city population consisted of 22775 million (SSC of the Republic of Azerbaijan, 2019). Primary education consists of a period of 9 years that begins at the age of 6 years. All schools have the same curriculum and the same sets of textbooks provided by the Ministry of the Education Republic of Azerbaijan. Thus, schools are considerably homogenous. The data were collected during winter, 2018-2019. The total sample consisted of more 1000 students that contained missing data. Subsequently, we delated

cases which included missing data. Thus, the total sample of 540 students (boys 48.9%, girls 51.1%) participated in the study.

Without background features, participants were drawn randomly. Students' participation in the tests was mandatory while they voluntarily participated in the survey, and parental consent was received. Despite the author explaining the present study's primary aim, this study included supplementary and explanatory information to facilitate student comprehension. All students were enssured anonymity and confidentiality of their responses (see appendix A).

4.3 Instruments

4.3.1 Self-Concept

Self-concepts in three subjects were measured by adaptation of Self-Description Questionnaire II (Marsh, 1990) in listening and reading skills of English and Russian. The same two-way translation procedure implemented to translate the questionnaire into Azerbaijani. The same item sets were used in both target languages and math and were asked to consider only one respective subject domain while responding the items. All scales consisted of three items and created on a 4-point Likert scale (strongly disagree, disagree, agree, strongly agree). High values on the scales indicated higher levels of self-concept. All scales used in this study demonstrated excellent reliability estimates in alpha (α) and scale reliability (ρ – developed in the context of SEM modeling; Raykov, 2009; see also Table 2, 3).

Table 2

Descriptive Statistics for English, Russian and Mathematics

Skills	Reliability	*a*	Boys			Girls	
			M	*SD*		*M*	*SD*

Skills	Reliability	*a*	Boys		Girls	
Self-concept						
English cognitive	.94	.94	2.10	0.39	2.92	0.31
English affective	.99	.99	2.31	1.17	2.94	1.00
Russian cognitive	.91	.91	1.85	0.25	3.14	0.05
Russian affective	.99	.99	1.66	0.52	3.37	0.26
Mathematics	.90	.81	2.70	0.29	2.45	0.24
Achievement						
English	.88	.86	0.44	0.01	0.60	0.01
Russian	.91	.92	0.41	0.01	0.66	0.01
Mathematics	.90	.81	0.62	.0.02	0.40	-1.17

Note. Reliability for self-concept is scale reliability (ρ; Raykov, 2009); α= Cronbach's alpha reliability coefficient. Reliability for achievement is the reliability of Warm's weighted likelihood estimate (WLE) (Wu, Adams, Wilson, & Haldane, 2007). The self-concept means (*M*) and standard deviations (*SD*) demonstrate accumulation of the items.

Table 3

Descriptive Statistics for Listening, Reading in English and Russian

	Reliability	*A*	*M*	*SD*	Skew	Kurtosis
Self-concepts						
Global English self-concept	.93	.93	3.05	.45	-1.10	-1.52
English listening self-concept	.98	.98	2.28	1.04	-.12	-1.55
English reading self-concept	.93	.93	2.80	.60	-.41	-.76
Global Russian self-concept	.93	.92	3.17	.41	-.25	-.69
Russian listening self-concept	.98	.98	2.24	1.12	-.06	-1.62
Russian reading self-concept	.97	.97	2.95	.97	-.14	-1.80
Achievement						
English listening achievement	.89	.84	.49	.02	-.10	-1.51
English reading achievement	.91	.88	.54	.03	.20	-1.24
Russian listening achievement	.92	.84	.49	.02	-.10	-1.51
Russian reading achievement	.89	.84	.58	.02	-1.70	-.13
English grade			4.11	.40	-.13	-.34
Russian grade			4.20	.42	-.22	-.71

Note. Reliability for self-concept is scale reliability (ρ; Raykov, 2009); α= Cronbach's alpha reliability coefficient. Reliability for achievement is the reliability of Warm's weighted likelihood estimate (WLE) (Wu, Adams, Wilson, & Haldane, 2007). The self-concept means (*M*) and standard deviations (*SD*) demonstrate accumulation of the items.

4.3.2 Achievement

Listening and Reading Tests of the Study

Language tests were adopted from Célnyelvi mérés (2013/2014) and were skill-specific (listening and reading) formed by experts and structured with correspondence to the six-point scale defined in the Common European Framework of Reference for Language (CEFR, Council of Europe, 2001). The reasons of instrument adoption are following; (1) instrument based on Hungarian curriculum which distinguishes between different skills that in its turn is based on A2 level, CEFR, (2) these instruments were validated in Hungary with

representative sample and internationally (Kazakhstan, Namibia, Mongolia, Romania), (3) tests were based on real-life situations and age-appropriate.

Receptive skills tests were used in the study, where they focused on meaning, not on the form (Bachman & Palmer, 2010). Texts in English were authentic but adequate for 12-14 years old. To assure clear understanding, two-way translators participated in the translation of achievement tests from English to Russian see appendices B and C. Language achievement tests comprised of the similar number of tasks, A2 level in English and Russian Table 4.

Table 4

The Structure and Content of Language Tests

Skills	Task	Input	No of items
Listening 1	Multiple choice on dialogues	Short dialogues	10
Listening 2	Choose a title for short film	Short film trailers	10
Reading 1	Find a title for each book	Description of books	10
Reading 2	Find the missing part of text	Text	10

Mathematics Test of This Study

Achievement tests in mathematics were adapted from TIMSS (Trends in International Mathematics and Science Study, 2011). It assesses different cognitive domains with various main topics. See the example tasks (Figure 11 and 12).

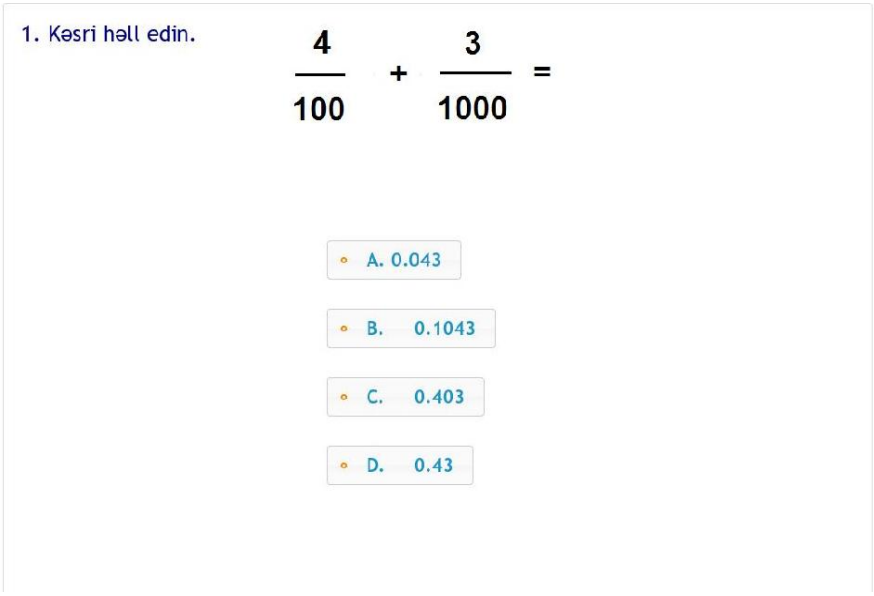


Figure 11. Cognitive domain: knowing; main topic: fractions and decimals

Figure 12. Cognitive domain: applying; main topic: ratio, proportion and per cent.

Mathematics tests were used for the second and fourth parts of the study that students were expected to utilize their cognitive skills see Appendix D. To guarantee clear

comprehension; two-way translators participated in translating proficiency tests from English to Azerbaijani mathematics. Mathematics tests comprised of seventeen cognitive domain items of the (Table 5). The item selection process for examination of students' competencies in mathematics was built on the present national curriculum. All tests consisted of multiple-choice tests.

Table 5

The Content of Math Tests

Items	Item number in repository	Main topic	Cognitive domain
Item 1	M032094	Fractions and decimals	Knowing
Item 2	M032595	Ratio, proportion and percent	Applying
Item 3	M03262	Whole numbers	Knowing
Item 4	M042016	Whole numbers	Applying
Item 5	M042024	Fractions and decimals	Knowing
Item 6	M042031	Fractions and decimals	Applying
Item 7	M052228	Fractions and decimals	Applying
Item 8	M032047	Algebraic expressions	Applying
Item 9	M032295	Algebraic expression	Knowing
Item 10	M032738	Algebraic expression	Knowing
Item 11	M042067	Algebraic expression	Applying
Item 12	M042077	Algebraic expression	Knowing
Item 13	M042236	Algebraic expression	Knowing
Item 14	M052302	Equations/formulas and functions	Knowing
Item 15	M032100	Geometric measurement	Applying
Item 16	M032116	Geometric measurement	Applying
Item 17	M052084	Geometric measurement	Applying

School Grades

Students had obtained school grades in English and Russian from the latest three consecutive sessions for half-year, called small summative assessments. Small summative assessments were accomplished in every final evaluation for each chapter. School grades entail

student achievement in the corresponding language domain. The Azerbaijani educational system consisted of school marks ranged from 1 to 5, with 5 showing the highest mark. As school grades imply single-item measures for the achievement in the corresponding language domain, their measurement errors were fixed due to the sample variance (Arens & Jansen, 2016; Feldt & Qualls, 1996; Hancock & Mueller, 2013) and presumed reliability estimate of .96.

4.4 Procedure

As nowadays computer-based assessment is the demanded and current trend in research (Csapó, Molnár, & Nagy, 2014), the online data collection was performed through the Electronic Diagnostic Assessment (eDia) platform (Csapó & Molnár, 2019) for all studies. Despite the author's explanation of the present study's primary aim, I included supplementary and explanatory information to facilitate student comprehension. Immediate feedback was provided after task completion. First, I administered proficiency tests in three sequential periods, each lasting almost 45 min, with 15 min between the breaks. Afterwards, verbal and math self-concept questionnaires were completed nearly 30 min. Mathematics self-concept questionnaire competed for the of the second and the fourth parts of the study. Each student had their password to access the online platform. All learners were ensured anonymity and confidentiality of their responses. The online testing results proved to be acceptable; however, some technical problems appeared during the assessment of students.

4.5 Data Analysis

From chapter one was evident that the primary purpose of this study is to reveal the relationship between self-concept and receptive skills. The data was analysed due to applying the software Mplus7.31 (Muthén & Muthén, 1998-2015) and the software ConQuest 2.0 (Wu

et al., 2007). Multiple group analysis was conducted to reveal differences between gender in the second part of the study. Furthermore, item response models (IRT) were used as they aligned with the research aim of identifying the students' ability in two domains of skill-specific English and Russian, mathematics domain and general language domains of English and Russian. "The main idea of item response theory (IRT) is to use a mathematical model for predicting the probability of success of a person on an item, depending on the person's 'ability' and the item 'difficulty' (Adams & Wu, 2002, p. 28). Characteristically, the probability of success on an item for a student whose abilities vary is plotted as an "item characteristic curve" (ICC). Item response models usually apply a mathematical function to model the probability of a student's response to an item, as a function of the student's "ability" level (Adams & Wu, 2002).

Several sets of models were conducted within the structural equation modeling (SEM) framework, which is recognized as an adequate method for examining hypotheses and models. As scales consisted of parallel wording such as "I am good in English", the model fit could incline to be inadequate and the parameter estimates prone to be biased, inducing incorrect outcomes (Marsh & Hau, 1996; Xu et al., 2013). Hence, correlated uniqueness was suggested in the models, when the same item is used for multiple domains (Marsh & Hau, 1996; Marsh et al., 2012). Moreover, the study included a comparison of nested models. Considering the dependency of chi-square value on participants' number, most studies (Byrne, 2012; Chen, 2007; Cheung & Rensvold, 2002; Kline, 2011; Marsh et al., 2005) suggested various goodness of fit indices for assessment and comparison of nested models. Invariance occurs when the value of CFI does not decrease more than .01, and the value of RMSEA does not increase more than .015 between non-restrictive and restrictive models.

4.6 Summary

In this chapter, the process entailed collecting data to answer the research hypothesizes mentioned in the previous chapter. Due to achieving credible and reliable research outcomes and essential in the research field (Cohen et al., 2007, p. 183), the appropriate design and methodology were studied. Because of the hypothesizes set for the study, it was decided to apply a quantitative cross-sectional design suitable for this study. Correspondingly, quantitative data collecting measures such as test-taking and questionnaires were the most relevant to reveal students' perceptions of their language self-concept, how they construct their self-concepts in language, and how language achievement results influenced on their self-concept and how they feel as language learners. The process of selecting test measures and how these measures were adapted are explained. A summary of how the data were conducted and analyzed are concisely introduced, and the detail data analysis processes are provided under each part of the study. In the next chapter, the results and discussions that emerged from the four parts of the study are emphasized.

Chapter 5

The Parts of Study I

5.1 Cognitive and Affective Components of Verbal Self-Concepts and Internal/External Frame of Reference within Multidimensional Verbal Domain

5.1.1 Introduction

The aim of the present study was (1) to reveal whether there is a separation or conflation between cognitive and affective components of academic self-concept if we divide items equally into cognitive and affective components; (2) to validate self-concept structure in the verbal domain by examining the assumption of a single verbal self-concept for different language learners, and (3) to evaluate cognitive ad affective components of verbal self-concept construct across gender. Arens (2011, p. 971) claimed that "as self-concept is a latent construct that cannot be directly observed, rigorous scrutiny is required for its validity to be established".

Therefore, we applied within-network and between-network approaches employing a CFA framework to produce clear relationships that divide academic self-concepts into cognitive and affective components. Since the competence dimension can entail students' self-perception of ability, we hypothesize that achievement would be highly correlated with competence component than the affect component of corresponding academic self-concept domains. Most of the studies examined math and language domains of self-concept, which are traditional academic self-concept domains. Moreover, the present study investigates cognitive and affective components of self-concept within verbal domain reveal distinct verbal self-

concept structure for each language and find whether a single verbal domain can represent learner's self-concept in different languages.

5.1.2 Methodology

5.1.2.1 Statistical Analysis

Since structural equation modeling (SEM) framework is a more preferred method to examine conceptual models, several sets of models were conducted by employing Mplus software, version 7.31 (Muthen & Muthen, 1998-2015). Before examining the hypothesis, we observed the skews and kurtoses of all variables (Table 2). The CFA analysis has been described in the statistical literature (Byrne, 2012; Kline, 2011; Schumacker & Lomax, 2016). Therefore, we selected the robust maximum likelihood estimator (MLR) to be against any violations of normality assumptions and proper while analyzing scales with four categories as continues (Beauducel & Herzberg, 2006). As scales contained similar wording items such "I am good in English", the model fit could incline to be less proper, and the parameter estimates could be biased which could lead to systematical inflation of the correlations among matching latent factors across various domains (Marsh et al., 2012).

Firstly, we examined models assuming all (12) items related to English and Russian self-concepts would load on a single factor (Model 1 in Table 6) indicating one single verbal self-concept for two target languages. Next, we analyzed the two-factor model of verbal self-concept structure to reveal whether the conflation of two self-concept components would show good or inadequate fit (Model 2). To substantiate the assumption, we inspected conflated models' relations with achievement tests in English and Russian (Model 3). Further, we investigated one-factor models for English and Russian to determine whether the conflation of two components of self-concept demonstrates similar or varied structure in two target languages.

Table 6

Goodness-of-Fit Indices for the First Part of The Study

Model	Model description	χ^2	*df*	CFI	TLI	RMSEA	SRMR
1.	1-factor model for a single verbal domain for English and Russian self-concepts (12 items related to cognition assumed to load on 1-factor)	2795.164	48	.579	.421	.326	.174
2.	2-factor model for English and Russian self-concepts (all 12 items assumed load on two factors)	1566.007	47	.720	.606	.245	.206
3.	2-factor model for English and Russian + achievements	3536.263	71	.553	.427	.301	.324
4.	1-factor model for English self-concept	675.813	9	.550	.250	.370	.179
5.	1-factor model for Russian self-concept	324.732	9	.844	.740	.255	.060
6.	2-factor model for English self-concept (cognitive and affective domains)	15.443	8	.995	.991	.042	.006
7.	2-factor model for Russian self-concept (cognitive and affective domains)	18.410	8	.995	.990	.049	.006
8.	2-factor model for English self-concept (cognitive and affective domains) + achievement	15.674	12	.998	.997	.024	.005
9.	2-factor model for Russian self-concept (cognitive and affective domains) + achievement	20.415	12	.997	.995	.036	.006
10.	4-factor model. Cognitive and affective components of verbal self-concepts (English and Russian cognitive and affective domains)	61.854	42	.996	.994	.030	.008
11.	6-factor model for English and Russian self-concepts and achievement tests in a corresponding domain	68.171	58	.999	.998	.018	
12.	Higher-order factor and 4-factor model	245.162	44	.963	.944	.092	.008 .116

Note. CFI=confirmatory fit index; TLI=Tucker-Lewis index; RMSEA= root mean square error of approximation; SRMR= standardized root mean square residual. All models contain the uniqueness of similar items which correlated across the domain.

Table 7

Correlations of input variables of Model 10 in Table 7, Figure 13A for the First Part of This Study

	1	2	3	4	5	6	7	8	9	10	11	12	*M*	*SD*	Uniqueness
1. I am good at English. EC1	1.00												2.50	.56	.165
2. Study in English is easier for me. EC2	.85	1.00											2.53	.57	.153
3. I learn English quickly. EC3	.85	.86	1.00										2.54	.60	.137
4. I like English. EA1	.55	.54	.56	1.00									2.63	1.19	.011
5. I enjoy learning English. EA2	.55	.55	.56	.98	1.00								2.63	1.20	.021
6. I am interested in English. EA3	.55	.54	.56	.99	.98	1.00							2.63	1.19	.011
7. I am good in Russian. RC1	.50	.49	.51	.22	.23	.22	1.00						2.53	.58	.200
8. Study in Russian is easier for me. RC2	.50	.49	.50	.24	.24	.24	.78	1.00					2.52	.68	.257
9. I learn Russian quickly. RC3	.51	.51	.52	.26	.26	.26	.79	.77	1.00				2.49	.72	.204
10. I like Russian. RA1	.53	.52	.54	.23	.23	.23	.78	.73	.78	1.00			2.53	1.38	.023
11. I enjoy learning Russian. RA2	.53	.52	.55	.25	.24	.24	.78	.74	.77	.97	1.00		2.54	1.59	.036
12. I am interested in Russian. RA3	.52	.51	.53	.23	.23	.23	.78	.73	.78	.98	.98	1.00	2.53	1.13	.011

Note. Correlation is significant at the $p<.001$ (two-tailed). Each item's uniqueness is the residual variance related uniquely to that item and is independent of residual variance related to other measured variables.

Next set of models comprises two-factor models for each language indicating separation of two dimensions (cognitive and affective) of verbal-self-concept (Models 6-9), as the competence- and affect- related items of each domain identified separate factors (Arens et al., 2011). Finally, due to test the construct validity of the self-concept scale within the context of the I/E frame of the reference model and to investigate the assumption that states cognitive domain of self-concept highly correlates with achievement result comparing to affective domain, we integrated English and Russian achievement results (Models 8-9).

To examine whether boys and girls demonstrate a comparable verbal self-concept construct in two target languages entailing separation of cognitive and affective components, we analyzed measurement invariance across student's gender by a three-step multi-group confirmatory factor analysis. The first stage is configural invariance which requires the same factors structures across groups, involving the similar number of factors and the similar compositions of items for each factor (Millsap, 2007). The next stage is metric invariance implies, additionally to configure invariance, that the factor loadings have the same magnitudes in all groups (Horn & McArdle, 1992). The final stage is scalar invariance (also strong factorial invariance; Meredith, 1993), in addition to metric invariance, entails that the measurement intercepts are equal across groups. Furthermore, the examination of gender variation in factor means further requires effect sizes that should be considered. Researchers (e.g., Marsh et al., 2004) are recommended to use suggested cutoff values only as rough guidelines.

5.1.3 Results

The two-factor models (Models 6-7 in Table 6) and the four-factor model (Model 10 in Table 5; Figure 13A) that assumed separate cognitive and affective components for English and Russian self-concepts fitted to the data adequately. However, the models (Models 1-8 in Table 6) that stated conflation of these two dimensions for both target languages did not demonstrate adequate fit to the data. The self-concept structure was well defined in two target languages, when cognitive and affective components differentiated within the corresponding domain, as we can see from significant and high standardized factor loadings (Figure 13A).

A

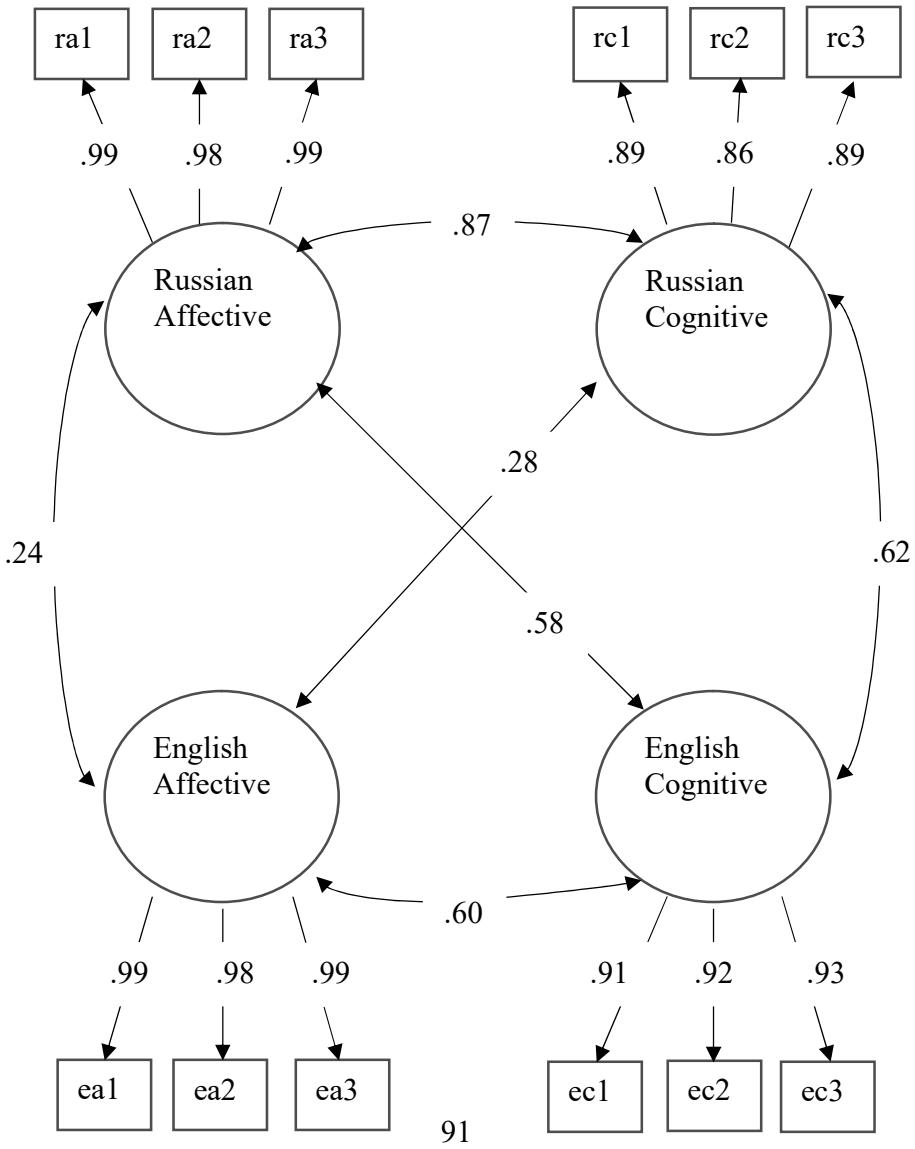


Figure 13A. 4-factor model. Cognitive and affective components of verbal self-concepts (English and Russian cognitive and affective domains)

As the model (Model 1 in Table 6) assuming all items to load on one factor and proposing one single verbal self-concept for two target languages has not demonstrated good fit to the data, we separated English and Russian domains (Model 2) and integrated achievement scores (Model 3) to test conflated models and their relations with achievement. Since the two-factor model for English and Russian did not show good fit, we examined one-factor model for each language separately (Models 4-5) whether the conflation of two verbal self-concept components generalizes or varies according to the specific language. One-factor models showed poor fit to the data that these findings support the assumptions of multidimensionality and separation of cognitive and affective components within specific language self-concepts.

As one-factor models demonstrated poor fit, we tested the next set of models that assumed separation of two verbal self-concept dimensions for each language. Based on goodness of fit values, the two-factor models (Models 6-7 in Table 6) indicating the separation of cognitive and affective components of self-concept showed good levels of fit to the data. Further we integrated achievement measures to the two-factor models that showed slightly better levels of good fit than when achievement measures were not included in both English (Model 8: ΔCFI = -.003; ΔTLI = -.006; ΔRMSEA = +.018; ΔSRMR = +.001) and Russian (Model 9: ΔCFI = -.002; ΔTLI = -.005; ΔRMSEA = +.013; ΔSRMR = +.000). These findings were showed to be similar across two target languages.

In the next step, we investigated the internal structure of verbal self-concept assessing English and Russian cognitive and affective components in one model (Model 10) which demonstrated excellent fit indices. Two dimensions of verbal self-concept were well defined, explicit from significant and positive standardized factor loadings. Figure 8A depicts standardized factor loadings resulting from Model 10. For the external structure of verbal self-concept, we incorporated achievement measures in the model (Model 11) that showed the best fitting model.

Table 6 reports the standardized correlations between conflated and separated models with achievement measures. The relations between conflated models and achievement measures in matching domain were weak compared to the nonmatching domain, which showed a near-zero correlation.

Table 8

Standardized Correlations between Latent Constructs and Achievements in English and Russian

Variables	Conflated model		Separated model			
	English SC	Russian SC	English SC cognitive	English SC affective	Russian SC cognitive	Russian SC affective
English ACH	.130**	.084**	.782**	.100**	-.023	.177**
Russian ACH	.037**	.121**	-.003	.007	.931**	.072*
English SC	1.00		-	-	-	
Russian SC	.244**	1.00	-	-	-	

Note. SC= self-concept, ACH= achievement.

**p<.001, *p<.05

Testing separated models; results demonstrated a high positive correlation between cognitive domains of two target languages (r=.62; p<.001) while the correlation between affective components was weak but positive (r=.24; p<.001) (Figure 13A). Consistent with other studies (Möller et al., 2009; Xu et al., 2013) English and Russian achievements were

substantially and positively correlated (r = .90). As we expected that cognitive dimension which entailed student's ability would correlate with achievement in a corresponding domain, the correlations between cognitive component and achievements across languages were high (English r=.79; Russian r=.95, p<.001, Figure 13B), but correlations between affective dimension and achievement in corresponding domains of two target languages were low or near zero (English r=.10; Russian r=.07; p<.001).

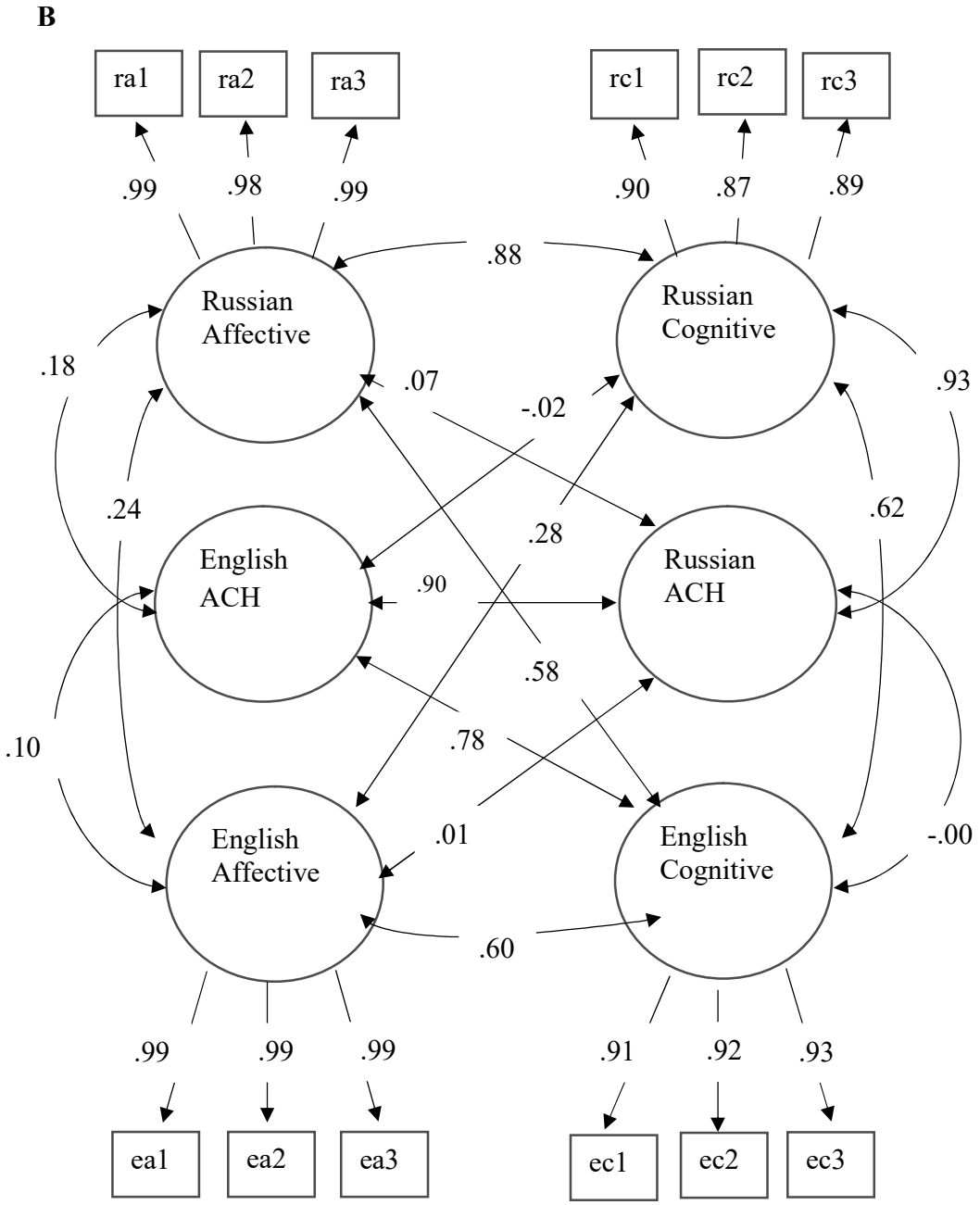


Figure 13B. Test measurement models (see also Table 5, Model 10-11, Table 6) with standardized model parameters. Other parameters such as intercepts and correlations among uniquenesses of parallel items are estimated but are omitted for clarity (see also Table 7). *Note.* ACH= Achievement.

However, there are insignificant relations between English achievement and cognitive component of Russian self-concept (r=-.02, *n.s.*); and between Russian achievement and cognitive component of English self-concept (r=.007, *n.s.*).

However, examining a higher-order with four first-order factors, the model was found to have a poor fit (Model 14 in Table 6). The findings confirm the separation of self-concepts into cognitive and affective components. The findings of the internal structure of English and Russian self-concepts imply the validity of the twofold multidimensional nature of verbal self-concept that is separated into specific domains such as English and Russian indicating the impossibility of one single verbal self-concept cannot represent multilingual learners, and into cognitive and affective components within each domain.

For examination of gender difference between girls and boys across models, measurement invariance has been tested, assuming boys and girls produced the same results. Table 9 provides structural invariance at the first stage that demonstrated perfect model fit to the data. Model-data fit x^2 value is statistically significant at the significance level of 0.01. These results indicate that the four-factor model consisted of cognitive and affective components of verbal-self-concepts for English and Russian is significant and available in each gender. The next stage of invariance is metric invariance showing that all goodness-of-fit values are between acceptable score range for adequate model fit. This result indicates the availability of the similar predictive level and the similar order of each index for boys and girls. The final stage is scalar invariance that also demonstrated adequate levels of fit pointing the same correlations between factors in each gender subgroup.

Table 9

Goodness-of-Fit Indices of Partial Invariance across Gender for Model 10, Figure 13B

Invariance	Gender	χ^2 contribution	χ^2	*df*	*p*	CFI	TLI	RMSEA	SRMR
Configural invariance	Boys	89.830	126.471	84	.000	.990	.984	.043	.022
	Girls	36.641							
Metric invariance	Boys	91.391	133.690	92	.000	.990	.985	.041	.030
	Girls	42.299							
Scalar invariance	Boys	93.024	142.830	100	.000	.990	.986	.040	.038
	Girls	49.806							

Note. CFI=confirmatory fit index; TLI=Tucker-Lewis index; RMSEA=root mean square error of approximation; SRMR=standardized root mean square residual.

However, when achievement measures were included in the four-factor model, the model fit was declined for configural invariance and showed poor model fit to the data (χ^2 = 301.622, CFI = .969, TLI = .955, RMSEA = .072, SRMR = .111). Moreover, the girls' mean levels were revealed significantly positively deviate from boys in all components of both target languages (Table 4; Figure 14). Therefore, girls demonstrated higher mean levels in cognitive and affective components of English and Russian self-concepts.

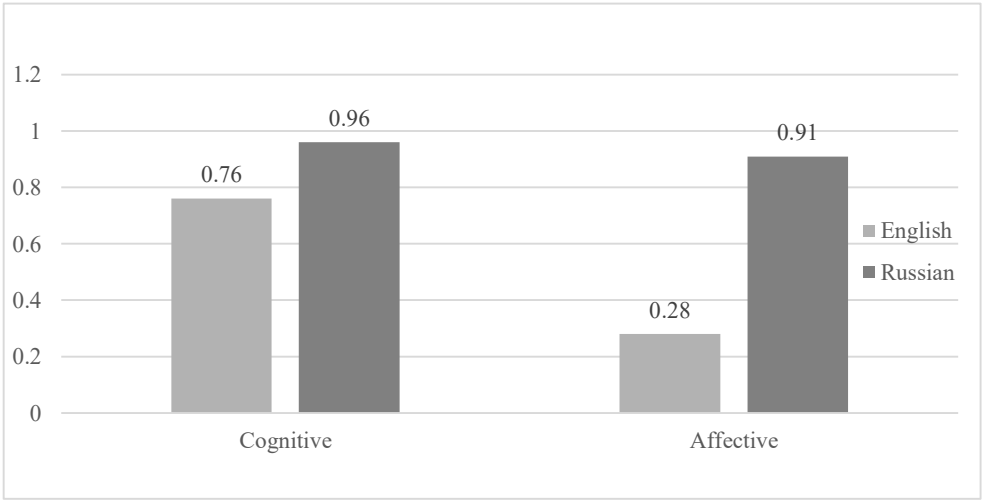


Figure 14. Self-Concept Components across Gender. Effect sizes (Cohen's d) of gender differences in latent means of self-concept components. Positive values demonstrate higher values for girls (*p*s<0.001).

5.1.4 Discussion

This study's primary purposes were (1) to examine affective and cognitive components of English and Russian self-concepts, (2) to validate the structure of verbal self-concept showing the impossibility of single verbal self-concept to represent multilingual learners. Moreover, verbal self-concept structure was tested in terms of gender invariancy. Previous research on the cognitive and affective dimensions of the academic domain has revealed a distinction between these two components in mathematics and verbal domains (Abu-Hilal, 2005; Arens et al., 2011; Marsh & Ayote, 2003; Pinxten, 2014), in science and mathematics domains (Abu-Hilal et al., 2012). Therefore, the present study amplified evidence of the separation of self-concept facets by maintaining it within the verbal domain of self-concept and supporting the argument that two dimensions should be separated and not conflated.

Further substantiate the notion of twofold multidimensionality, the higher-order analysis in SEM provided additional evidence by demonstrating an invalid higher-order construct. The separation of verbal self-concept into cognitive and affective dimensions provided clear comprehension to relationships and made them distinguished, indicating effective component as a part of affective self than social self. As we hypothesized, cognitive components of verbal self-concepts had a stronger correlation with achievement measures corresponding domain than affective components that similar results were reported for classical academic self-concepts by Arens et al. (2011). This pattern provides further evidence of the importance of the separation between competence and affective components within more skill-specific domains such as reading, listening, writing and speaking.

Most of the studies (Fredricks & Eccles, 2002; Jacobs, Lanza, Osgood, Eccles, & Wigfield, 2002; Skaalvik & Skaalvik, 2004; Wilgenbusch & Merrell, 1999) inspected gender differences in mean levels of classical academic self-concepts have revealed the conformity of these differences to gender stereotypes. Thus, consistency with these studies, the present study supports the evidence indicating that girls showed higher mean levels of language self-concept than boys. However, this study also aligned with some studies (Arens, Yeung, Craven, & Hasselhorn, 2011) confirmed the structure of academic self-concept positing different two dimensions were invariant across gender subgroups.

Moreover, this study provided evidence of the multidimensionality and domain specificity of the verbal domain of self-concept, indicating a distinction between two different language self-concepts. Weak correlation between English and Russian in conflated models (r = .24) did not allow a single verbal self-concept structure to adequately entail the self-concepts in English as a first foreign language and Russian as a second foreign language. This result supports

Yeung and Wong (2004) finding showing the inadequacy of one single verbal self-concept for different languages. It is interesting to note that correlations between cross domains of English and Russian cognitive self-concepts with achievements were near zero and not statistically significant.

In respect of I/E model extended to the insertion of competence and affective components within the verbal domain, the findings indicated a higher correlation of English and Russian achievements with the cognitive components of matching self-concept domains but nonsignificant correlation between nonmatching domains (Marsh & Hau, 2004).

The construct validity of verbal self-concepts for two dimensions is evident from the relation between these components in two target languages and their achievement measures. Marsh's (1986) I/E theory provided a framework for self-concept research and indicated the multidimensional nature of self-concept that is based on further self-concept models. These findings might benefit language self-concept research enriching the present scope of the relations between language achievement in different foreign languages and two dimensions (cognitive and affective), making the current study worthy of attention.

5.2 The Internal/External Frame of Reference of Math, English, and Russian Self-Concepts

5.2.1 Introduction

Considering classical I/E model that implies negative effect of high performance in one school domain on the opposing domain of academic self-concept, this prediction has been framed by classical domains (mathematics and first language) of academic self-concepts (Marsh & Shavelson, 1985). Therefore, the present study aims to examine I/E model of academic self-concept within math and nonnative languages. The study's question is whether achievements in

both nonnative languages (English and Russian) contrast with mathematics achievement or whether one of nonnative language contrasts with mathematics achievement.

5.2.2 Methodology

5.2.3 Results

Firstly, we analyzed the I/E model of relations between self-concepts in two subjects and their achievements. The results of the I/E model for English and mathematics (Model 1 in Table 10, Figure 15A), for Russian and mathematics (Model 2 in Table 10, Figure 15B), for English and Russian (Model 3 in Table 10, Figure 15C) indicated strong, positive, significant correlation among achievements and self-concepts in the matching domains but weak (near zero), negative correlations among achievements and noncorresponding domains.

Table 10

Goodness-of-Fit Indices for Models for the Second part of This Study

Model description	χ^2	*df*	CFI	TLI	RMSEA	SRMR
1. I/E model for English and math; Figure 10A	14.960	13	.999	.998	.017	.016
2. I/E model for Russian and math; Figure 10B	20.610	13	.997	.995	.033	.017
3. I/E model for English and Russian; Figure 10C	29.049	15	.997	.994	.042	.024
4. First-order model in math English and Russian; Figure 10D	59.174	35	.992	.986	.048	.018
5. I/E model math, higher-order in verbal self-concept and achievement	911.668	39	.854	.759	.200	.112

Note. CFI=confirmatory fit index; TLI=Tucker-Lewis index; RMSEA= root mean square error of approximation; SRMR= standardized root mean square residual.

A

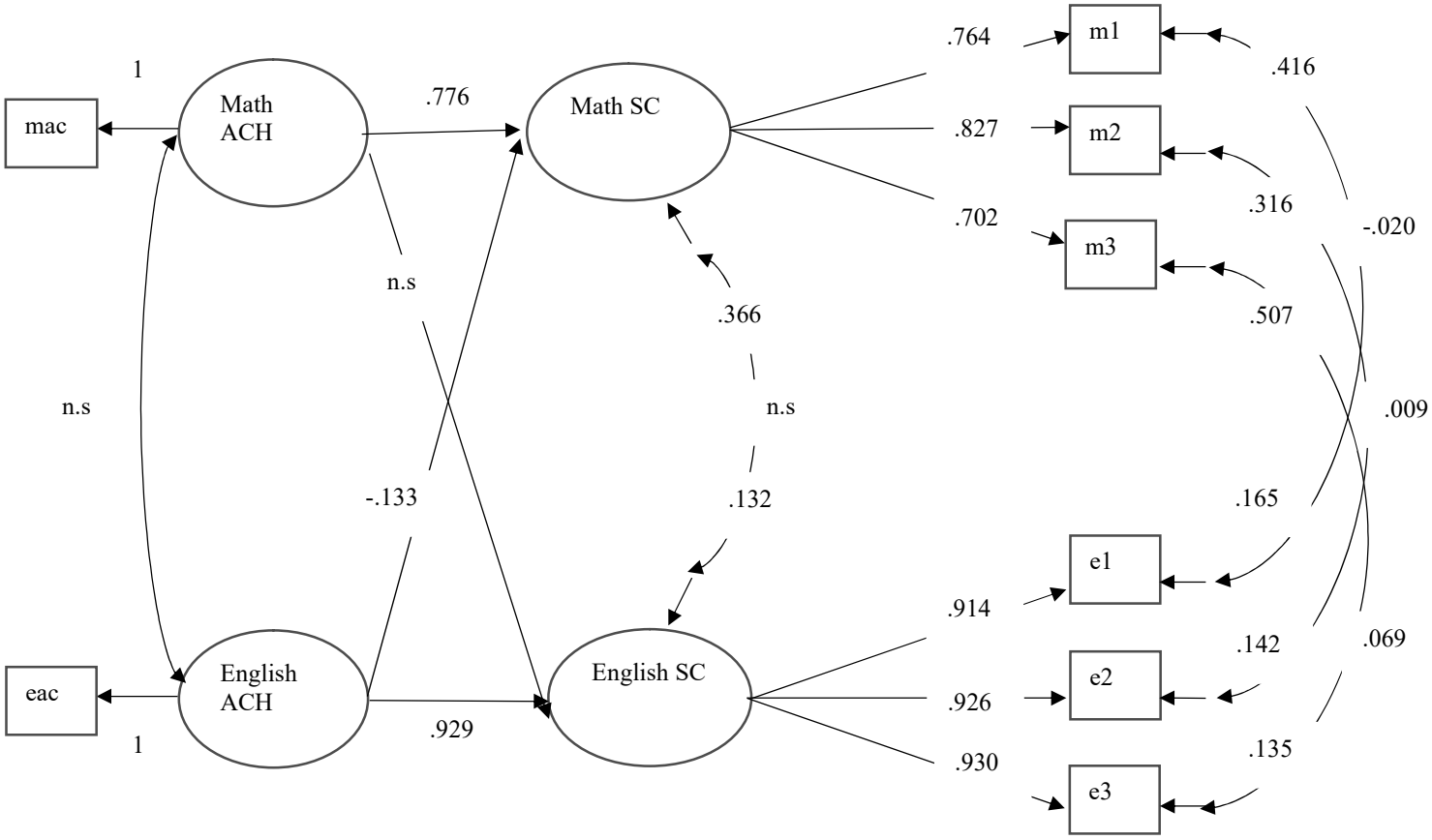


Figure 15A. I/E model for English and math.

B

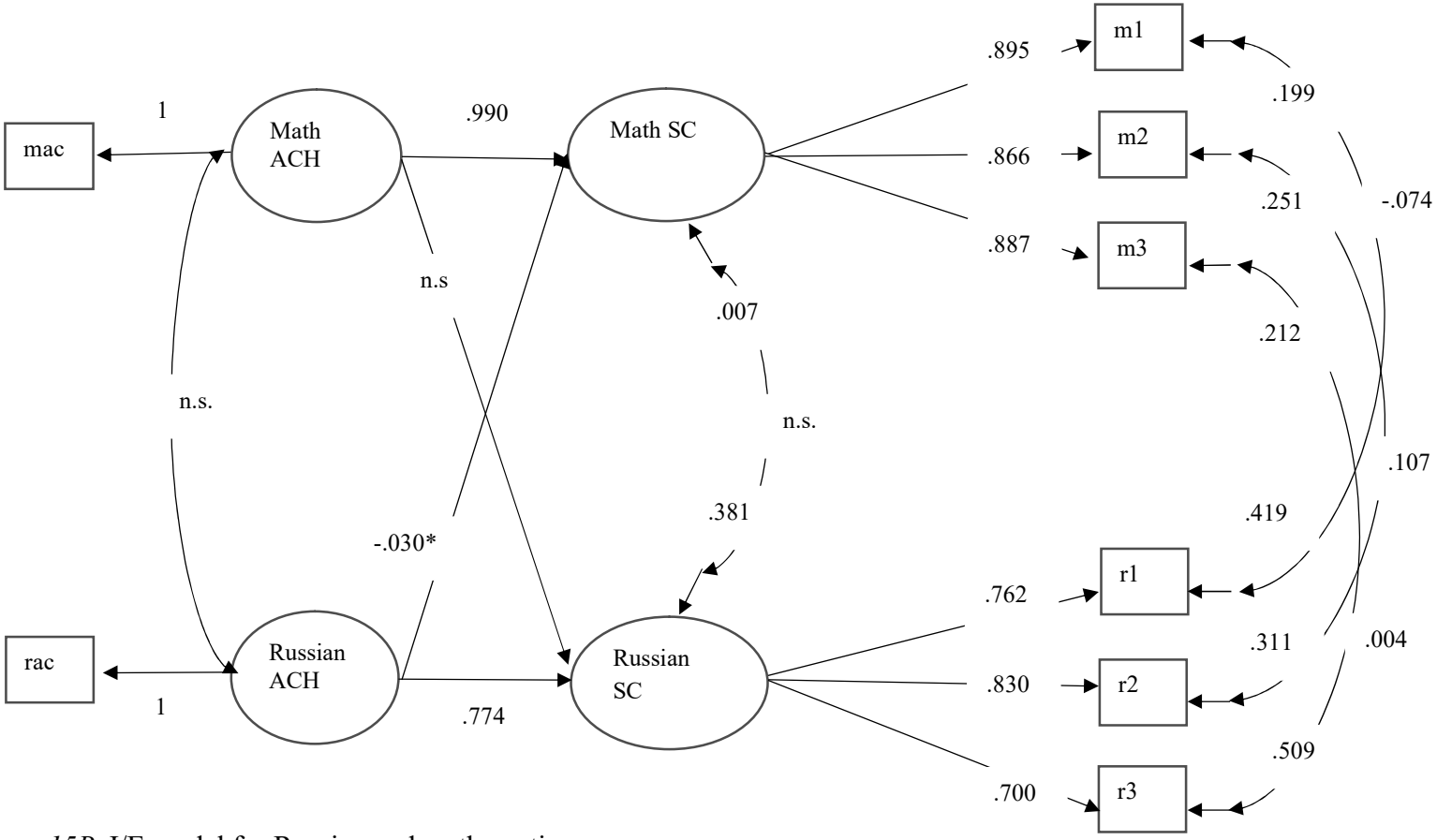


Figure 15B. I/E model for Russian and mathematics

C

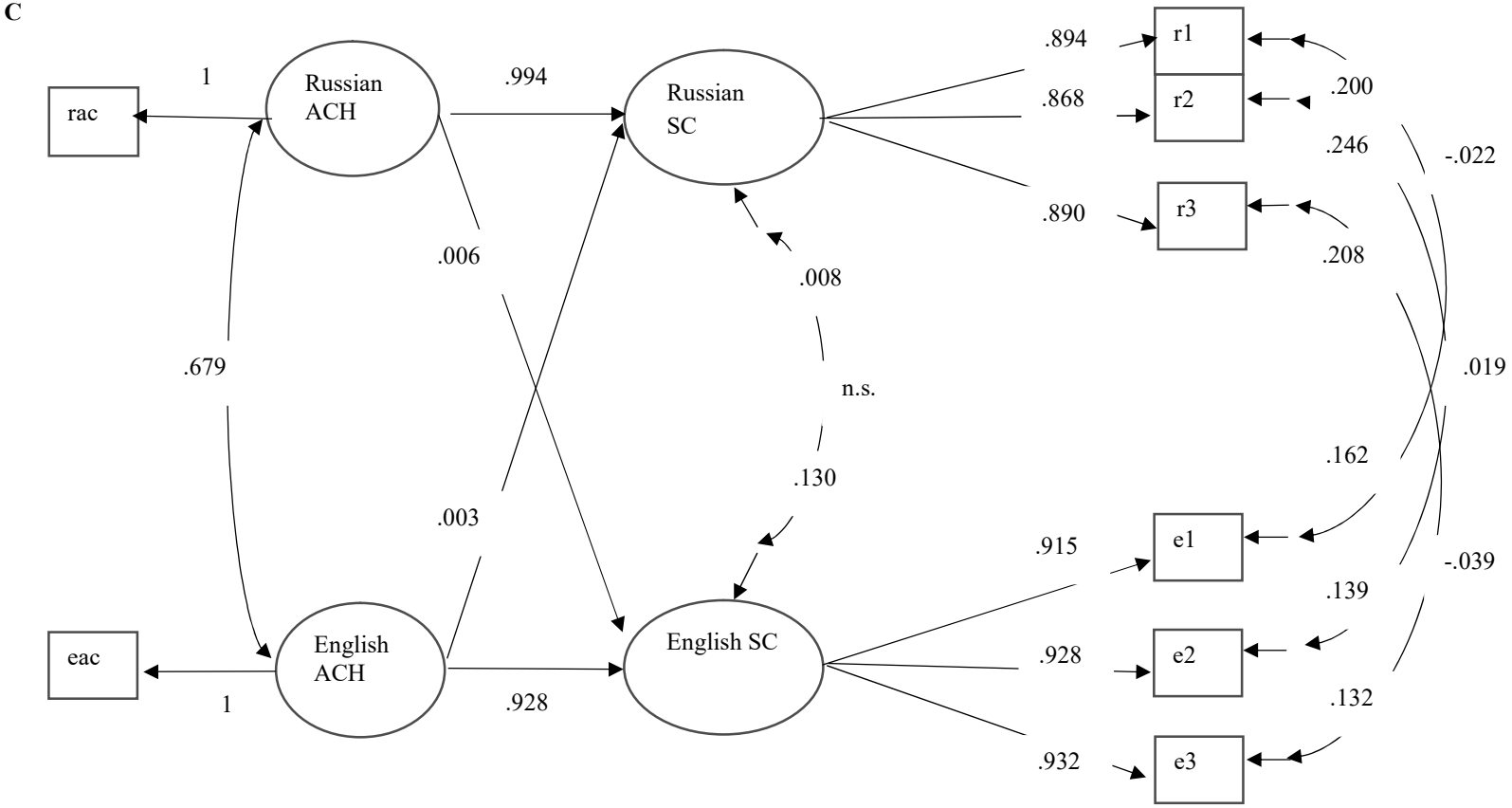


Figure 15C. I/E model for English and Russian

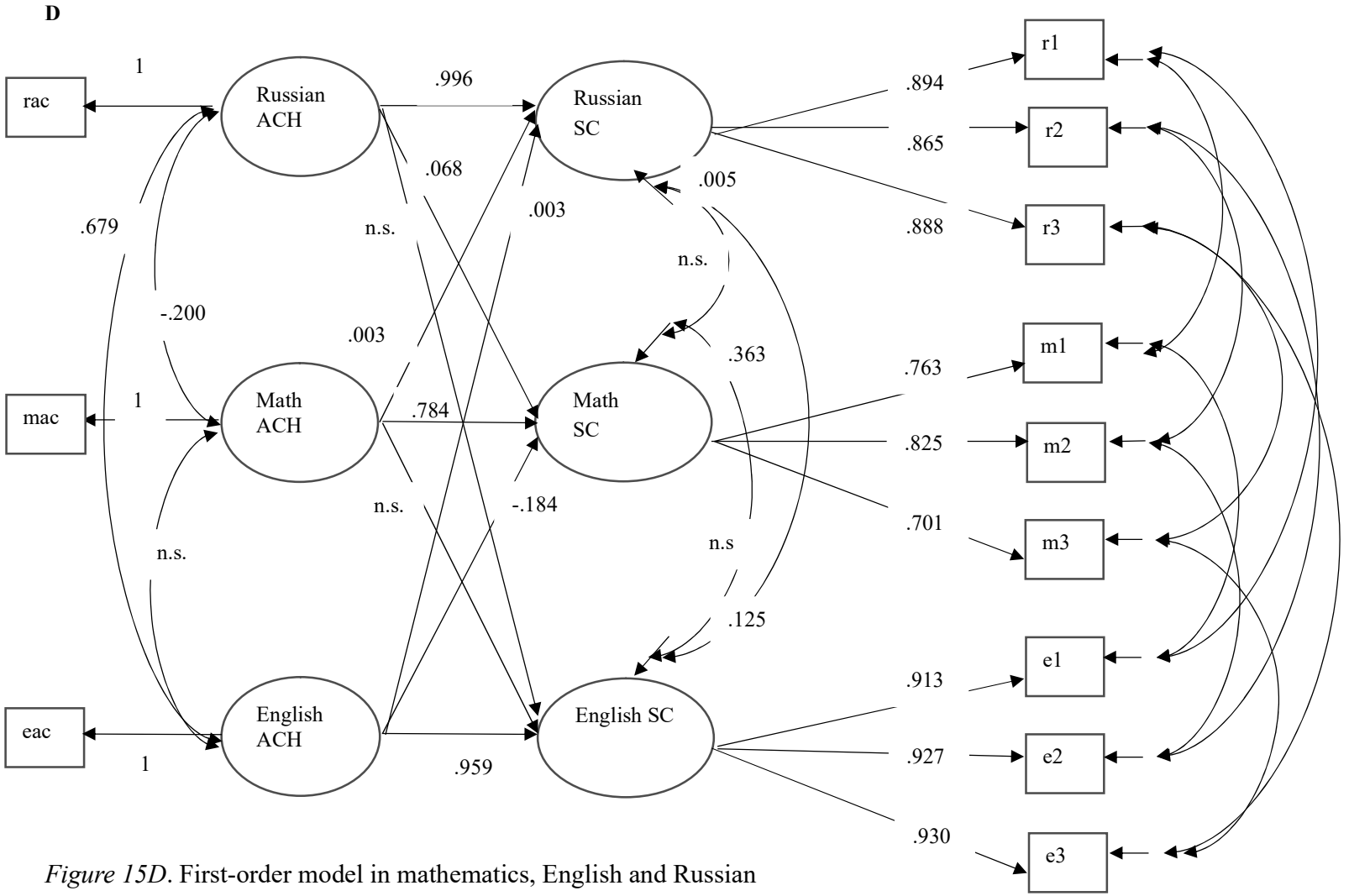


Figure 15D. First-order model in mathematics, English and Russian

Table 11

Means, Standard Deviations, Standardized Factor Loadings and Uniquenesses of Each Item for Model 4 Figure 15D

Items	*M*	*SD*	Factor loading*	Uniqueness*
1. I am good at English (e1).	2.50	.56	.913	.167
2. Study English is much easier for me (e2).	2.53	.56	.927	.141
3. I learn English quickly (e3).	2.54	.60	.930	.135
4. I am good in Russian (r1).	2.53	.58	.894	.201
5. Study Russian is much easier for me (r2).	2.52	.68	.865	.251
6. I learn Russian quickly (e3).	2.49	.72	.888	.212
7. I am good at math (m1).	2.54	.35	.763	.418
8. Study math is much easier for me (m2).	2.54	.41	.825	.319
9. I learn math quickly (m3).	2.63	.40	.701	.509

Note. Each item's uniqueness is the residual variance related uniquely to that item and is independent of residual variance related to other measured variables. *p<.001.

Moreover, we found two target languages opposed to mathematics (Figure 15A, B). Although, the positive and high (.679 in Table 12) correlation was revealed within achievements in the English and Russian. However, there were low (near zero) and negative (.003, -.040 in Table 12) correlations between corresponding domains in English and Russian I/E model. Therefore, it was not easy to integrate the higher-order verbal factor (Model 5 in Table 10).

Table 12

Standardized Latent Factor Correlations for Model 10, Figure 10D

Measure	1	2	3	4	5
1.English SC	-				
2. Russian SC	.363	-			
3. Math SC	.112	-.406	-		
4. English ACH	.959**	.003**	-.184**	-	
5. Russian ACH	-.040	.996**	.068	.679**	-
6. Math ACH	-.036	.003**	.784	-.068	-.200**

Note. SC= self-concept; ACH= achievement; **p<.001.

Model 4 (Table 10, Figure 15D) included three school subjects in a single model and indicated a good fit to the data since the fit indices were above criterion (CFI = .992, TLI = .986). There were low, negative correlations between mathematics achievement with two target language achievements, r = -.200 and r = -.068, respectively. There were strong, positive and significant the paths from English achievement to English self-concept (r = .959), from Russian achievement to Russian self-concept (r = .996), and from mathematics achievement to mathematics self-concept (r = .784). However, the negative and nonsignificant (r = -.036) cross path from mathematics achievement to English self-concept was found, and near zero but significant positive (r = .003) cross path to Russian self-concept was revealed. Russian achievement showed positive, nonsignificant, near-zero relation to mathematics self-concept (r = .068) but indicated negative, nonsignificant, near-zero relation to English self-concept (r = -.040). English achievement related to mathematics self-concept negatively (r = -.184) but showed positive, near-zero, significant correlation with Russian self-concept (r = .003).

In summary, Russian achievement showed a nonsignificant correlation with mathematics and English self-concepts while English and mathematics achievements significantly related to Russian self-concept. But the path from English achievement to mathematics self-concept was significant negative, but the path from mathematics achievement to English self-concept was statistically nonsignificant negative.

The next stage, the higher-order factor, was tested for a single verbal domain of self-concept in the I/E model for English and Russian languages. As we expected, it indicated a inadequate fit to the data (Model 5 in Table 10). From Table 13, the I/E model of self-concept in three school domains provided structural invariance.

Table 13

Goodness-of-Fit Indices of Measurement Invariance across Gender for Model 4

Invariance steps	Gender	χ^2 contribution	χ^2	*df*	*P*	CFI	TLI	RMSEA	SRMR
Configural invariance	Boys	56.39	98.257	66	.01	.990	.982	.043	.033
	Girls	41.86							
Metric invariance	Boys	56.80	101.710	72	.01	.991	.984	.039	.040
	Girls	44.91							
Scalar invariance	Boys	68.31	137.164	81	.00	.983	.974	.051	.080
	Girls	68.86							
Strict (factor invariance)	Boys	104.931	266.741	86	.00	.946	.921	.088	.281
	Girls	161.810							
Strict (residual invariance)	Boys	197.534	440.726	92	.00	.896	.857	.118	.302
	Girls	243.192							

Note. CFI=confirmatory fit index; TLI=Tucker-Lewis index; RMSEA= root mean square error of approximation; SRMR= standardized root mean square residual.

All fit indices are excellent for perfect model-data fit indicating significance and availability of I/E self-concept structure in three domains for each gender. Next step was metric invariance. Providing fit indices, it showed the similar predictive level and the similar order of each index variable for each gender. Therefore, there was not an item bias between gender. However, we revealed from scalar and strict invariance outcomes that the model did not remain the similar across boys and girls when error correlations of factors and all model parameters were restricted. Thus, scalar, and strict invariances have not been met.

5.2.4 Discussion

The present research aims to examine classical mathematics/verbal I/E model of academic self-concept incorporating English and Russian. To determine the structure, we specified various latent variable models. First, we analyzed first-order factors in two target languages and mathematics self-concepts, next we combined verbal self-concepts in a second order to oppose mathematics self-concept. Findings did not provide evidence the assumption that English and Russian self-concept introduced a single verbal domain consistent with Yeung and Wong (2004) results which showed that the verbal self-concept structure could be very distinct and uncorrelated with each other. Therefore, it supports multidimensionality and domain-specificity of academic self-concept.

Moreover, measurement invariance tests: configural and metric of the academic self-concept indicated that academic self-concept constructs were invariant across boys and girls. In contrast, scalar and strict invariance measurement scores indicated a distinction between boys and girls when error correlations of factors and all model parameters were restricted.

The correlations between math and two target languages self-concepts were near zero or negative (math and English, r = -.036; math and Russian r = .003)but in lined with relations

between math and language self-concepts (r = -.07 to r = .13) reported by Marsh et al. (2001). But these relations were not significant. The results that indicate the statistical significant with near-zero correlation (r = .003) path from English achievement to Russian self-concept and nonsignificant, negative path from Russian achievement to English self-concept entail separate self-concept constructs for each foreign language and imply that achievement in one verbal domain will not affect student's self-concept in another.. This result contributes previous studies (Marsh et al., 2001; Möller et al., 2006; Yeung & Wong, 2004).

5.3 Self-Concept in Reading and Listening of English and Russian: Multidimensionality and Hierarchy.

5.3.1 Introduction

Since academic self-concept has been defined as a multidimensional and hierarchical construct, most studies have focused on the distinction between verbal and math domains, and only three studies have investigated the verbal self-concept structure. This study reports the correlations and structural variations of specific verbal self-concepts between English and Russian. Confirmatory analysis revealed the multidimensional nature of verbal self-concept, which was supported by the better-fitted multidimensional models. The notion of hierarchy was supported by the high association of both listening and reading scores with the global self-concept factor. The achievement scores highly related to higher-order factors, while school grades highly correlated to the global self-concept factor. There were low correlations between skill-specific self-concepts in English and high correlations in Russian. This study provides evidence for multidimensionality and hierarchy within verbal self-concept domain.

5.3.2 Methodology

5.3.2.4 Statistical Analysis

Several sets of models were conducted within the structural equation modeling (SEM) framework, which is recognized as an adequate method for examining hypotheses and models. Statistical analysis has been depicted in the literature (Byrne, 2012; Kline, 2011; Tabachnick & Fidell, 2006; Schumacker & Lomax, 2016). From observed skewness and kurtosis (Table 3) we selected default estimator which is the maximum likelihood (ML) to be proper with normality assumptions and proper to analyze of scales with four categories as continues (Beauducel & Herzberg, 2006). All models were examined in the two domains of English and Russian separately.

As scales comprised parallel wording such as “I am good in English”, the model fit could incline to be adequate and the parameter estimates prone to be biased, inducing incorrect findings (Marsh & Hau, 1996; Xu et al., 2013). Hence, correlated uniqueness was recommended in the examination of models, when the similar item is used for different domains (Marsh & Hau, 1996; Marsh et al., 2012). Moreover, as the study included the comparison of nested models, whether the correlation between skill-specific self-concept and achievement scores were of the similar or different size, several model parameters are fixed in the nested model but freely estimated in the general model. Since chi-square value can depend on sample size, most researchers (Byrne, 2012; Chen, 2007; Cheung & Rensvold, 2002; Kline, 2011; Marsh et al., 2005) suggested various goodness of fit indices for assessment and comparison of nested models. Invariance occurs when the value of CFI does not decrease more than .01, and the value of RMSEA does not increase more than .015 between nonrestrictive and restrictive models.

Firstly, we tested multidimensional models and compared them with unidimensional models. In unidimensional models (Models 1-2 in Table 15), the items of two different verbal

skills (listening and reading) were evaluated in terms of one common first-order factor and global self-concept that determined by three items (Figure 16A).

Table 14

Means, Standard Deviations, Standardized Factor Loadings and Uniquenesses of Each Item for Model 3-4, Figure 16B

	M	*SD*	Factor Loading*	Uniqueness*
Items for English three-factor model				
1. I am good at English. (ssc1)	3.04	.48	.905	.182
2. Study English is much easier for me. (ssc2)	3.06	.54	.930	.136
3. I learn English quickly. (ssc3)	3.04	.48	.883	.220
4. I am good at listening in English. (lsc1)	2.25	1.16	.987	.027
5. Study listening in English is easy for me. (lsc2)	2.32	1.02	.954	.089
6. I believe I can learn listening in English quickly. (lsc3)	2.27	1.08	.970	.058
7. I am good at reading in English. (rsc1)	2.77	.69	.894	.200
8. Study reading in English is easier for me. (rsc2)	2.80	.68	.891	.207
9. I believe I can learn reading in English quickly. (rsc3)	2.82	.70	.931	.134
Items for Russian three-factor model				
10. I am good in Russian. (ssc1)	3.15	.46	.881	.223
11. Study Russian is much easier for me. (ssc2)	3.18	.48	.924	.145
12. I learn Russian quickly. (ssc3)	3.18	.48	.883	.220
13. I am good at listening in Russian. (lsc1)	2.21	1.22	.992	.016
14. Study listening in Russian is easier to me. (lsc2)	2.28	1.07	.964	.071
15. I believe I can learn listening in Russian quickly. (lsc3)	2.25	1.17	.973	.054
16. I am good at reading in Russian. (rsc1)	2.91	1.13	.940	.117
17. Study reading in Russian is easier to me. (rsc2)	2.95	1.00	.948	.101
18. I believe I can learn reading in Russian quickly. (rsc3)	3.00	.98	.971	.058

Note. Each item's uniqueness is the residual variance related uniquely to that item and is independent of residual variance related to other measured variables. *p<.001.

A

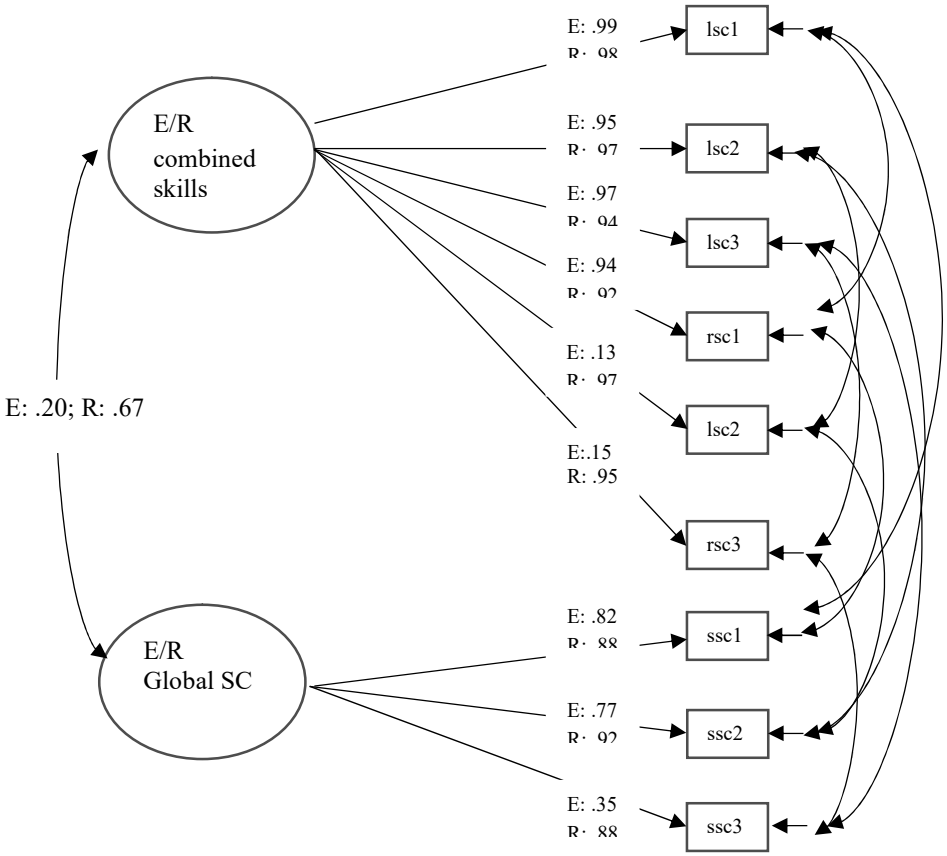

E/R
combined
skills
E/R
Global SC
E: .20; R: .67
E: .99
R: .98
E: .95
R: .97
E: .97
R: .94
E: .94
R: .92
E: .13
R: .97
E:.15
R: .95
E: .82
R: .88
E: .77
R: .92
E: .35
R: .88
lsc1
lsc2
lsc3
rsc1
lsc2
rsc3
ssc1
ssc2
ssc3

Table 15

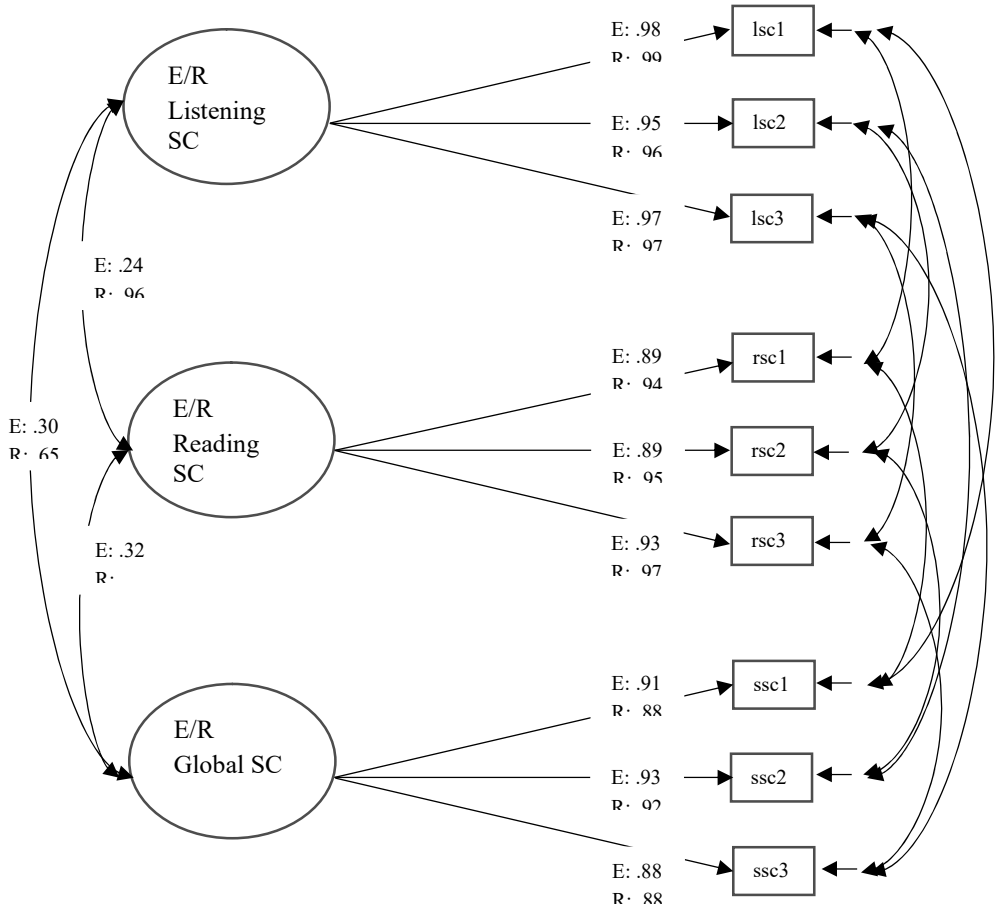
Goodness-of-Fit Indices for Models

	Model description	χ^2	*df*	CFI	TLI	RMSEA	SRMR
1.	Unidimensional model (listening and reading skills) + global self-concept for English	1410.797	17	.757	.485	.390	.249
2.	Unidimensional model (listening and reading skills) + global self-concept for Russian	228.098	17	.972	.940	.153	.018
3.	Three -factor model for English	20.773	16	.999	.998	.024	.055
4.	Three-factor model for Russian	35.683	15	.997	.993	.051	.013
5.	Higher-order model for English + global self-concept	49.548	15	.993	.984	.065	.016
6.	Higher-order model for Russian + global self-concept	39.495	15	.997	.992	.055	.013
7.	Three-factor model for English + reading and listening tests	43.561	28	.998	.996	.032	.010
8.	Three-factor model for Russian + reading and listening tests	66.285	31	.996	.994	.046	.011
9.	Higher-order model for English + global self-concept + school grade in English	40.416	23	.997	.994	.037	.042
9a.	Higher-order model for English + global self-concept + school grade in English; invariant correlation for higher-order and global factors to school grade	99.347	23	.987	.975	.078	.163
10.	Higher-order model for Russian + global self-concept + school grade in Russian	48.787	22	.997	.993	.047	.013
10a	Higher-order model for Russian + global self-concept + school grade in Russian; invariant correlation for higher-order and global factors to school grade	69.881	23	.995	.989	.059	.066
11.	Higher-order model for English + global self-concept + combined listening and reading achievement test scores	1166.755	31	.841	.717	.260	.551
11a.	Higher-order model for English + global self-concept + combined listening and reading achievement test scores; invariant correlation for higher-order and global factors	1166.755	31	.841	.717	.260	.551
12.	Higher-order model for Russian + global self-concept + combined listening and reading achievement test scores	271.841	31	.976	.958	.120	.044
12a.	Higher-order model for Russian + global self-concept + combined listening and reading achievement test scores; invariant correlation for higher-order and global factors	512.516	31	.952	.915	.170	.081

Note. CFI=confirmatory fit index; TLI=Tucker-Lewis index; RMSEA= root mean square error of approximation; SRMR= standardized root mean square residual.

The multidimensional models (Models 3-4, Figure 16B) supposed distinct first-order factors for skill-specific self-concepts in both target languages and one global factor. Three first-order factors in the model consisted of two skill-specific self-concept factors (reading and listening), each determined by three items. Still, the global factor reflects general language self-concept. Subsequently, Models 5-6 (Figure 16C) assessed due to testify the hierarchy of verbal self-concepts, and each model integrated a higher-order factor comprised two skill-specific self-concept factors next to the general self-concept factor.

B



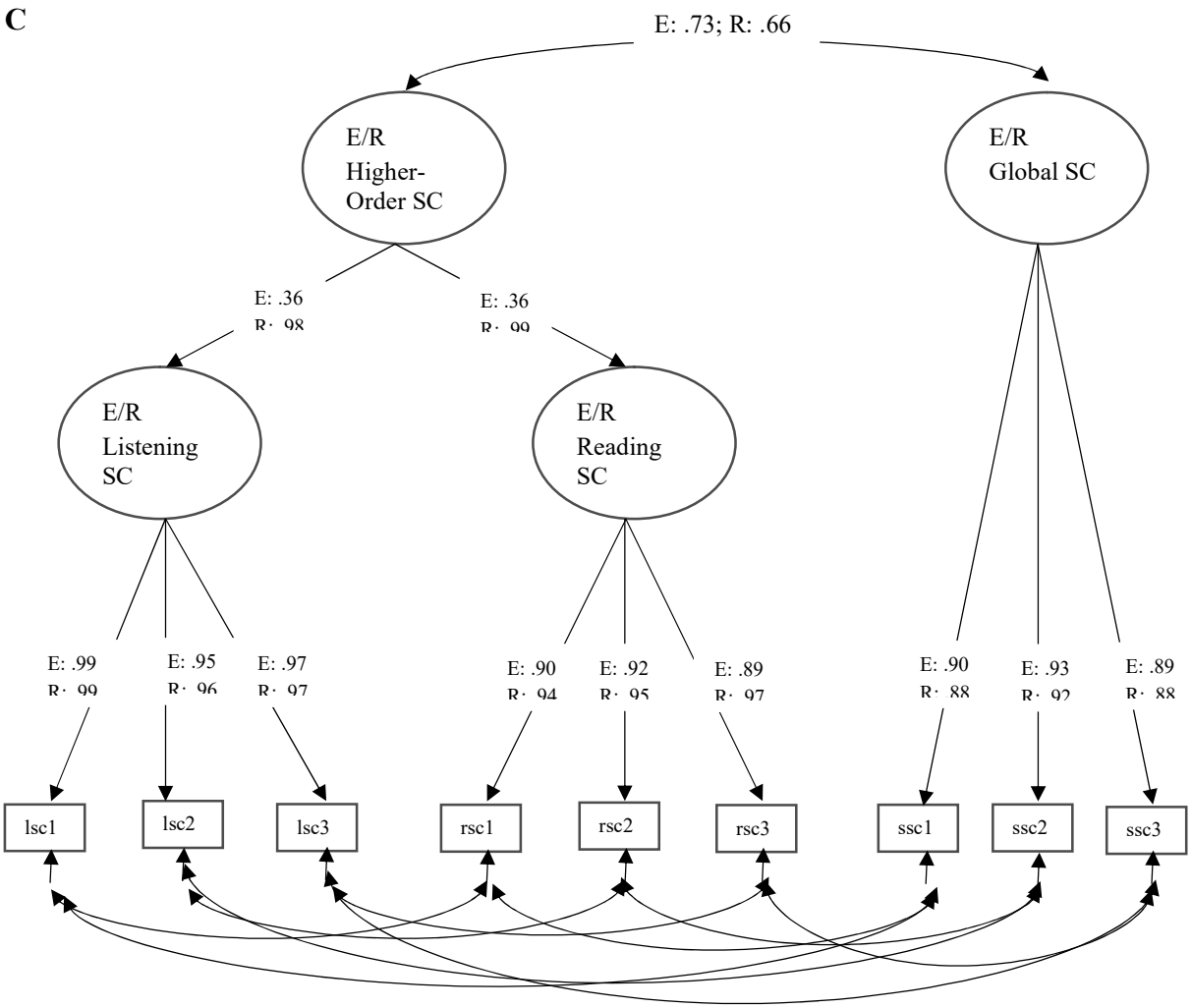


Figure 16. A = Unidimensional model (listening and reading skills) + global self-concept for English and Russian; B = Three -factor model for English and Russian; C = Higher-order model for English and Russian + global self-concept. Tested measurement models (Table 15, Model 1-6), all parameters are standardized. The covariances for self-concept item residuals were correlated uniqueness for the parallel worded items. *Note.* E = English; R = Russian; SC = Self-Concept. All parameters were statistically different from zero (p<.001).

Furthermore, we added achievement scores to the models. Three-factor multidimensional models (Models 7-8) contained students' achievements in listening and reading tests. To find out relations higher-order factor and global factor with achievement, achievement scores were added to the higher-order models (Models 5-6). Therefore, we used two approaches. Firstly, we added

school grades and in the next stage, achievement scores were included in the higher-order models (Models 9-12).

5.3.3 Results

Three-factor models (Models 3-4 in Table 15, Figure 16B) indicating separate factors for listening and reading self-concepts including global self-concept demonstrated good levels of fit to the data comparing to the models which indicated a unidimensional factor for all skill-specific scales including general self-concept factor (Models 1-2, Figure 16A) and demonstrated poor fit to the data. Moreover, based on the goodness of fit indices, it has been found that there was a slight difference between the three-factor structures of students' self-concepts in two target languages (English, Russian). From the significant and standardized factor loadings, it was evident that the skill-specific facets were well-defined (Figure 16B). The correlations between two skill-specific self-concepts from three-factor models varied according to two target languages (Table 16).

Table 16

Standardized Factor Correlations between the Self-concept Facets for the Three-Factor (Model 3-4 in Table 15)

	Reading	Listening
English listening	.241	
Russian listening	.962	
Global English	.320	.295
Global Russian	.657	.650

Note. All correlations are statistically different from zero (p <.001).

Despite low correlation for English (r = .24) and reasonably high correlation for Russian (r = .96), we examined the higher-order factor for both target languages. From these correlations,

it was obvious that multidimensionality within language self-concept was more emphasized in English domain than Russian. Despite high correlations in Russian, relations between skill-specific facets were not perfect, demonstrating students' ability to distinguish between skill-specific self-concepts.

Furthermore, the higher-order models (Models 5-6; Figure 16C) based on first-order factors of skill-specific self-concepts (listening and reading) and besides global self-concept resulted in inadequate levels of fit. Standardized loadings of the first-order skill-specific self-concept factors provided evidence for well-defined high order factor. The relation between higher-order and general factors was high in both languages demonstrating slight high in English (r = .73, p<.001) compared to Russian (r =.66, p<.001). Therefore, these results provide evidence for the coexistence of multidimensionality and hierarchy within specific language self-concepts.

To further contribute to the concept of multidimensionality, student's achievement in listening and reading achievement tests were incorporated, and the relation between skill-specific self-concept and achievement was assessed (Table 17).

Table 17

Standardized Factor Correlations between the Self-Concept Facets and Achievement Tests for the Three-Factor (Model 7-8 in Table 15)

	Reading self-concept	Listening self-concept	Global self-concept
English reading test	.880	.024	.016
Russian reading test	.882	.031	.047
English listening test	.020	.918	.088
Russian listening test	.065	.903	.011

Note. All correlations are statistically different from zero (p <.001).

Despite in English (Model 7) and Russian (Model 8) skill achievement scores similarly associated with each of three self-concept factors, it is interesting to observe that reading and

listening achievement test scores showed high relation with matching domain of skill-specific self-concept facets (English listening: r = .92, English reading: r = .88; Russian listening: r = .90, Russian reading: r = .88) but low correlation or near zero correlation was found with nonmatching domain and global self-concept in both foreign languages. Subsequently, a model implying equal-sized correlations between receptive skill test scores and self-concept facets demonstrated poor model fit in both target languages, English: CFI = .888 (Δ = - .110), TLI = .796 (Δ = -.200), RMSEA = .221 (Δ = +.189), SRMR = .147 (Δ = +.137); Russian: CFI = .986 (Δ = -.010). TLI = .976 (Δ = -.018), RMSEA = .0.090 (Δ = + .044), SRMR = .0.020 (Δ = + .009). Therefore, descriptive results for two foreign languages support the evidence of a skill-specific multidimensional self-concept structure indicating high relations between receptive skill scores and skill-specific facets. Further, we examined relations among school grades with higher-order and global self-concept factors (Table 18). After that, regardless of language, school grades highly associated with global factors comparing to higher-order factor.

Table 18

Standardized Achievement Correlations for the Higher-Order Factor Models (Models 9-12 in Table 15)

	Higher-order factor	Global factor
English grade	.791	.862
Russian grade	.570	.697
English combined test	.994	.046
Russian combined test	.872	.194

Note. All correlations are statistically different from zero (p <.001).

However, when the correlations of school marks to the higher order and global factors were constrained to be identical, the model fits declined, particularly, when invariant relations

were presumed in English domain (Model 9a: ΔCFI = -.0.10; ΔTLI = -.019; ΔRMSEA = +.041; ΔSRMR = +.121) comparing to Russian (Model 10a: ΔCFI = -.002; ΔTLI = -.004; ΔRMSEA = + .012; ΔSRMR = + .053). This finding demonstrates that different associations in the relation of school grades to higher order and global factor are more significant in English than in Russian.

The next step we assessed a set of models (Models 11-12 in Table 15) which included relations of receptive skill test measures to the higher-order and global self-concept factors. In contrast to school grades, higher-order factors showed higher relations to achievement tests than global self-concept factors. The correlations of achievement scores with global self-concept factors were low or near zero correlation in both target languages. However, constraining achievement scores to the higher-order and global factors to be identical (Models 11a-12a) resulted in a slight decline in Russian but no decrease in English. Therefore, these findings support the evidence that higher-order and global self-concept factors were identically correlated with achievement test scores in both target (English and Russian) languages.

5.3.4 Discussion

Most of the researches (Marsh, 1986; Marsh & Yeung, 2001; Möller et al., 2006, 2009; Xu et al., 2013; Yeung & Wong, 2004) in the field of verbal self-concept have focused on the traditional academic domain, the separation of verbal self-concept from math self-concept and the multidimensional and hierarchical structure of academic self-concept. Very few studies (Arens et al., 2016; Lau et al., 1999; Yeung et al., 2000) concentrated their attentions on the multidimensional and hierarchical structure within verbal self-concept. The purpose of the present study to examine whether multidimensional and hierarchical structure varies across two foreign languages.

Supporting the concept of hierarchy and multidimensionality within the structure of self-concepts associated with students' English and Russian as foreign languages, this study findings are consistent with previous studies' results (Arens & Jansen, 2016; Lau et al., 1999; Yeung et al., 2000). The notion of multidimensionality between verbal self-concept was supported by the fact that models' differentiation between skill-specific self-concepts in reading and listening fitted data better than unidimensional models. Moreover, the skill-specific self-concept facets were revealed to be not ideally correlated to one another, providing evidence of their distinction. The notion of hierarchy between verbal self-concept was supported by integrating skill-specific self-concept facets correlated with reading and listening into the higher-order factor that was revealed to be highly associated with global self-concept factor. Furthermore, from this study, it was also evident that correlations between skill-specific facets varied according to the target language. While the low correlation was revealed between listening and reading self-concepts in English, there was a high correlation between skill-specific facets of Russian self-concept. However, this difference did not have an impact on the hierarchical structure of verbal self-concept. This concept was further supported by incorporating achievement measures that provided a complementary approach to examine the structure of self-concept within verbal self-concepts.

Therefore, examining the correlations within skill-specific verbal self-concepts and test measures for reading and listening achievements provided further evidence to the multidimensional structure within verbal self-concept. Subsequently, skill-specific facets of self-concept highly correlated with matching domains, whereas near-zero correlation was found between nonmatching domains of verbal self-concept in both target languages. Listening self-concept highly related to listening achievement and reading self-concept highly associated with reading achievement.

Overall, these findings correspond to previous results and support the structure of academic self-concept. Contrary to the weak correlation of mathematics and verbal self-concepts (Marsh et al., 2001), the relation between self-concepts for two target languages in a verbal domain is a high supporting hierarchical structure of verbal self-concept. However, Henschel et al. (2013) provide evidence for further differentiation within reading self-concept, focusing on text type.

The evidence of the hierarchical structure of self-concept is supported by an adequate fit of higher-order models to data and their higher relations with global self-concept factors. This evidence matches with previous studies (Arens & Jansen, 2016) in the verbal self-concept research. It is interesting to note that achievement scores had near-zero correlation with global self-concept factor in contrast to higher-order factors, but school grades related to global and higher-order factors. However, the correlation between school grade and global factor is high comparing to the higher-order factor. Therefore, achievement test scores highly related to higher-order factor while school grades highly correlated to global factor.

In conclusion, as the most studies (Xu et al., 2013; Yeung & Wong, 2004) pointed multidimensionality within verbal self-concept, these findings support multidimensional nature of self-concept emphasizing students' ability to differentiate between skill-specific self-concept facets. However, it also provides evidence for the hierarchical structure of self-concept pointing coexistence of multidimensionality and hierarchy simultaneously.

However, careful analysis of self-concept structure for English and Russian revealed differences between two foreign languages. Reading and listening self-concepts related to Russian were shown to be more interrelated than those for English indicating students' ability to differentiate skill-specific self-concepts more in English. It could be explained by different

teaching methods for various foreign languages. While teaching methods in English suggest consideration of four language skills, Russian teaching methods do not take it into account. Moreover, as learners receive a single mark for their performance in different skills, global self-concept factor correlates highly with school grades.

5.4. Reading, Listening and Math Self-Concepts: Internal/External Frame of Reference

5.4.1 Introduction

Most research (e.g., Beauducel & Herzberg, 2006; Marsh et al., 2012; Marsh & Hau, 1996; Xu et al., 2013) on the internal/external (I/E) frame of a reference model based on classical domains (math and native language) of academic self-concept and most studies conceptualize self-concept as multidimensional. The I/E model study has frequently revealed contrasting relation of math and language self-concepts with nonmatching domains while there are strong correlations between achievements and self-concepts in matching domains. The purpose of this study is (1) to extend the I/E model by examining students' listening and reading self-concepts in two foreign languages (English and Russian) and math self-concept; (2) to reveal correlations among achievements, and matching or nonmatching within I/E models (listening, reading and math); (3) to find out the structure of academic self-concept contrasting math with two more specific domains of verbal self-concept; (4) to examine whether the multidimensional structure of academic self-concept that included more specific domains of verbal self-concept and contrasted with math varies or generalizes according to two foreign languages.

5.4.2 Methodology

5.4.2.4 Statistical Analysis

Sets of models were analyzed within the structural equation modeling (SEM) framework, which is acknowledged as an adequate method for examining hypotheses and models. From observed skewness and kurtosis (Table 2, 3) we selected default estimator which is the maximum likelihood (ML) to be adequate with normality assumptions and to analyze of scales with four categories as continues (Beauducel & Herzberg, 2006). Set of hypothesized models were examined in the two domains of English and Russian independently. As scales consisted of parallel wording such as “I am good in English”, the model fit could incline to be adequate and the parameter estimates prone to be biased, inducing inaccurate findings (Marsh & Hau, 1996; Xu et al., 2013). Thus, correlated uniqueness was offered in the hypothesized models, when the same item is utilized for multiple domains (Marsh et al., 2012; Marsh & Hau, 1996).

Table 19

Correlation input variables of Model 11, Figure 17A for English

Items	1	2	3	4	5	6	7	8	Uniq
1. I am good at math (msc1).	1								.03
2. Study math is much easier for me (msc2).	.64	1							.03
3. I learn math quickly (msc3).	.50	.60	1						.04
4. I am good at listening in English. (lsc1)	-.18	-.18	-.12	1					.00
5. Study listening in English is easy for me. (lsc2)	-.17	-.19	-.14	.94	1				.01
6. I believe I can learn listening in English quickly. (lsc3)	-.16	-.18	-.10	.96	.92	1			.01
7. I am good at reading in English. (rsc1)	-.07	-.07	-.05	.10	.11	.09	1		.02
8. Study reading in English is easier for me. (rsc2)	-.07	-.07	-.02	.11	.13	.10	.79	1	.02
9. I believe I can learn reading in English quickly. (rsc3)	-.09	-.60	-.05	.12	.13	.10	.82	.82	.02

Note. Correlation is significant at the $p<.001$ (two-tailed). Uniq = uniqueness. Each item's uniqueness is the residual variance related uniquely to that item and is independent of residual variance related to other measured variables.

Table 20

Correlation Input Variables of Model 12, Figure 17B for Russian

Items	1	2	3	4	5	6	7	8	Uniq
1. I am good at math (msc1).	1								.04
2. Study math is much easier for me (msc2).	.64	1							.03
3. I learn math quickly (msc3).	.50	.60	1						.04
4. I am good at listening in Russian. (lsc1)	-.20	-.21	-.14	1					.00
5. Study listening in Russian is easy for me. (lsc2)	-.20	-.22	-.16	.96	1				.01
6. I believe I can learn listening in Russian quickly. (lsc3)	-.17	-.18	-.11	.97	94	1			.01
7. I am good at reading in Russian. (rsc1)	-.15	-.20	-.11	.89	.87	.88	1		.01
8. Study reading in Russian is easier for me. (rsc2)	-.18	-.23	-.10	.90	.88	.89	.89	1	.01
9. I believe I can learn reading in Russian quickly. (rsc3)	-.19	-.26	-.13	.93	.90	.91	.91	.92	.01

Note. Correlation is significant at the $p<.001$. Uniq = Uniqueness. Each item's uniqueness is the residual variance related uniquely to that item and is independent of residual variance related to other measured variables.

5.4.3 Results

Firstly, we examined the I/E model of correlations within self-concepts in two foreign language domains and their achievements. The I/E model results for listening and mathematics (Model 1 for English and Model 3 for Russian in Table 21), reading and mathematics (Model 2) for English demonstrated a good fit to the data compared to the result of Model 4 for Russian. Moreover, we tested correlations between math and skill-specific facets of language self-concept within I/E model and found negative or near zero correlations among mathematics and two skill-specific facets of verbal self-concept (Table 22).

Table 21

Goodness-of-Fit Indices for Models for the Fifth Part of This Study

	Model description	χ^2	*df*	CFI	TLI	RMSEA	SRMR
1.	I/E model for listening and math in English	3.492	5	1.000	1.001	.000	.009
2.	I/E model for reading and math in English	8.489	5	.999	.997	.028	.048
3.	I/E model for listening and math in Russian	6.789	5	.999	.998	.026	.010
4.	I/E model for reading and math in Russian	19.594	15	.994	.983	.074	.021
5.	First-order model for listening, reading and math in English	10.915	15	1.000	1.002	.000	.012
6.	First-order model for listening, reading and math in Russian	44.752	15	.995	.989	.061	.016
7.	I/E model for listening and math in English + achievements in two domains	13.861	13	1.000	1.000	.011	.012
8.	I/E model for reading and math in English + achievements in two domains	12.593	13	1.000	1.000	.000	.013
9.	I/E model for listening and math in Russian + achievements in two domains	17.322	13	.999	.998	.025	.013
10.	I/E model for reading and math in Russian + achievements in two domains	43.638	13	.993	.985	.066	.020
11.	First-order model for listening, reading and math in English + achievements	50.211	33	.997	.995	.031	.013
12.	First-order model for listening, reading and math in Russian +achievements	70.889	33	.996	.992	.046	.016

Note. CFI=confirmatory fit index; TLI=Tucker-Lewis index; RMSEA= root mean square error of approximation; SRMR= standardized root mean square residual.

Table 22

Standardized Factor Correlations between Skill-Specific Facets of Language Self-Concept and Mathematics within I/E Models (Models 1-4 Table 21)

Skills	Math
English	
Listening	-.21
Reading	.03
Russian	
Listening	-.24
Reading	-.11

Note: All values are significant at $p < .0001$.

Model 5 and 6 included two skill-specific self-concepts (reading and listening) and mathematics self-concept in a model and indicated a better fit to English data compared to Russian. The same pattern was observed with minor differences in the correlations of first-order models for skill-specific self-concepts in two foreign languages and mathematics domains (Table 23).

Table 23

Standardized Factor Correlations between Skill-Specific Facets of Language Self-Concept and Mathematics within a Single Model (Models 5-6 Table 21)

	Math
English	
Listening	-.21
Reading	-.08
Russian	
Listening	-.23
Reading	-.26

Note: All values are significant at $p < .0001$.

In the next step, we incorporated achievement tests to all I/E models to reveal the relationships among matching and nonmatching domains. All models (Models 7-9) showed a good fit to the data comparing to Model 10. From the correlations among math and skill-specific facets of self-concept with their achievements, it was evident that there were strong and significant correlations between matching domains while correlations among nonmatching domains were near zero or negative (Tables 24-25).

Table 24

Standardized Factor Correlations between Two Domains within I/E Model for English (Models 7-8 Table 21)

	Listening achievement	Math achievement	Reading achievement
Model 7			
Listening self-concept	.94**	-.03	
Math self-concept	-.06	.77**	
Model 8			
Reading self-concept		-.02	.89**
Math self-concept		.79**	-.14**

Note: ** Correlations are significant at p <.0001.

Table 25

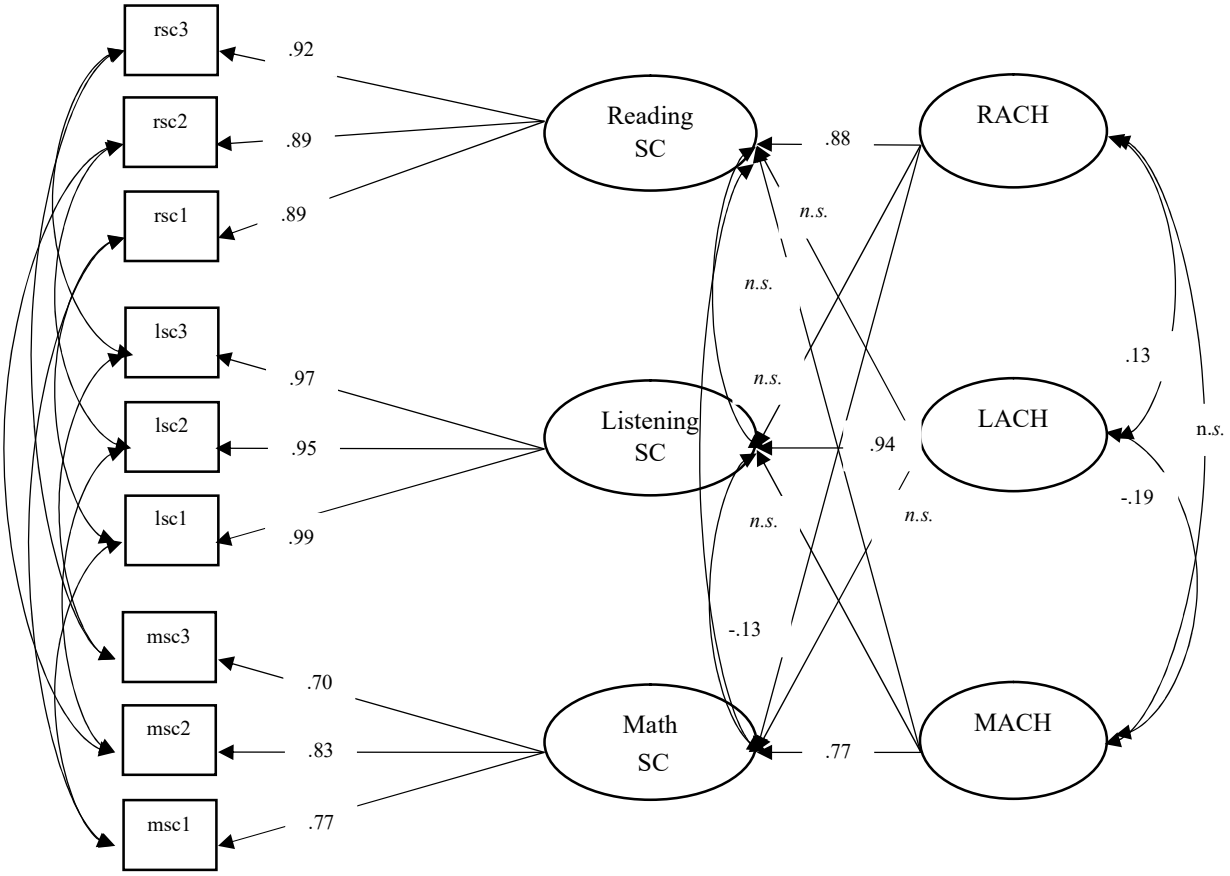
Standardized Factor Correlations between Two Domains within I/E Model for Russian (Models 9-10 Table 21)

	Listening achievement	Math achievement	Reading achievement
Model 9			
Listening self-concept	.94**	-.03	
Math self-concept	-.06	.77**	
Model 10			
Reading self-concept		-.03	.96**
Math self-concept		.77**	-.06

Note: ** Correlations are significant at p <.0001.

Subsequently, we incorporated achievement measures to Model 11-12 to reveal relations between skill-specific facets of self-concept and achievements in matching and nonmatching domains. From the significant and standardized factor loadings of Figure 17A and B was evident that academic self-concept is skill specific.

A


rsc3
rsc2
rsc1
lsc3
lsc2
lsc1
msc3
msc2
msc1
.92
.89
.89
.97
.95
.99
.70
.83
.77
Reading SC
Listening SC
Math SC
.88
.94
.77
RACH
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n.s.
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.13
-.19
-.13

B

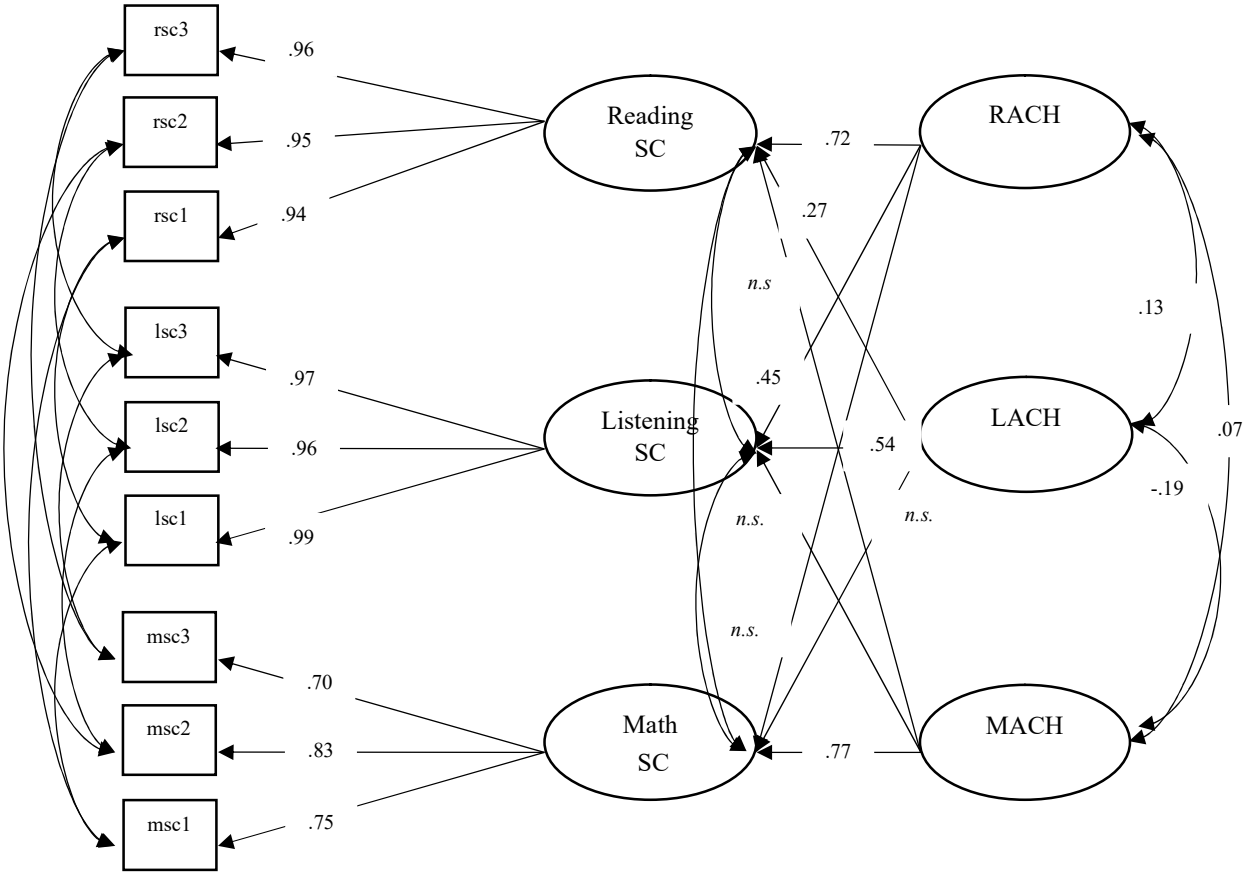


Figure 17. A = First-order model for English self-concepts + achievements. B = First-order model for Russian (Models 11-12, Table 21). *Note:* n.s. = not significant. See also Table 19-20 for correlated uniquiness and Tables 26 and 27 for more correlations. All values are significant at $p < .0001$ except *n.s.*

Models 11-12 involved two skill-specific facets of foreign languages and math domain in a model indicated good fit to the data since the fit indices were above criterion (CFI = .997; TLI = .995 English; CFI = .996; TLI = .992 Russian).

Table 26

Standardized Factor Correlations among Skill-Specific Facets of Language Self-Concept and Mathematics domain and Achievements in Corresponding Domains for English (Model 11 Table 21; Figure 17A)

	1	2	3	4	5
1. Math self-concept					
2. English listening self-concept	.01				
3. English reading self-concept	.01	-.11*			
4. Math achievement	.79***	-.03	-.01		
5. English listening achievement	-.04	.94***	-.11	-.19***	
6. English reading achievement	-.13***	-.01	.88***	.07	.13*

Note. *** Correlations are significant at the level $p < .0001$.

* Correlations are significant at the level $p < .05$.

Table 27

Standardized Factor Correlations among Skill-Specific Facets of Language Self-Concept and Mathematics domain and Achievements in Corresponding Domains for Russian (Model 12 Table 21; Figure 17B)

	1	2	3	4	5
1. Math self-concept					
2. Russian listening self-concept	.14*				
3. Russian reading self-concept	-.23**	.51***			
4. Math achievement	.77***	-.01	-.02		
5. Russian listening achievement	-.04	.54***	.23***	-.19***	
6. Russian reading achievement	-.02	.45***	.73***	-.20***	.89***

Note. *** Correlations are significant at the level $p < .0001$.

** Correlations are significant at the level $p < .001$.

* Correlations are significant at the level $p < .05$.

Subsequently, examining correlations was revealed that there were low, negative or near zero correlations among skill-specific facets of self-concept in two foreign languages with mathematics self-concept (Table 26-27). However, the paths from listening achievement to

listening self-concept (r = .94 English; r = .54 Russian), from reading achievement to reading self-concept (r = .88 English; r = .73) in both foreign languages and from mathematics achievement to mathematics self-concept (r = .79 English; r = .77 Russian) were strong, positive and significant. But cross paths from listening achievement to mathematics self-concept (r = -.04) and from mathematics achievement to listening self-concept (r = .19) were near zero, negative nonsignificant or low, positive, significant. Regarding to paths from reading achievement to mathematics self-concept (r = -.13 English; r = -.02 Russian) and from mathematics achievement to reading self-concept (r = -.01 English; r = -.02), it was revealed low, significant or near zero negative and nonsignificant correlations. According to the foreign language, there is a difference between paths and cross paths of reading and mathematics self-concepts and their achievements.

Moreover, the clear difference was explored between the paths from listening achievement to reading self-concept (r = -.01 English; r = .23 Russian) and from reading achievement to listening self-concept (r = -.01 English; r = .45) due to different foreign languages. Furthermore, while there was weak, negative correlation between reading and listening self-concepts (r = -.11 English) in English, there was a strong, positive correlation between listening and reading self-concepts (r = .51) in Russian. The same pattern was seen for achievement correlations. There was a strong and positive correlation between reading and listening achievements (r = .89) in Russian comparing to English (r = .13).

5.4.4 Discussion

This study aims to enhance traditional math/verbal I/E model of academic self-concept to more skill-specific domains (listening and reading) contrasting them with mathematics. To find out the structure, we analyzed a set of models. First, we analyzed I/E models within two foreign

languages opposing mathematics with the verbal domain's skill-specific facets. Then we put two skill-specific facets of self-concept and mathematics self-concept in the first-order model to reveal correlations between listening and reading self-concepts with mathematics self-concept. Results supported the notion that skill-specific facets of self-concept contrast with math domain which is consistent with Xu et al. (2013) findings that indicated the multidimensional nature of the academic self-concept opposing the language domain. Thus, it supports multidimensionality and domain specificity of academic self-concept within more subdomain level.

Subsequently, to substantiate the notion of multidimensionality of academic self-concept by contrasting more skill-specific facets with mathematics domain and reveal correlations between achievement and self-concept, we incorporated achievement measures to I/E models and first-order model of self-concept. From the correlations, it was evident that there were low, negative or near zero correlations among skill-specific facets of self-concept in two foreign languages with mathematics self-concept which is in consistent with relations between mathematics and language self-concepts (r = .07 to r = .13) studied by Marsh et al. (2001). Moreover, there was a difference between foreign languages regarding relations between skill-specific facets and their achievements. In other words, it was revealed that students distinguish skill-specific facets of self-concept in English more than Russian. While Russian skill-specific facets are related to each other, there is low or near, even negative correlation in English.

Moreover, these findings support students' perceptions about similarity or difference among domains that they choose subjects as frames of reference that influences their various self-concepts in different ways (Möller et al., 2006). Students may variate in terms of their perceptions. In other words, a student can find similarity among subjects, but another student can perceive them different. Mercer (2011) pointed out that students possess different perceptions

about specific foreign languages in terms of similarity or difference. She emphasized the importance to comprehend and clarify the extension of variation in the cross-foreign language domain comparisons.

5.5 Assessing Azerbaijani Students' Performances in Listening and Reading Skills in English and Russian

5.5.1 Introduction

In this study, students' receptive skills (reading and listening) in English and Russian were examined in Azerbaijan according to B1 level of Common European Framework Reference for Languages to determine students' proficiency level. The government of Azerbaijan recognizes education as one of the essential inputs for globalization and unification of public and political, cultural, and social life and the increase of significance of information and communication technologies, economic development. During the Soviet era, language learning methodology was based on an in-depth knowledge of a language's grammar and vocabulary; texts were selected compulsorily; teaching techniques and activities were controlled (Shafiyeva & Kennedy, 2010). After being the Council of Europe (CoE) member in 2001, Azerbaijan started to design curriculum based on a six-point scale of language ability projected by the Common European Framework of Reference for Languages (CEFR).

Although trainers promote communicative language teaching, known as the communicative approach, its implementation has been problematic. Various reasons were found, ranging from government policies to teaches' beliefs and training to students' expectations (Shafiyeva & Kennedy, 2010). Shafiyeva and Kennedy (2010) explored the challenges of transforming traditional language teaching methodology in post-Soviet republics, using

Azerbaijan as a specific example. To develop language learning and teaching in Azerbaijan, we need to explore students' ability in receptive skills of two target languages according to CEFR level. Although Azerbaijan participates in PISA, there is a shortage of data collection regarding receptive skills in two target languages, especially online assessment.

5.5.2 Statistical Analysis

To determine the students' ability in three school domains, and receptive skills of foreign languages, item response models (IRT) were used. "The main idea of item response theory (IRT) is to use a mathematical model for predicting the probability of success 70 of a person on an item, depending on the person's 'ability' and the item 'difficulty' (Adams & Wu, 2002, p. 28).

5.5.3 Results

5.5.3.1 Psychometric properties

The reliability index of the combined listening and reading skills in English and Russian tests was good, Cronbach's alpha .86 and .92, respectively (Table 2). Cronbach's alphas for separated receptive skills in English (listening = .84; reading = .88) and Russian (listening and reading = .84) were also good (Table 3). Mathematics tests also showed good reliability (Cronbach's alpha = .81). Moreover, listening (English and Russian M = .49; SD = .02) and reading (English M = .54, SD = .03; Russian M = .58, SD = .02), tests in both target languages were moderately hard for the students as well as mathematics test (M = .59, SD = .15). Furthermore, reliabilities for subtests were acceptable, except Russian subtest (text) showed lower Cronbach's alpha = .69 (see Table 28).

Table 28

Descriptive Statistics for Subtests of English and Russian

	a	*M*	*SD*	Skew	Kurtosis
English listening 1	.81	.85	.19	-1.08	1.40
English listening 2	.73	.14	.15	.85	.27
English reading 1	.82	.90	.17	-1.82	3.82
English reading 2	.90	.19	.26	.81	-1.07
Russian listening 1	.80	.85	.19	-.97	.75
Russian listening 2	.73	.14	.16	.95	1.01
Russian reading 1	.69	.93	.12	-3.42	.106
Russian reading 2	.83	.22	.21	.13	.106

Note: a = Cronbach's alpha; *M* = Mean; *SD* = Standard deviation.

Positive correlations were revealed between subtests of English and Russian receptive skills (Table 29). While strong correlations can be observed between subtests of receptive skills (listening $r = .52$; reading $r = .49$) in Russian as well as a subtest of listening ($r = .52$) in English, there was a moderate correlation between subtest of reading ($r = .28$) in English (Table 29). However, noncorresponding domains of subtests for both target languages showed different results. The first English task negatively correlated with subtests of English listening ($r = -.11$, $r = -.08$), while the second task of English reading showed positive and a moderate correlation with subtests of English listening ($r = .25$; $r = .17$). All noncorresponding domains of subtests for Russian showed high, positive, and significant correlations (Table 29).

Table 29

Correlations between Subtests of English and Russian Receptive Skills

	1	2	3	4	5	6	7	8
1. English listening 1	1							
2. English listening 2	.52**	1						
3. English reading 1	-.11*	-.08	1					
4. English reading 2	.25**	.17**	.28**					
5. Russian listening 1	-	-	-	-	1			
6. Russian listening 2	-	-	-	-	.54**	1		
7. Russian reading 1	-	-	-	-	.60**	.49**	1	
8. Russian reading 2	-	-	-	-	.81**	.63**	.45**	1

Note: Correlation is significant at the 0.01 level (2-tailed).

Correlation is significant at the 0.05 level (2-tailed).

One parameter Rasch analyses were conducted to obtain detailed information about the test. The Cronbach's alpha (reliability) was good .88 for English and was excellent .91 for Russian. The analysis found that certain items were lower the students' ability level, and certain items were higher students' ability level Figure 18. The items that were top, students were not able to get a correct score. English and Russian test scores had moderate difficulty for 8th-grade students.

A

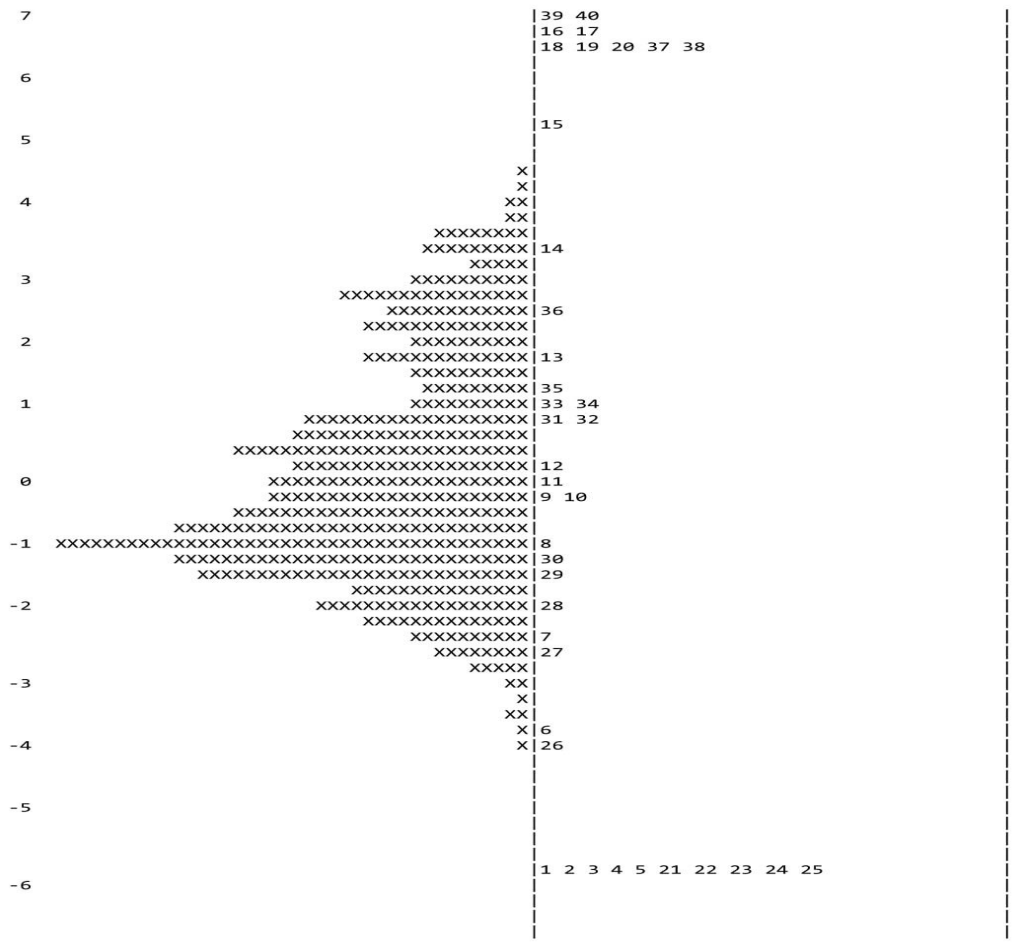


Figure 18A. Person-item map for English.

B

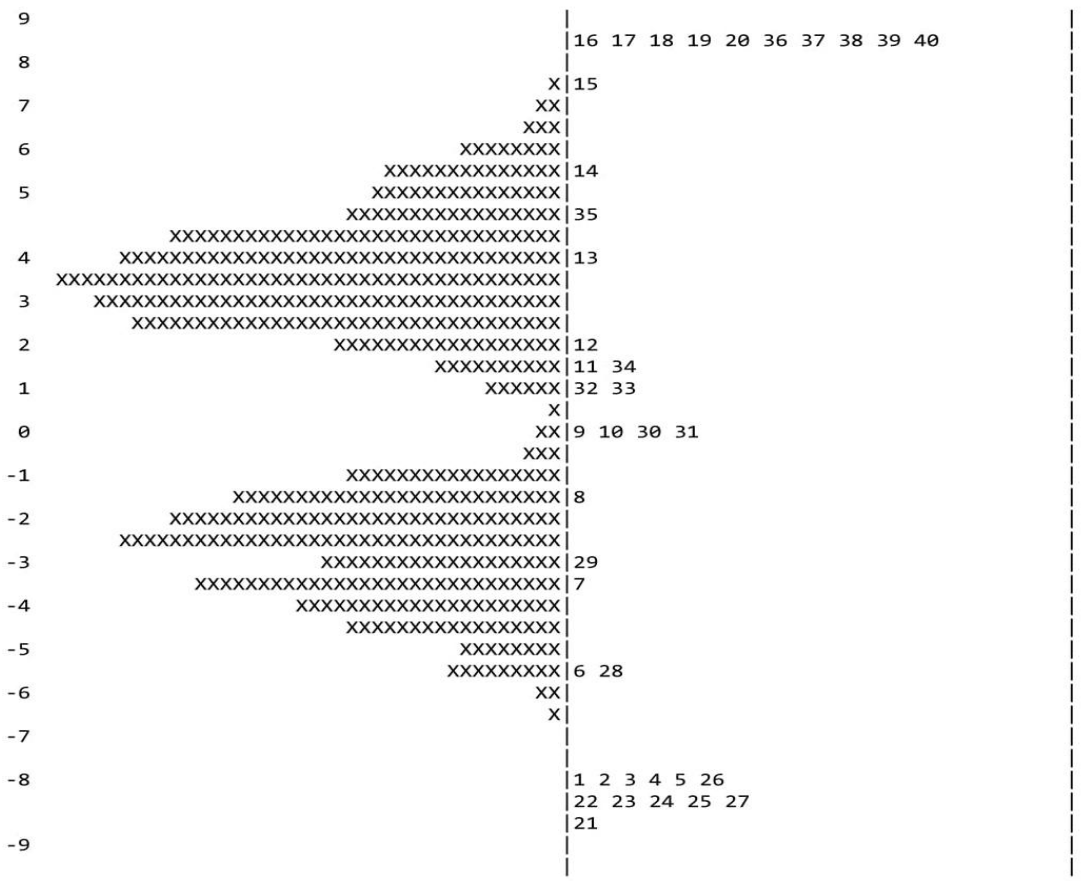


Figure 18B. Person-item map for Russian.

Moreover, the study revealed that students performed better on those items that were first introduced and were easier than others but performed worse on those items that were last and difficult in both languages. From the person-item map, it was evident that there were small differences between students' ability levels and item difficulties in two foreign languages.

Two parameter Rasch analyses were performed for each target language to gain more detailed insight about student ability level and item difficulty in skill-specific tests of two target languages. The analysis revealed the same pattern for skill-specific proficiency tests: certain

items were lower students' ability level, and certain items were higher students' ability level Figure 19.

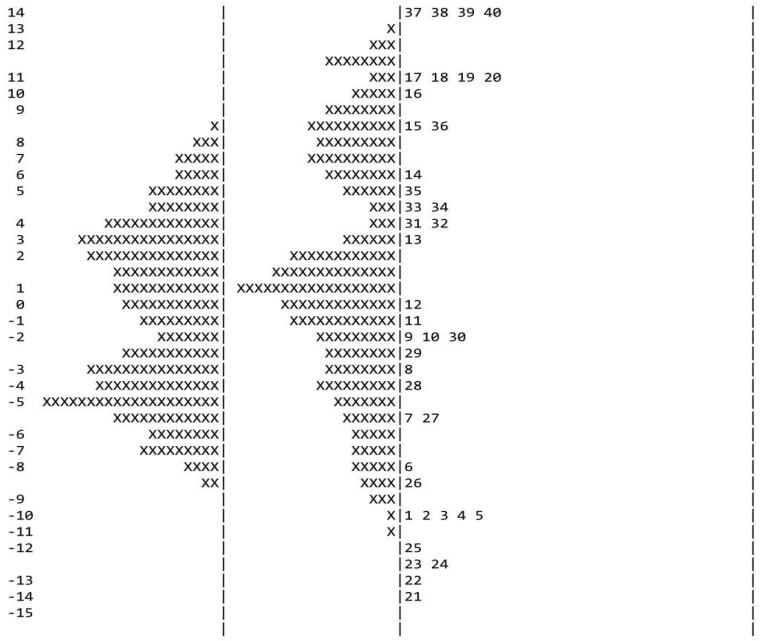


Figure 19A. Person-item map for English skill-specific

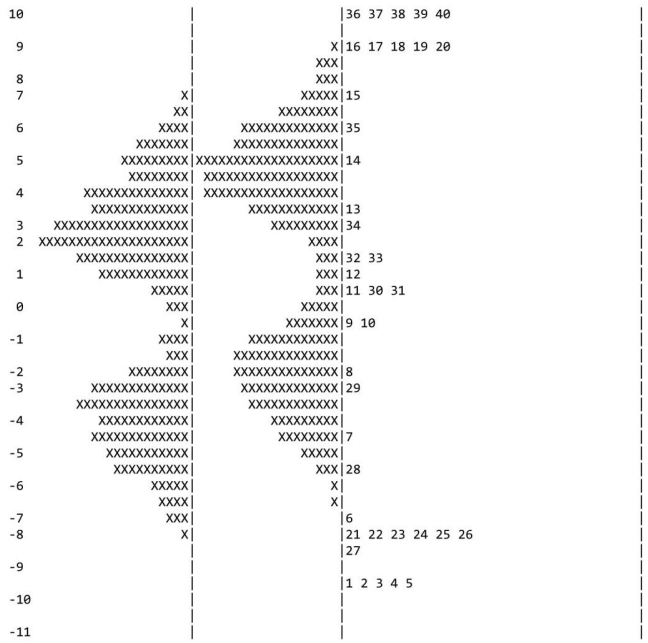


Figure 19B. Person-item map for Russian.

The items that were top, students were not able to get a correct score. English and Russian test scores had moderate difficulty for 8th-grade students. The WLE reliabilities were good to excellent for assessed achievements in two skills in English and Russian: English listening: .89; English reading: .91; Russian listening: .92; Russian reading: .89. Furthermore, the study revealed that students performed better on those items that were first introduced and were easier than others but performed worse on those items that were last and difficult in both languages. From the person-item map, it is evident that there are small differences between students' ability levels and item difficulties in two foreign languages.

The findings of this study revealed the similar trend to mathematics achievement and revealed that some items were below students' level, and item 15 was above students' level Figure 15. The 15th item that was top, students were not able to get a correct score. Math test had moderate difficulty for 8th-grade students.

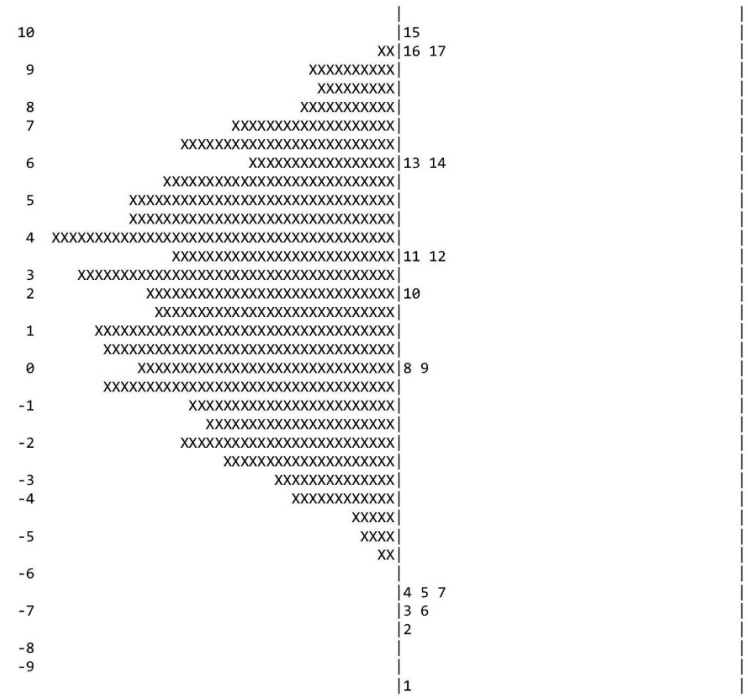


Figure 20. Person-item map for math.

Moreover, the study found an interesting result similar to language tests students performed better on those items that were first introduced and were more straightforward than others but performed worse on the last items. The total WLE reliability of English is .88, Russian is .91, mathematics is .90. Achievements in listening and reading were aggregated to represent verbal (English and Russian) achievement domain.

STUDY II

The Relationship between Cognitive and Affective Dimensions of Reading Self-Concept with Reading Achievement in English and Russian (Separate Study)

5.6.1 Introduction

Although most studies focused on reading motivation, there is a shortage of research in examining cognitive and affective dimensions of reading self-concepts in two foreign languages. This study aimed to evaluate whether cognitive and affective dimensions of reading self-concepts in two foreign languages (English and Russian) are distinct constructs and to examine whether the relationships among cognitive and affective variables are invariant across gender. A total of 349 tenth-grade Azeri students were selected from 12 schools in Baku, Azerbaijan. The results of a structural equation modelling demonstrated that cognitive and affective self-concepts were independent, but strongly interrelated constructs. The separated cognitive and affective components of reading self-concept construct showed a more explicit structure than a conflated model. The relationships among cognitive and affective self-concepts with achievements in the reading domain of English and Russian were invariant across gender. This study's results can encourage future research on examination of more domain-specific self-concepts that conceptualizes cognitive and affective dimensions of the self-concept and its relationship with achievement. This study might be suitable for secondary school teachers to help their students understand their strengths and weaknesses in reading.

5.6.2 Methodology

5.6.2.1 Sample

The data were collected in winter of 2020. The total sample consisted of 349 Baku secondary school students (boys 54.7%, girls 44.7%) in grade 10 (12 schools of all 12 administrative districts) who completed online tests in reading achievement of English and Russian, and a questionnaire in Azerbaijani. Mean age of the sample was 15.28 years (*SD* = 0.54; range 14 to 18 years). Since students are expected to reach the B1 level at the end of their school studies, the present study selected 10th-grade as adequate to be the target group of the research. 11th-grade in Azerbaijan is considered the final school year. Besides, most international assessments have focused on ninth-grade students, and there was a lack of research that targeted tenth-grade students' self-concept. The eDia (Electronic Diagnostic Assessment) online platform for online assessment was applied to facilitate data collection (Csapó & Molnár, 2019). Schools were selected by Baku Educational Department based on two criteria: 1) students should enroll for both target languages (English as the first language and Russian as the second language); b) Schools which correspond to first criteria were objects to the second round selection which was based on a random number generator. Without preference, all students from selected schools participated in the study. Obtaining parental consent, students' participation in the proficiency tests was mandatory, but students' participation in the survey was voluntary.

5.6.2.2 Procedure

All participants were informed about the anonymous and confidential usage of their responses. Before administering instruments, the author introduced a brief description of the purpose of the present study. Since measures of this study were based online platform, each student was provided by passwords to access this platform and guarantee confidential data

collection. Students used the same password for all achievement tests and a questionnaire. Passwords consisted of nine-digit numbers, such as 191012613, which students should enter to the webpage. First, reading achievement tests in English were administered lasting nearly 50 min. After 15 min break, reading achievement tests in Russian were administered lasting nearly 50 min. Similarly, after a 15 min break, RSC questionnaire was completed. Without involvement in the data collection process, school officials participated in assuring objectivity and students' contribution.

5.6.2.3 Instruments

Achievement. The present study adapted achievement tests in reading (Cényelvi mérés, 2013/2014) created by Hungarian experts and teachers. Based on national educational standards of Hungary (for a detailed description of the test and its psychometric properties, see Csapó, 2014; Nikolov & Csapó, 2009; Nikolov & Szabó, 2015), they corresponded to the B1 level of the Common European Framework of Reference for Language (CEFR, Council of Europe, 2001).

Two-way translators participated in translating achievement tests from English to Russian to guarantee the analogy assessment between English and Russian. Reading tests comprised of a comparable number of tasks and corresponded to the B1 level in both target languages (Table 1). Tasks focused on meaning (not form), and although texts were authentic, they were appropriate for 14-18 years old. Using multiple matrix booklet designs (Gonzalez & Rutkowski, 2010), the structure of text items varied from a single word, an expression, or a sentence to a very brief paragraph. All rubrics were provided in the foreign language. To facilitate student comprehension and to clarify test instructions requirements, samples of correctly completed items were included in the tests. Items in four achievement tests ranged between eight and ten; each language test comprised a total of 36 items. On average, each student worked on 18.37

reading items in English (*SD* = 8.96) and 16.15 reading items in Russian (*SD* = 10.35). Scaling of all achievement tests was based on a one-parameter logistic IRT model (Rasch model). Using the software ConQuest2.0 (Wu, Adams, Wilson, & Haldane, 2007), Weighted Likelihood Estimates (WLE, Warm, 1989) were applied to estimate students' ability from the test items. Scaling of all achievement tests was based on a one-parameter logistic IRT model (Rasch model). Using the software ConQuest2.0 (Wu, Adams, Wilson, & Haldane, 2007), Weighted Likelihood Estimates (WLE, Warm, 1989) were applied to estimate students' ability from the test items. The WLE reliabilities (Wu et al., 2007) were good for all reading achievement tests: English reading: .88; Russian reading: .88 (see Table 30, 31).

Table 30

Online English and Russian Reading Comprehension Tests

Number of tests	Task	Input text	Number of items	Cronbach's Alpha	
				English	Russian
Reading 1	Match word with appropriate sentence	Definitions of words	10	.84	.90
Reading 2	Match notice with meaning	Public notices and their meanings	9	.80	.83
Reading 3	Match question with answer	Interview from youth magazine	9	.83	.86
Reading 4	Match question with answer	Quiz texts for teenagers	8	.85	.85

Table 31
Descriptive Statistics

			Boys				Girls			
	Reliability	α	*M*	*SD*	Skew	Kurtosis	*M*	*SD*	Skew	Kurtosis
Reading Self-Concept										
English Cognitive	.93	.93	3.65	1.17	-0.75	-0.25	3.63	1.10	-0.62	-0.66
English Affective	.96	.96	3.64	1.44	-0.83	-0.19	3.58	1.86	-0.80	-0.70
Russian Cognitive	.93	.93	3.09	1.77	-0.11	-1.27	2.77	1.52	0.25	-0.96
Russian Affective	.94	.94	3.24	1.64	-0.26	-1.16	3.10	1.56	0.05	-1.26
Achievement										
English achievement	.88	.93	0.51	0.06	-0.13	-0.83	0.52	0.06	0.08	-0.99
Russian Achievement	.88	.95	0.46	0.08	0.10	-1.27	0.44	0.08	0.23	-1.15

Note. α = Cronbach's alpha reliability coefficient, Reliability [for self-concept: scale reliability (ρ; Raykov, 2009); for achievement: WLE reliability (Wu, Adams, Wilson, & Haldane, 2007)]. The self-concept means and standard deviations indicate manifest aggregations of the items.

Self-concept. Students' reading self-concepts were assessed by adapting an internationally validated questionnaire - Self-Description Questionnaire II (Marsh, 1990) in the English and Russian, translated by two-way translators in Azerbaijani. Although the questionnaire has been validated internationally (German: Arens et al., 2011; American: Bong, 1998; Chinese: Yang et al., 2016), the present study further reported discriminant validity of the internal structure (Table 32).

Table 32
Correlations of Internal Structure for Model 8, Figure 21B

Items	1	2	3	4	5	6	7	8	9	10	11	12
1. ESC1	1.00											
2. ESC2	.84	1.00										
3. ESC3	.81	.81	1.00									
4. ESA1	.68	.66	.62	1.00								
5. ESA2	.66	.67	.63	.89	1.00							
6. ESA3	.65	.67	.60	.86	.88	1.00						
7. RSC1	.10	.07	.07	.12	.11	.14	1.00					
8. RSC2	.07	.07	.06	.09	.07	.09	.80	1.00				
9. RSC3	.05	.06	.06	.08	.04	.08	.81	.82	1.00			
10. RSA1	.04	.02	-.04	.09	.06	.08	.72	.66	.72	1.00		
11. RSA2	.08	.06	.00	.07	.05	.09	.70	.68	.70	.85	1.00	
12. RSA3	.07	.07	.04	.11	.09	.13	.70	.64	.67	.83	.82	1.00

Note. Correlations are significant at the 0.001 level (2-tailed). ESC = English self-concept cognitive, ESA = English self-concept affective, RSC = Russian self-concept cognitive, RSA = Russian self-concept affective.

The same set of items were used across two foreign languages to evaluate students' reading self-concepts in cognitive [e.g., I am good at reading (English); Study reading is easy for me (Russian)] and affective [e.g., I like reading texts (English); I enjoy reading texts (Russian)] domains (see also Table 33 for the item wordings and the descriptive statistics of the items.). The students were requested to consider of one of the verbal domains when responding to the items. All scales (cognitive and affective scales in two verbal domains) comprised of three items to which learners were requested to answer on a 5-point Likert scale (strongly disagree, disagree,

neither agree nor disagree, agree, strongly agree). Higher values on the scales indicated higher levels of self-concept. All scales used in the study indicated good to excellent reliability estimates regarding coefficient alpha (α) and likewise scale reliability (ρ) reliability index of a structural equation modelling (SEM, Raykov, 2009; Table 31).

Table 33

Means, Standard Deviations, and Uniquenesses of Each Item for Model 7, Figure 21B

Items	*M*	*SD*	Uniquenesses*
1. Study English reading is easy for me (ESC1).	3.61	1.33	.220
2. I am good at English reading (ESC2).	3.66	1.26	.194
3. I learn English reading quickly (ESC3).	3.58	1.43	.317
4. I like reading English texts (ESA1).	3.95	1.81	.212
5. I enjoy reading English texts (ESA2).	3.82	1.92	.186
6. I am interested in English reading texts (ESA3).	3.52	1.90	.288
7. Study Russian reading is easy for me (RSC1).	2.94	2.07	.402
8. I am good at Russian reading (RSC2).	2.92	1.81	.373
9. I learn Russian reading quickly (RSC3).	2.96	1.98	.347
10. I like reading Russian texts (RSA1).	3.16	1.83	.252
11. I enjoy reading Russian texts (RSA2).	3.07	1.76	.281
12. I am interested in Russian reading texts (RSA3).	3.19	1.83	.374

Note. The uniquenesses of each item is the residual variance. *p <.001.

5.6.3 Statistical Analysis

Model estimation. The present study estimated several of models within the structural equation modeling employing Mplus 7.31 (Muthén & Muthén, 1998-2015). Since the skews and kurtoses showed a slight deviation from normality assumptions (skewness: achievement test scores: range from -0.13 to 0.23; self-concept items: range from -0.82 to 0.25; kurtoses: achievements test scores: range from -1.27 to -0.83; self-concept items: range from -1.27 to -0.19; Table 31), this study selected default (Maximum Likelihood) estimator which has been found adequate for treating response scales with five categories as continues variables (Wang &

Wang, 2020). Furthermore, studies (Marsh & Hau, 1996) recommended using correlated uniquenesses for similar worded items. Since the same item [I am good in reading (English/Russian)] was used for multiple domains in this study, correlated uniquenesses were applied to prevent bias parameter estimates which could lead to inflated correlations among corresponding latent factors across different domains. As missing data was small; 2.6% for RSCs responses, Full Information Maximum Likelihood (FIML) estimation was utilized to treat missing data recognized to be a reliable and efficient procedure that resulted in unbiased estimates (Enders, 2010).

First, the separation of RSC's cognitive and affective components was examined in two domains of English and Russian, separately. The first set of models comprised measurement models for examining the multidimensionality of RSCs by comparing unidimensional and multidimensional models. In unidimensional models (Models 1-2 in Table 34), the items relating to cognitive and affective components of self-concept assessed in this study from one common first-order factor. The multidimensional models (Models 3-4) imply distinct first-order factors for each component of RSC. Therefore, two first-order factors assumed in these models constituting cognitive and affective components. Further, achievement test scores were incorporated into the models. Students' achievements in the English and Russian reading domains were added to two-factor multidimensional models (Models 3-4) resulting in Models 5 and 6 to test differential relations between cognitive and affective self-concepts and achievement measures.

Table 34

Goodness-of-fit Indices

	Model description	χ^2	*df*	CFI	TLI	RMSEA	SRMR
1	Unidimensional self-concept for English	419.047	9	.814	.689	.361	.092
2	Unidimensional self-concept for Russian	231.546	9	.890	.816	.266	.050
3	A two-factor model for English	13.000	8	.998	.996	.042	.008
4	A two-factor model for Russian	13.134	8	.997	.995	.043	.011
5	A two-factor model for English + reading achievement test	19.587	12	.997	.994	.043	.010
6	A two-factor model for Russian + reading achievement test	19.318	12	.996	.994	.042	.013
7	Four-factor model for English and Russian	66.257	42	.994	.991	.041	.019
8	Four-factor model for English and Russian + reading achivement tests	94.938	58	.992	.987	.043	.019
9	Conflated model for English and Russian	759.824	67	.844	.788	.172	.058

Note. CFI = Comparative fit index, TLI = Tucker-Lewis-Index, RMSEA = root mean square of approximation, SRMR = standardized root mean squared residual.

The next series of models (Models 7-8) were the structural models performed to test the I/E frame of reference within foreign language domains. To examine this assumption, first-order factors of cognitive and affective components of RSCs in two target languages were included (Model 7). Subsequently, achievement measures were added to examine whether the two components of reading RSCs in English and Russian indicate differential relations to achievement (Model 8).

To test whether the twofold multidimensional structure of RSCs was invariant across gender, the multi-group analysis was performed. To examine the invariance of twofold

multidimensional models (Tables 35-36), this study followed Sass and Schimtt (2013) propositions by starting with tests of configural invariance in which only the same factor structure expected across groups. All model parameters were freely estimated. Subsequently, this model was important as a baseline model for more restrictive models which can be compared and tested with increasingly more restrictions. In the next step, setting all first-order factor loadings equal across groups, metric invariance was performed, which was the precondition of all further invariance tests (Millsap, 2011). In subsequent models, this study tested gender to display differences in the separation of cognitive and affective RSC factors fixing the factor loadings to be identical across gender and allowing the item intercepts to vary freely. After metric and scalar invariances were obtained, strict factorial invariance was performed setting variable's residuals equal across the groups.

Evaluation of model fit. Since the chi-square statistic represents variation between the assumed model and the observed sample covariance matrices, it was used to assess the goodness-of-fit of models performed within the SEM framework. However, being sensitive on sample size, the chi-square statistic frequently generates significant values resulting in model rejection (Marsh, Hau, & Grayson, 2005). Thus, researchers were recommended to apply the most commonly used descriptive goodness-of-fit indices such as the comparative fit index (CFI), the Tucker-Lewis index (TLI), the root mean square error of approximation (RMSEA), and the standardized root mean square residual (SRMR). Hu and Bentler (1999) suggested the strict cut-off value of .95 as a criterion for CFI and TLI, which considered a good model fit. For interpretation of RMSEA, Browne and Cudeck (1993) recommended values about .05 indicate "close fit", values near .08 indicate "fair fit". Hu and Bentler (1995) considered values below .05 as a good model fit for SRMR. However, Kline (2005) suggested values close to .08 as a good

model fit. The vast amount of literature on the SEM framework has provided the controversial cut-off values for various goodness-of-fit indices. Subsequently, to abstain from the subjective interpretation and to retain theoretical adequacy of the model and statistical compliance, researchers were recommended to consider the results of various fit indices concurrently.

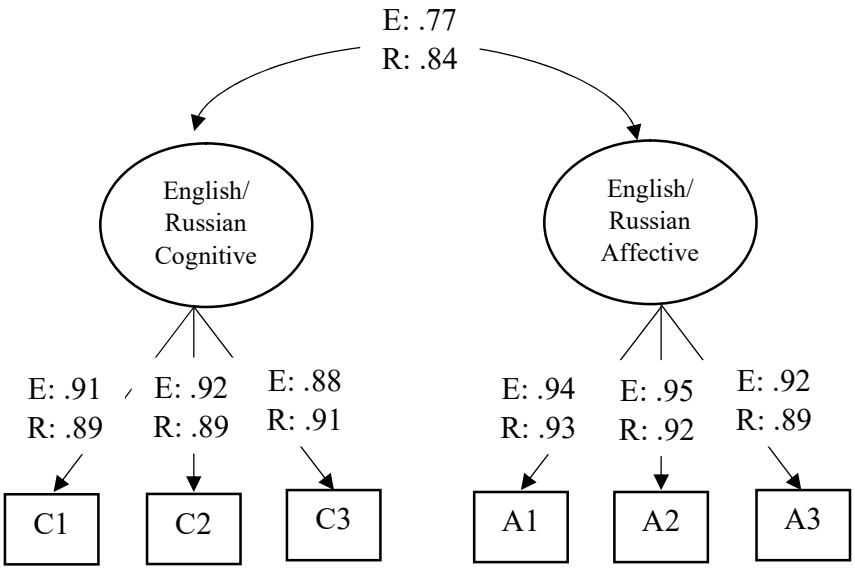
The hypothesizes of this study involved the examination of nested models. Specifying a subtype of a more general model, models were nested within each other. Thus, fixed model parameters in the nested model were freely estimated in the more general model. The nested model's comparison was performed to test whether the twofold structure of RSCs in two foreign languages was invariant across gender and to examine whether the I/E model assumption within foreign language domain was applicable across gender. Since chi-square was sensitive to sample size, researchers (Marsh, Hau, & Grayson, 2005) suggested various goodness-of-fit indices for examining and comparing nested models. Chen (2007) introduced that invariance can be assumed when the value of CFI did not decrease more than .01, and likewise, RMSEA did not increase more than .015 among less and more restrictive, models.

5.6.4 Results

5.6.4.1 Structure of Reading Self-Concepts

The two-factor models (Models 3-4 in Table 34) and the four-factor model (Model 7) which assumed distinct factors for the two components (cognitive and affective) of RSCs resulted in good levels of fit to the data. Conversely, the models which stated a unidimensional factor for two components of RSCs (Models 1-2) did not demonstrate good fits to the data. From the substantial and positive factor loadings (Figure 21A), it was clear that two components of RSCs were well defined in two foreign languages. Figure 21A displays the standardized correlations between cognitive and affective factors resulting from the two-factor models.

A


E: .77
R: .84
English/
Russian
Cognitive
English/
Russian
Affective
E: .91
R: .89
E: .92
R: .89
E: .88
R: .91
E: .94
R: .93
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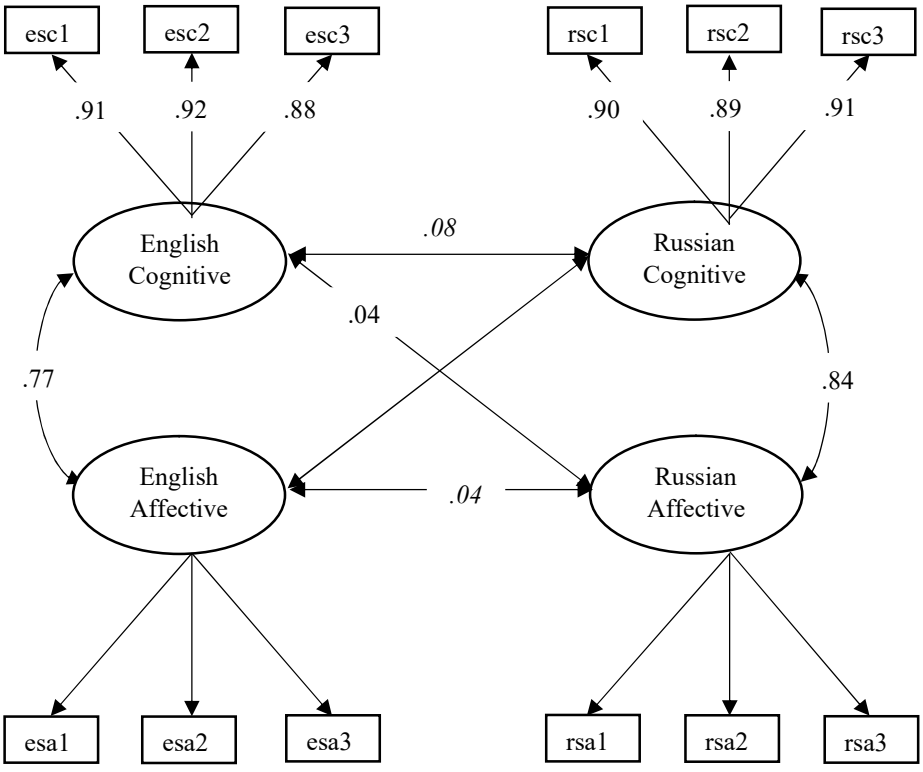
B


esc1
esc2
esc3
rsc1
rsc2
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.91
.92
.88
.90
.89
.91
English
Cognitive
Russian
Cognitive
.08
.04
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C

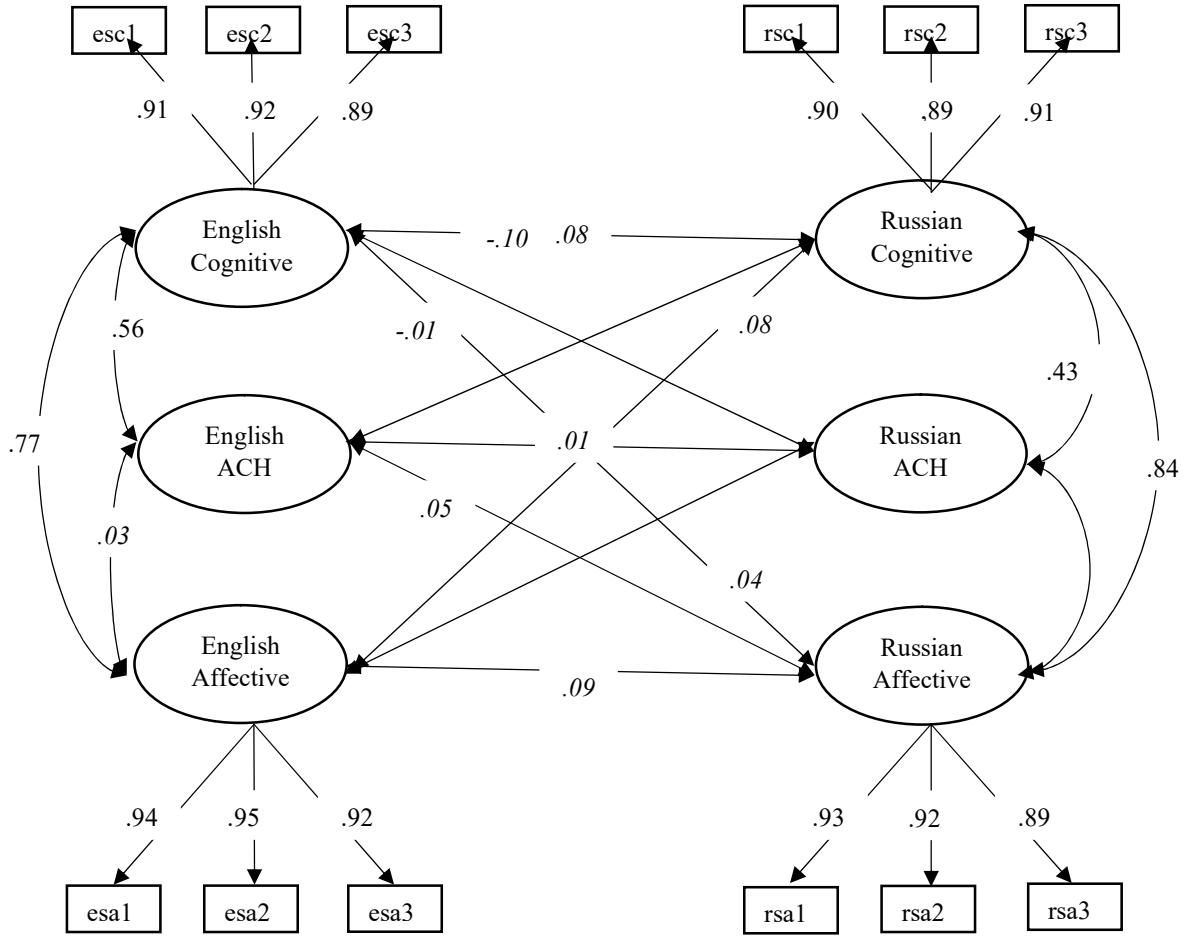

*Figure 21***.** Confirmatory Factor Analysis results among the latent factors of cognitive and affective readings of English and Russian, readings of two target languages, and their indicators (all parameters are standardized). *Note*. ACH = achievement, E = English, R = Russian, esc = English cognitive self-concept, esa = English affective self-concept, rsc = Russian cognitive self-concept, rsa = Russian affective self-concept, $p < .001$, except values shown italics are not significant. Correlations among uniquenesses of similar worded items are not shown (Table 5, Models 3-4; 9-10; see also item correlated uniqueness in Table 4).

The relationships among the two-component self-concept factors were substantial, but not ideal providing argument for the learner' ability to distinguish among self-concepts

associated with cognitive and affective components indicating twofold multidimensionality within RSCs. In this respect, it was necessary to indicate that the two components of RSCs were found to be more interrelated within Russian (r = .84) as the second foreign language compared to English as students' first foreign language (r = .77). These results contribute the assumption of the existence of multidimensionality within RSCs of different foreign languages.

5.6.4.2 Relations to Achievement

This study considered relations between two-factor models of RSC and reading achievements (Models 5-6 in Table 34). Students' achievement scores were found to be dissimilarly related to the two-factor models for English (cognitive: r = .56, affective: r = .03 in Table 35) and Russian (cognitive: r = .42, affective: r = .01). Cognitive components of RSCs in foreign languages demonstrated a strong, significant relation with reading achievement, while there was a weak, nonsignificant correlation between affective components and reading achievements. Cognitive component was more strongly correlated with reading achievement in English domain than Russian, indicating a reasonable difference between foreign languages. Furthermore, when achievement test scores were integrated into the two-factor models, they showed a slight decline in a model fit in both English (Model 5: $\Delta\chi^2$ = +.6587; ΔCFI = -.001; ΔTLI = -.002; RMSEA = +.001; SRMR = +.002) and Russian ($\Delta\chi^2$ = +.6184; ΔCFI = -.001; ΔTLI = -.001; ΔRMSEA = -.001 (a slight increase); ΔSRMR = +.002).

Next, this study investigated RSC's internal structure assessing the relationships between cognitive and affective components of foreign languages in a single model (Model 8). The substantial factor loadings (Figure 16B) and significant goodness-of-fit indices made it clear that the four-factor model (Model 8) showed a good fit to the data. Correlations between cognitive and affective components of the corresponding domains of foreign language were high, positive

and significant (English: r = .77; Russian: r = .84 Figure 16B), while there were nonsignificant, near-zero correlations between corresponding domains of cognitive self-concept (r = .08, n.s.) and affective self-concept (r = .04, n.s.) as well as the correlations between noncorresponding domains of cognitive and affective self-concepts (English cognitive and Russian affective: r = .04, n.s.; Russian cognitive and English affective: r = .08). In the subsequent model (Model 8 in Table 34), the present study examined the relations of first-order factors of cognitive and affective components of reading RSCs with reading achievements in a single model. Although Model 8 exhibited a good fit to the data, it also showed a slight decline comparing to Model 7 ($\Delta\chi2$ = +28.681; ΔCFI = -.002; ΔTLI = -.004; RMSEA = +.002).

Furthermore, this study examined the conflated model (Model 9) of RSCs to reveal correlations between cognitive and affective components of RSCs and reading achievements. Model 9 involved all six cognitive and affective items expected to load in a single English and Russian domains and reading achievement test scores, showed a poor fit to the data. Examining corresponding relations between conflated and separated models in two foreign languages (Table 35), this study found a reasonable difference (English conflated: r = .51, separated: the relationship between cognitive and achievement: r = .56; Russian conflated: r = .39, separated: the relationship between cognitive and achievement: r = .43) between two models.

Table 35

Latent Factor Correlations between Achievement and Self-Concept (Model 8-9 in Table 34)

Variables	Conflated model		Separated model			
	Eng RSC	Rus RSC	Eng RSC cognitive	Eng RSC affective	Rus RSC cognitive	Rus RSC affective
Eng RACH	.51**	.03	.56**	.03	-.01	.05
Rus RACH	.02	.39**	-.10	.11	.43**	.-.03
Eng RSC	1.00	.09	-	-	-	
Rus RSC	.09	1.00	-	-	-	

Note. Eng = English, Rus = Russian, RSC = reading self-concept, RACH = reading achievement, **$p < .001$.

As this study expected that students' ability would correlate with achievement, cognitive components of RSCs showed high, significant correlations with reading achievements in two foreign languages, but there were near-zero and the nonsignificant correlations between affective components of RSCs and reading achievements (English: $r = .03$, n.s.; Russian: $r = .05$, n.s.). Consequently, from the nonsignificant correlation indicators, it is evident that students perceive two foreign languages distinctly.

5.6.4.3 Gender Invariance

Gender invariance was examined to investigate the separation of cognitive and affective components of RSCs and their relations across gender. A set of measurement invariance models were performed. First, this study examined measurement invariance across gender for Model 7 (Table 34). The *p*-values of the chi-square tests for all invariance models were statistically significant, showing the applicability of the four-factor structure of RSCs in two foreign languages for each gender (Table 36).

Table 36

Goodness-of-fit Indices of Measurement Invariance across Gender for Model 7

Invariance steps	Gender	χ^2 contribution	χ^2	*df*	*P*	CFI	TLI	RMSEA	SRMR
Configural invariance	Boys	80.907	127.926	84	.001	.990	.984	.055	.026
	Girls	47.019							
Metric invariance	Boys	84.241	133.070	92	.003	.990	.986	.051	.029
	Girls	48.829							
Scalar invariance	Boys	86.677	137.266	100	.008	.991	.988	.046	.030
	Girls	50.589							

Note. CFI = confirmatory fit index, TLI = Tucker-Lewis index, RMSEA = root mean square error of approximation, SRMR = standardized root mean square residual.

The next step of the study was to test the twofold multidimensionality of RSC within the foreign language domain and its relation were invariant across gender (Table 37). Since all *p*-values of the chi-square tests for all invariance models were statistically significant, Model 8 showed conformity with each gender. Following the researchers' guidelines (Chen et al., 2005; Millsap, 2011), firstly this study tested the model of configural invariance of the Model 8 (Table 34) assuming whether boys and girls held the same structure of RSC.

Table 37

Latent Factor Correlations between Achievement and Self-Concept (Model 5-6 in Table 34)

Variables	English reading self-concept		Russian reading self-concept	
	Cognitive	Affective	Cognitive	Affective
Eng RACH	.56**	.03	-	-
Rus RACH	-	-	.423**	.01

Note. Eng = English, Rus = Russian, RACH = reading achievement, **$p < .001$

To test configural invariance of the Model 8, all factor loadings and item intercepts were freed to vary for each group (Table 38).

Table 38

Goodness-of-fit Indices of Measurement Invariance across Gender for Model 8

Invariance steps	Gender	χ^2 contribution	χ^2	*p*	*Df*	CFI	TLI	RMSEA	SRMR
Configural invariance	Boys	101.937	174.389	.0004	116	.987	.979	.054	.026
	Girls	72.452							
Metric invariance	Boys	105.472	179.928	.0003	124	.987	.982	.051	.029
	Girls	74.456							
Scalar invariance	Boys	111.452	191.076	.0013	136	.988	.983	.048	.040
	Girls	79.625							
Strict (factor invariance)	Boys	117.733	214.927	.0001	143	.984	.979	.054	.082
	Girls	97.195							

Note. CFI = confirmatory fit index, TLI = Tucker-Lewis index, RMSEA = root mean square error of approximation, SRMR = standardized root mean square residual.

This model resulted in a good fit for each gender so that they were found to demonstrate the twofold multidimensional structure and the I/E frame of reference within RSCs of English and Russian. The next step of measurement invariance was to test metric invariance whether the factor loadings were equivalent across gender, allowing the item intercepts to vary freely. The goodness-of-fit indices of the metric model of measurement invariance demonstrated a good fit to the data indicating the non-existence of item bias between genders. Fixing item intercepts to be equal across each gender group, the goodness-of-fit indices of scalar invariance model also indicated a good fit to the data. The next step of measurement invariance was strict factorial invariance which depicts the overall error in predicting the target construct. From the significant goodness-of-fit indices of strict invariance model, it was clear that the observed variable's residuals were equal across the groups. Regarding correlations among cognitive and affective self-concepts with achievements in the reading domain of English and Russian were not invariant across gender (Table 39). Although correlations between cognitive and affective components of RSCs in English and Russian were similar across gender (English: boys: r = .79, girls: r = .73; Russian: boys: r = .84, girls: r = .84 in Table 39), boys and girls demonstrated differences in the relationships between cognitive components of RSCs and reading achievements. Girls showed strong relations between cognitive components which implied students' ability and reading achievements comparing to boys in both FLs (English: boys: r = .34, girls: r = .80; Russian: boys: r = .39, girls: r = .50).

Table 39
Standardized Latent Correlations of Configural Invariance for Boys and Girls

Variables	1	2	3	4	5
1. English RSC cognitive					
2. English RSC affective	.787(.730)				
3. Russian RSC cognitive	*.056(.091)*	*.138(.091)*			
4. Russian RSC affective	*.014(.047)*	*.132(.017)*	.842(.838)		
5. English reading achievement	.340*(.795)	*.181(-.098)*	*-.072(.066)*	*.181(.003)*	
6. Russian reading achievement	*-.153(-.089)*	*-.133(.132)*	.392*(.496*)	*-.038(-.042)*	*-.001(.053)*

Note. RSC = reading self-concept, RACH = reading achievement, the values for girls are in the parenthesis, all values are significant at level $p < .001$, except values shown in italics are not significant, others are significant at level $p < .01$.

Furthermore, there were differences between two FL correlations indicating stronger correlations between RSC's cognitive component and achievement in English domain than in Russian.

5.6.5 Discussion

Studies on twofold multidimensional self-concept have inspected the separability of cognitive and affective components of ASCs (Abu-Hilal et al., 2013; Arens et al., 2011; Yang et al., 2016) and its distinction for specific subjects (native language, mathematics). The present study aimed to examine the cognitive and affective components of RSC within the FL domain (English and Russian) and examine the applicability of the I/E frame of reference to English and Russian domains studying the internal structure of the FL domain. Additionally, this study aimed to test gender invariance whether boys and girls hold the same twofold multidimensional RSC structure in two FLs.

The results of this study support the twofold multidimensional structure of RSCs in English as students' first FL and Russian as students' second FL and the applicability of the I/E

frame of reference within the FL domain. Evidence of the twofold multidimensional structure within RSCs of FLs was provided since the models differentiating between cognitive and affective components of self-concepts fitted the data substantially better than unidimensional models. The cognitive and affective components of RSCs were found to show high but not perfect relations to further support their distinctiveness. Evidence of the applicability of the I/E frame of reference to the foreign language domain was provided as the four-factor model referring separated cognitive and affective components of RSCs in English and Russian showed a better fit to the data than a conflated model was found to demonstrate near-zero, nonsignificant correlations between two FLs indicating distinctive RSC for each language.

This study aligns with Yeung and Wong (2004) study that founded distinctive verbal self-concepts for three languages indicating the multidimensional structure of self-concept within the verbal domain. Furthermore, this study is also consistent with Abu-Hilal et al. (2013) research that studied a twofold multidimensional structure of self-concept within mathematics and science domains. This notion was further supported by considering achievement correlations and gender differences as further methodological approaches to examine the structure of RSCs within the FL domain. While the findings appeared to be similar across the two target languages, but subtle differences were manifested.

5.6.5.1 Extension of the I/E Model to Foreign Languages

To further substantiate twofold multidimensionality, this study inspected the internal structure of RSCs of FLs and found that the four-factor model with incorporated achievements tests fitted the data considerable better than conflated models. Since there was a shortage in studies investigating the internal structure of RSCs of FL domain, this result contributes to domain-specificity of self-concept research, reading comprehension and FL learning and

teaching. Further, investigating correlations internal structure of RSCs, the present study found different relations between achievements and two components of RSCs.

Cognitive components which implied students' ability related highly to achievements in the corresponding domains than affective components which implied students' attitudes. These findings are consistent with Abu-Hilal et al. (2013) study that revealed high correlations between cognitive components of self-concept and achievement within mathematics (r = .58) and science (r = .57) domains and Arens et al. (2011) study that found high correlations between cognitive self-concepts and achievements within German (r = .63) and mathematics (r = .61) domains. Moreover, the results of the high relations between cognitive and affective components of RSCs within two FLs correspond to the findings of Arens et al. (2011) study that found high correlations between two components within mathematics (r = .81) and German (r = .78) domains and Abu-Hilal study that found high correlations between science (r = .74) and mathematics (r = .74) domains.

These results support and contribute to the multidimensionality of domain-specific self-concepts and the classic I/E model's extension to the FL domain. However, this study further found a near-zero, nonsignificant relationships between the cognitive components of RSCs in two foreign languages and between affective components of RSCs in two FLs. Nonsignificant correlations were also revealed between cognitive and affective components of noncorresponding domains. These results were not in line with previous studies (Abu-Hilal et al., 2013; Arens et al., 2011), which found negligible but significant correlations between corresponding and noncorresponding cognitive and affective domains self-concepts indicating the distinction of RSCs in two foreign languages. These findings suggest that students' cognitive and affective self-concepts are domain-specific, matching with Marsh and Yeung (1998) study

showing distinctiveness of cognitive and affective RSCs in two FLs and hence, extended the I/E model assumption to the construct of the foreign reading domain.

5.6.5.2 Gender Invariance and Generalizability across Languages

Support for the twofold multidimensional structure of self-concept construct emerges from the previous studies that have examined gender invariances among subject-specific self-concepts (Abu-Hilal et al., 2013; Arens et al., 2011). Consistent with past research (Abu-Hilal, 2005; Arens et al., 2016; Irwing, 1996; Marsh, 1989), boys and girls were found to develop a similar structure of RSCs in two foreign languages. However, there was a difference between boys and girls regarding correlations between cognitive and affective components of RSCs with reading achievement in English and Russian. Girls were found to display high correlations between cognitive self-concepts and achievements in two FLs than boys. This result corresponds to Abu-Hilal (2013) study that found higher relations between cognitive self-concept and achievement in the reading domain for girls (mathematics: r = .63; science: r = .63) than boys (mathematics: r = .53; science: r = .45).

Since the self-concept construct is hypothetical and multidimensional, it is worthwhile to validate it employing a construct validity approach. The measurement invariance of factor structure across boys and girls entails identical validity of given indicator measures to RSC's same component for each gender. This study inspected measurement invariance across gender for the four-factor model. Next, achievement tests were included for examining invariance of correlations between two components and achievements across gender. All models of measurement invariance showed a good fit to the data indicating the availability of the multidimensional structure of self-concept within reading domain and extension of the classic I/E

model to reading self-concept for each gender. The findings of the present study are in line with Marsh (1993) study.

At first sight, the results of multidimensional reading self-concept structures in two FLs implied to be consistent across two target languages. The close inspection of English and Russian RSCs reveals some differences between English as a first FL and Russian as a second FL. The cognitive and affective components related to English were found to be less interrelated than those for Russian suggesting that students might less differentiate two components of RSC for English. The results were indicating differences between languages complied with previous findings (Arens & Jansen, 2016). Examining the relations between reading achievement test scores and cognitive components of RSCs of two FLs, this study found a subtle difference between English and Russian. However, the inspection of the correlations these achievement test scores and cognitive components of RSCs in English and Russian across gender indicating that reading achievement was highly correlated to cognitive self-concept in Russian domain than in English which was consistent with Arens and Jansen (2016) study that found a high correlation between reading achievement and RSC within French domain (r = .52) than English (r = .47).

The findings of this study suggest that although there are some differences between two FL, the twofold multidimensional structure and the I/E model are available for RSCs of both foreign languages for each gender contributing to the multifaceted and domain-specific self-concept research.

5.6.6 Limitations, Future Research, and Practical Implications

The present study might be conducive to self-concept research and theory regarding further empirical support for the operation of twofold multidimensionality and the I/E model of

self-concept within a domain-specific level. Regardless of this study's substantial findings, future research is essential to investigate further twofold multidimensionality and the I/E model within the domain-specific level. Although the present study's contribution to twofold multidimensionality and the I/E model, certain limitations should be addressed. Firstly, the present study is cross-sectional and targeted only tenth-grade Azeri students. Longitudinal studies are undoubtedly necessary to gain an accurate and deep intuitive understanding of the twofold multidimensionality operation and the I/E model of RSC structure within foreign language domain. Since studies (Marsh & Ayotte, 2003) explored the differentiation of self-concept according to the students' age, it might be beneficial to compare the twofold multidimensional structure and the I/E model of RSC within FL domain between younger and older students. Moreover, longitudinal studies allow the investigation of the interrelation across time, since they enable the examination of self-concept and achievement relations which have been explored to be reciprocal (Marsh & Craven, 2006).

Secondly, to gain insight into the development of twofold multidimensional and the I/E model of RSCs within FL domain, future studies can integrate the five paradoxical frame of reference (social comparison theory and frame of reference, dimensional comparison theory, cross-cultural self-concept paradox and big-fish-little-pond effect) and contextual effects in RSC formation that occur at different levels, since studies (Marsh et al., 2020) found psychological comparison processes influence on self-perceptions and their relations to distal outcomes. Irrespective of this study's findings, which suggested the generalizability of twofold multidimensional structure across the RSCs related to students' English as a first FL and Russian as a second FL, a closer inspection found subtle differences between the structures of two FLs.

This inspection might serve as a basis for further studies on similarities and differences in RSCs of two FLs.

It might be interesting to examine the applicability of the given conceptions to other domains such as listening, writing, speaking. For example, the twofold multidimensional structure and the I/E model of the self-concept related to cognitive and affective components could be examined. This assumption would also enable further multidimensionality within domain-specific self-concepts and to what extent is theoretically and practically relevant. Therefore, researchers could be inspired by examining the correlation of more domain-specific self-concepts with achievements of matching domains within different FLs.

Further research on the RSC construct within the FL domain might also be beneficial to examine twofold multidimensionality of domain-specific and skill-related differentiation of motivational constructs such as self-efficacy. Although the construct of self-efficacy was found to be closely related to self-concept which meant both constructs relate to students' perceptions of ability, most studies (Bong & Skaalvik, 2003; Jansen et al., 2015; Parker et al., 2014) found the theoretical and empirical separation between self-concept and self-efficacy. While self-concept applies to students' self-perceptions of their ability related to a given domain in general and is past-oriented, self-efficacy refers to students' expectation and confidence to perform a specific task successfully and is future-oriented. Since Arens and Jansen (2016) indicated that self-concept and self-efficacy became more difficult to distinguish when both constructs were applied for a more specific content domain; the task-orientation was considered as an essential part of the conceptualization of self-efficacy was partially confused with the specificity level of the item. The self-concept items were used in this study were conceptually distinct from the items of self-efficacy such as item example used by Pajares, Miller and Johnson (1999) to assess

writing: “How sure are you that you can correctly spell all words in a one-page story or composition?” (as cited in Arens & Jansen, 2016, p. 660). Hence, the empirical distinction of self-concept and self-efficacy on the level of specific domains would be compelling to explore in future studies.

The findings have significant practical implications for designing interventions to improve students’ FL self-concept and achievement. Educators need to have a clear understanding of how cognitive and affective components of RSs in two FLs operate to improve learner’ reading skills. Common perceptions of instructors about domain-specific academic achievements are dissent from learners’ views showing that students’ abilities in various domains are grounded on external evaluation, and do not differ between and within domains (Marsh & Craven, 1997). Teachers are likely to assume that if students have a positive attitude toward reading, they will also have a positive belief about their ability and show better performance. Educators also believe that if students have a positive attitude toward reading skill and belief about their ability in target skill in one FL, they will have a positive attitude toward reading skill and belief about their ability in another FL. The results of this study suggest that students hold distinct RSC for each FL. Students’ high RSC in English will not be affected by reading achievement in Russian.

Similarly, if students perform well in English reading, these students’ RSCs in Russian will not be influenced by English achievement. If students hold low beliefs related to their competence in a domain which they show weak performance, teachers should intervene to support students’ learning by improving and strengthening their beliefs about their abilities in a given domain. This study's findings are likewise worthwhile to curriculum developers, mainly FL field, to develop proper strategies to foster the growth of students’ beliefs about their reading

ability. Besides, the findings of this study reveal valuable information about Azeri students' personalities. The process of forming two components of self-beliefs is complicated particularly on that point that although the development of self-beliefs is indifferent from European culture in which all educational settings are based on mixed-sex education, likewise Eastern culture, the socialization process in the school and family lead Azeri students, particularly boys, to be less differentiate cognitive and affective components and do not hold stronger relations between performance in school subject and ability beliefs than girls. Attitudes toward reading are also crucial as cognitive domains for boys. However, regardless of attitudes toward reading, girls' ability beliefs have a strong influence on their performance. Since the affective component is highly related to RSC's cognitive component, which is highly related to achievement and if educators have the intention to improve the importance of reading, they need to work on the affective component of RSC of an FL, likewise the cognitive component.

Chapter 6 Conclusions, Recommendations, Implications and Limitations

6.1 Introduction

Across the use of five parts and one separate study of this research provide insights relationship between the foreign language and its receptive skills with self-concept. Sub studies concentrated their attentions on how receptive skills related to self-concept in the corresponding domain, how students construct their perceptions within language domain and how students perceive themselves as language learners. Moreover, as there is no research based on an online platform and no data in terms of receptive skills, this study is also beneficial to understand students' ability levels. Another focus of particular interest to find out how achievements related to students' self-concept in matching and nonmatching domains.

6.2 Cognitive and Affective Components of Verbal Self-Concepts and Internal/External Frame of Reference within Multidimensional Verbal Domain

I start with summarizing the findings to overall research aims from each study. Study one provides insights about twofold dimensionality of language self-concept. How cognitive and affective components of self-concept related to achievements within corresponding and noncorresponding domains. As most studies (Abu-Hilal, 2005; Arens et al., 2011; Marsh & Ayyote, 2003; Pinxten, 2014) revealed a distinction between affective and cognitive components of self-concept in math and verbal domain (only one research which was conducted by Abu-Hilal et al. (2012) studied twofold multidimensionality within science and math domains), we studied these two different components and their relations with achievement measures within foreign

language domain. The study revealed the separation of self-concept components and provided evidence that two dimensions should be separated and not conflated.

For further substantiation of argument about the separation of cognitive and affective components of self-concept, we tested the relationship between achievements and two components of self-concept and revealed that achievement measures strongly correlated with cognitive components with self-concept more than affective that is line with the literature (Marsh & Hau, 2004).

Furthermore, revealed weak correlations between English and Russian showed that single verbal self-concept is inadequate for different foreign languages such as English and Russian to represent multilingual learners. Therefore, these results support multidimensionality within verbal self-concept.

As most studies (Fredricks & Eccles, 2002; Jacobs, Lanza, Osgood, Eccles, & Wigfield, 2002; Skaalvik & Skaalvik, 2004; Wilgenbusch & Merrell, 1999) explored high levels of classical academic self-concept, especially in the verbal domain, this study confirmed the gender stereotypes indicating high levels of self-concept in the verbal domain for girls. However, the structure of self-concept indicating two separate components were invariant across gender.

6.3 The Internal/External Frame of Reference of Math, English and Russian Self-Concepts

To understand self-concept in the verbal domain and obtain a clear picture of students' perceptions, firstly, we explored academic self-concept, including two foreign languages. The aim of the present study is to expand classical math/verbal I/E model of academic self-concept to two foreign language domains and find out that whether the contrasting domains (math and verbal) of self-concept generalizes according to two foreign languages or varies. This study

revealed three distinctive self-concepts for three school subjects indicating the multidimensional structure of self-concept. Moreover, as in consistent with the literature (Yeung & Wong, 2004), verbal self-concept constructs can be different and unrelated.

Regarding gender differences, the results from measurement invariance showed that the construct of academic self-concept was invariant across gender. In contrast, scalar and strict invariance tests revealed gender differences when error correlations of factors and all parameters on the model restricted.

Subsequently, the study revealed the near-zero correlations between math and two foreign languages. As findings revealed, near-zero correlations between two foreign languages, one language's performance will not affect students' self-concept in another language.

6.4 Self-Concept in Reading and Listening of English and Russian: Multidimensionality and Hierarchy

As most researchers (Marsh, 1986; Marsh & Yeung, 2001; Möller et al., 2006, 2009; Xu et al., 2013; Yeung & Wong, 2004) concentrated their attentions on multidimensional nature of self-concept, the distinction of verbal self-concept from math indicating the multidimensional and hierarchical structure of academic self-concept. The study aims to examine the structure of self-concept within the verbal domain by revealing the multidimensional and hierarchical nature of this phenomenon. Moreover, it is also essential to answer the question of whether multidimensional and hierarchical structure varies across two foreign languages or not.

The current study revealed that models that distinguish skill-specific self-concepts in reading and listening showed a better fit to the data. Furthermore, as correlation were not perfect, the study revealed a distinction between skill-specific facets of self-concept indicating

multidimensionality. We also incorporated skill-specific self-concept facets into a higher-order factor and revealed that the higher-order factor was strongly correlated with global self-concept factor. However, the correlations between skill-specific facets were different due to the foreign language. There was a weak correlation between listening and reading self-concepts in English when a strong correlation was revealed between Russian listening and reading self-concept.

Subsequently, we included achievement measures to examine substantial multidimensionality and hierarchy within the verbal domain. The study revealed high relation between corresponding domains, listening achievement highly associated with listening self-concept and reading achievement related to reading self-concept; however, the near-zero correlation was revealed between nonmatching domains.

Moreover, this study revealed a high correlation between grades and the global factor of self-concept compared to the higher order. However, achievements measures demonstrated a strong association with the higher-order factor comparing to global self-concept. Detailed analysis of self-concept construct revealed that skill-specific facets of self-concept related each other more than in English. It might be interpreted by various teaching methods and strategies for different foreign languages.

6.5 Reading, Listening and Math Self-Concepts: Internal/External Frame of Reference

As the previous study revealed that the academic self-concept domain is multidimensional, we decided to explore how academic self-concept might be specific and whether this specificity generalizes or varies according to two languages. Therefore, the purpose of this study is to extend classical domains (verbal and math) of academic self-concept to more skill-specific domains opposing listening and reading self-concepts with math. The study

revealed that skill-specific facets of self-concept opposing math, indicating the multidimensional nature of self-concept in more skill-specific domains.

Further, substantiate multidimensionality of self-concept structure, we incorporated achievement measures and examined correlations between achievement and self-concept in corresponding and noncorresponding domains. The findings demonstrated that there were strong correlations between corresponding domains comparing to noncorresponding domains. Receptive skills have a negative or near-zero correlation with math self-concept in both languages. However, the detailed analysis demonstrated that correlation between receptive skills is stronger in Russian than English. In other words, students can differentiate listening and reading self-concepts in English.

6.6 Assessing Azerbaijani Students' Performances in Listening and Reading Skills in English and Russian

The results of the person item map show a relatively good distribution of the test. The difficulty level of the test demonstrated a good fit to the students' ability. Although students with different ability levels were fairly discriminated by the test which shows that the test was an adequate measure for the students, further study needs to be conducted with a large sample for the results to be more generalizable. More items are necessary to distinguish the ability level of students fairly. From the results of achievement tests, students have almost the same proficiency levels in two foreign languages. However, the achievement relations between listening and reading skills are different according to two foreign languages.

Furthermore, the relations of subtests of reading and listening skills varied according to language. Subtests of Russian were more interrelated than English. It means that students

distinguish and possess different proficiency levels in two different English language skills than Russian. While receptive skills in Russian were more interrelated and had a strong, positive correlation; there was a negative, moderate correlation between listening and reading English skills.

Moreover, being based on technology, online test administration, and automatic calculation of scoring reduced the testing process's time and cost (Pásztor, Molnár & Csapó, 2015). This instrument's character makes it suitable for everyday school practice and possible a large-scale assessment in Azerbaijan. The findings indicate that online assessment may provide teachers with an easy-to-use instrument for monitoring students' foreign language skills and may contribute to the development and improvement of effective teaching and learning methods.

6.7 The Relationship between Cognitive and Affective Dimensions of Reading Self-Concept with Reading Achievement in English and Russian (Separate Study)

Although most research examined motivation in reading domain, there is a lack of studies investigating twofold multidimensional structure of reading self-concepts within English and Russian. This study reported the investigation of whether cognitive and affective dimensions of reading self-concepts in two foreign languages (English and Russian) were distinct constructs and whether the relationships among cognitive and affective variables were invariant across gender. The results of a structural equation modelling demonstrated that cognitive and affective self-concepts were independent, but strongly correlated constructs. The separated cognitive and affective components of reading self-concept construct indicated a more straightforward structure than a conflated model. The correlations between two components of self-concepts with achievements in two foreign languages' reading domain were invariant across gender. This

study's findings can encourage future research on examination of more domain-specific self-concepts that conceptualizes twofold multidimensional structure of the self-concept and its relationship with achievement. This study might be appropriate for secondary school instructors to help their students' understanding of their strengths and weaknesses in reading domain.

6.8 Limitations, Future Research, and Practical Implications

Although it contributes to support twofold multidimensional and domain-specific nature of the verbal domain of self-concept, certain limitations should be considered. As the nature of self-concept is not stable but rather dynamic, it requires a deep understanding of verbal domain within different languages. Thus, longitudinal studies are needed to examine the development of students' abilities to distinguish between two dimensions (cognitive and affective) within verbal self-concepts. Since we focused only on foreign language domain, it is necessary to study how verbal domain differentiates between foreign languages, native tongue, and productive skills. Moreover, as the main limitation of the cross-sectional design is the absence of temporal precedence that might not be a liability in estimating reciprocal causation, this design restricts the inspection of relations between self-concept and achievements.

Furthermore, the careful analysis revealed differences between two foreign languages which might initiate further studies on differences and similarities of different foreign languages. As we found the multidimensional structure to have good data, further differentiation within skill-specific self-concepts might be considered. It might enhance domain specificity of self-concept within foreign languages.

Moreover, educators are suggested to consider students have separable competence-related and affect-related self-concepts. Therefore, inferring students' affective perceptions from

their competence self-perceptions would lead to misleading interpretations. Students' cognitive and affective perceptions should be considered separately in each subject domain, and it is necessary to assess them by different scales.

The present study also contributes to the classical I/E model of academic self-concept and its expansion to English and Russian, but certain limitations should be emphasized as well. Firstly, it is cross-sectional, and for profound comprehension of the secondary Azeri students' academic self-concept, longitudinal studies are necessary to investigate the improvement of learner' competencies of various languages and how self-concepts in these languages correlated with each other. Concerning language self-concept, only foreign language domain was examined in the present study. The most interesting findings were strong relationships between corresponding domains and very weak (near zero) relationships between noncorresponding domains. It demonstrates separate self-concept structure for each school domain.

The findings have significant practical implications for the design of interventions for developing students' verbal self-concept and verbal achievement and academic self-concept and achievement. About the reciprocal relation between academic self-concept and achievement, effective interventions should include self-concept enhancement to have the long-lasting impact of efforts in improving students' verbal skills. Likewise, verbal self-concept enhancement interventions should integrate skill development. The distinction between affective and cognitive components of verbal self-concept should be integrated on self-concept enhancement intervention strategies. Moreover, the distinction between the two components of self-concept allows researchers to design educational interventions to foster students' resilience. Considering the strong relationship between the cognitive component of verbal self-concepts and achievements, if educators' main aim is to improve students' performance, they should focus on

strengthening learners' self-perception of cognition. This study's findings should foster researchers to contribute understanding by examining more domain-specific self-concepts with conceptualizing of cognitive and affective components of self-concept and their relations with achievement.

Revealing the negative correlation between listening and reading self-concepts in English, this study shows that students distinguish two skill-specific self-concepts. If a student has positive self-concept in reading in English, it does not mean that s/he will have positive self-concept in listening. However, the results for Russian showed that students do not distinguish two skill-specific self-concepts. Furthermore, the near-zero correlations between noncorresponding verbal and math domains indicate that students tend to consider themselves either a verbal person or math person. It has significant implication in an educational setting. Teachers and parents assume that if a student is successful in one subject domain, s/he will be successful in another.

In this study, we revealed the distinction between English and Russian self-concepts of bilingual students that indicated the verbal domain's multidimensional nature. This multidimensional nature was supported by the separation of cognitive and affective components of verbal-self-concepts. Therefore, it is necessary to test further separation of cognitive and affective components of verbal-self-concept to more skill-specific domains with larger samples. One single verbal self-concept would lead to invalid interpretations if a second language teacher assumed that those students who perceive they are competent in one foreign language would perceive the same level of competence in another foreign language. The present finding that a single verbal self-concept cannot represent students' self-concepts in different languages entails that the notion of a single verbal self-concept can be more problematic.

To extend the I/E model of academic self-concept, affective and cognitive components of self-concept can be integrated into future studies because the affective component assesses students' interest level for a particular subject and cognitive component evaluates students' perception about ability in a specific subject. Moreover, researchers should be encouraged to investigate the relationship of more domain-specific self-concepts with achievements of matching domains. Future research could also examine this by receiving students' responses at various levels of education that would provide clear evidence.

As it was revealed that hierarchy is substantial within different languages and facilitates overall students' self-concept assessments, findings from this study might be conducive to instructors due to assisting them in exposing their students' perceived strengths and weaknesses.

6.9 Summary

In this chapter, the limitations, further research and practical implications were presented. The main aim of this study was to examine the relationship between receptive skills and self-concept. How students perceive themselves as language learners and how achievements in the corresponding domain and noncorresponding domain impact their self-concept. The first part of the study revealed the more robust relationship between a cognitive component of self-concept with achievement than affective, indicating that these two components should be separable. The second part of the study found out negative correlations or near-zero correlation between math and two foreign languages emphasizing distinct self-concepts for each subject domain. The third part of this study investigated skill-specific facets of self-concepts and found that students perceive various skills differently both of target languages. The fourth part of this study examined academic self-concept, extending it more skill-specific domains opposing them math

domain and found different self-concepts for skill-specific facets and math. The fifth part of this study revealed students' proficiency levels and differences between language achievements. The results suggest a longitudinal approach with representative samples to profoundly understand Azeri students' perceptions of the language domain. The sixth (separated) part of this study explored the twofold multidimensional structure of reading self-concept within two foreign languages indicating separation of cognitive and affective components in more skill-specific self-concept domain.

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Appendix A: Example Consent Form

Consent Form

Dear Parent/Guardian

My name is Konul Karimova, and I am a PhD student at the University of Szeged (Hungarian university that has bilateral educational cooperation agreements signed between the Ministries responsible for education) who was researching students' self-concept in the language in order to learn more about students' perceptions as language learners. The purpose of this letter is to ask for your permission for your child to complete questionnaires during this school semester. The questionnaires will take approximately 30 minutes to complete. The questionnaires will ask about your child's perceptions in language, how do they feel themselves as language learners. The questionnaires will be administered Autumn, 2018. All questionnaires' responses we collect will be used for research purposes only and will be kept confidential. The surveys that are administered will not have your child's name on them. Your child's participation in questionnaires is completely voluntary. He or she may skip any question that is asked and may discontinue answering the survey at any time. There are no known risks associated with answering this survey greater than what is experienced in everyday life. Our university will use data security procedures to ensure the confidentiality of students' questionnaires' responses.

Your child's participation in questionnaires will increase our understanding of their language self-concept, how do they evaluate themselves as language learners. This information will be used to inform improvements in educational approaches.

If you would like more information about this study, you may contact Konul Karimova, konulkerimova@edu.u-szeged.hu

We hope that you will allow your son or daughter to participate in this survey.

Sincerely,

Konul Karimova

PhD student

University of Szeged

If you agree to let, your son or daughter participate, please sign and return the consent form enclosed with this letter by 12. 11.2018.

Informed Consent

If you have read the above information, asked any questions and received answers, and allow your child to participate in the survey, indicate your response and sign below.

_____ **Yes,** I allow my child to respond to the survey.

_____ **No,** I do not allow my child to respond to the survey.

Name of Student _____

First Middle Last
Please print the name of a student here.

Student Date of Birth _____
(MM/DD/YYYY)

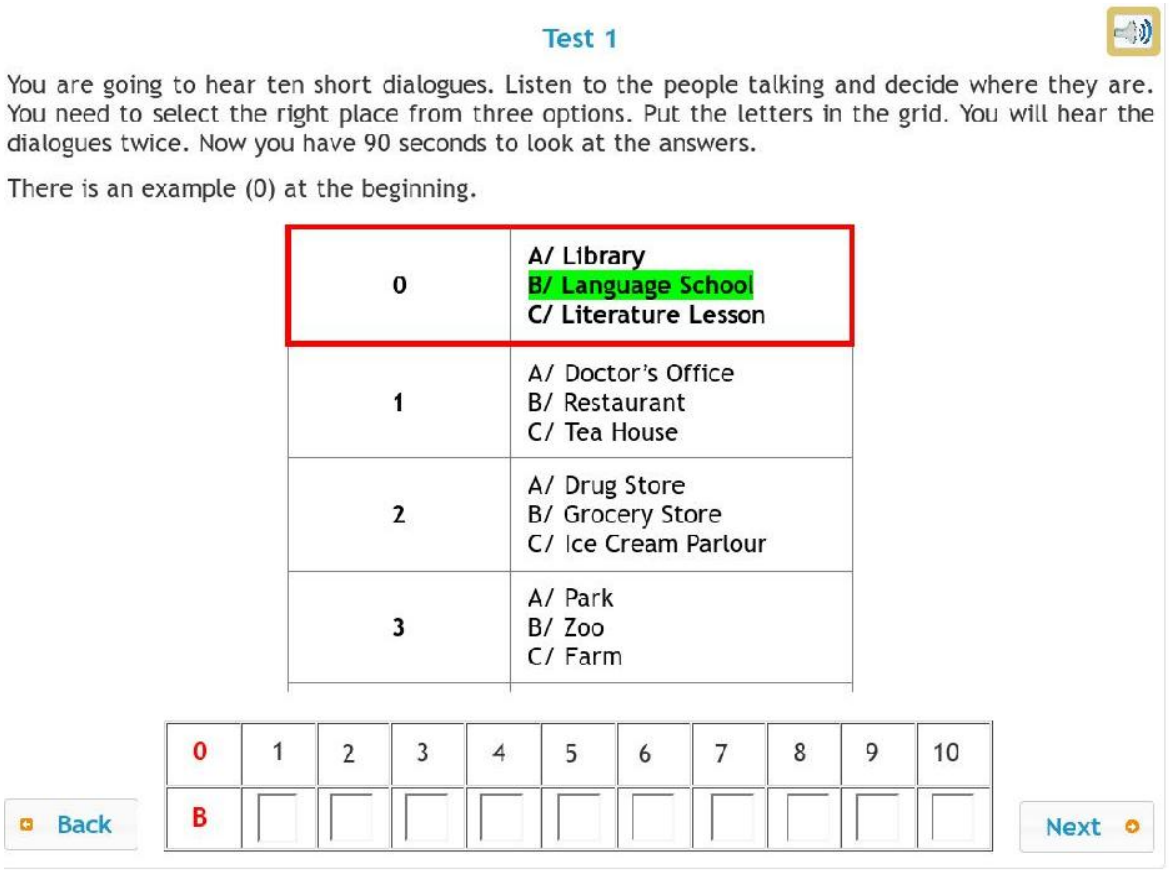
Signature of Parent or Guardian _____

Date of Signature _____
(MM/DD/YYYY)

Name of Parent or Guardian _____
Please print the name of signing parent or guardian here.

School Name _____

Appendix B: English Listening and Reading Tests (A2 Level)



Test 1

You are going to hear ten short dialogues. Listen to the people talking and decide where they are. You need to select the right place from three options. Put the letters in the grid. You will hear the dialogues twice. Now you have 90 seconds to look at the answers.

There is an example (0) at the beginning.

0	A/ Library B/ Language School C/ Literature Lesson
1	A/ Doctor's Office B/ Restaurant C/ Tea House
2	A/ Drug Store B/ Grocery Store C/ Ice Cream Parlour
3	A/ Park B/ Zoo C/ Farm

0	1	2	3	4	5	6	7	8	9	10
B										

Back Next

Test 2

You are going to hear ten short film trailers. As you listen choose a title for each film. Put the letters in the grid. There are twelve titles you can choose from, but you will only need ten of the titles. You will hear the dialogues twice. Now you have 90 seconds to look at the answers.

There is an example (0) at the beginning.

A. Finding Love and Gold
B. The Young Clock Master
C. The End of a Sports Career
D. Making Films
E. Travelling with a Stranger
F. Books and Violins
G. From Rich to Poor
H. Pen Friends' Love
I. Car Racing
J. Famous Spacemen
K. Teenage Love
L. The Rich Driver
M. The Librarian

0	1	2	3	4	5	6	7	8	9	10
J										

Back Next

Test 3

Below you will find the descriptions of books (0-10). Find the title of each book in the list (A-M) and put the letters in the grid. There are two titles you will not need.

There is an example (0) for you at the beginning.

0.	Create fabulous paper models with projects including an air-to-surface guided missile and a spaceship. This gift box includes a book with basic instructions, 50 sheets of origami paper, one completed origami missile, and nine amazing projects!

1. Written in glorious rhyme and illustrated in colour, this is a fabulous story, with drama, humour, originality - and a happy ending with balloons and a cake! Three friends throw a surprise party for Jerry, but complications almost ruin this special day.

2. ‚Oink!' said the cats ... The farmyard is full of noise with all the MOOing and HISSing and BAAAing and CLUCKing. When Hefty Hugh and Lanky Len plan a plot to steal the fine prize cow, it's the quietest animal of all who saves the day! Spot the tiny red animal with her black spots on every page of this wonderful rhyming tale.

3. Harry runs away from his home to join the circus. The audiences love him but poor Harry, kept in a cage by the wicked circus owner Sam Sly, soon longs to return to the

Answers

0	1	2	3	4	5	6	7	8	9	10
J										

Back Next

Test 4

There are ten gaps (0-10) in the text below. Find the missing parts in the list (A-M) and put the letters in the grid. There are two parts you will not need. There is an example (0.) for you at the beginning.

First Day of School

I don't want to start school. I don't want to do anything but stay in bed. Stay in bed, with the covers ___0___. All day.

"Take a shower, Dave," my mother says, on the morning when school starts. "Wash ___1___. I'll bet it's been seven days. That's not like you."

She is wrong. It's been ___ 2 ___ since I've bathed. I know I smell, but I don't care. I roll over and pull the bedsheet up over my ear.

"Please, honey," Mom says. "Don't wait too long to get ready for school."

As if I am planning to jump out of bed this moment and head right for the shower.

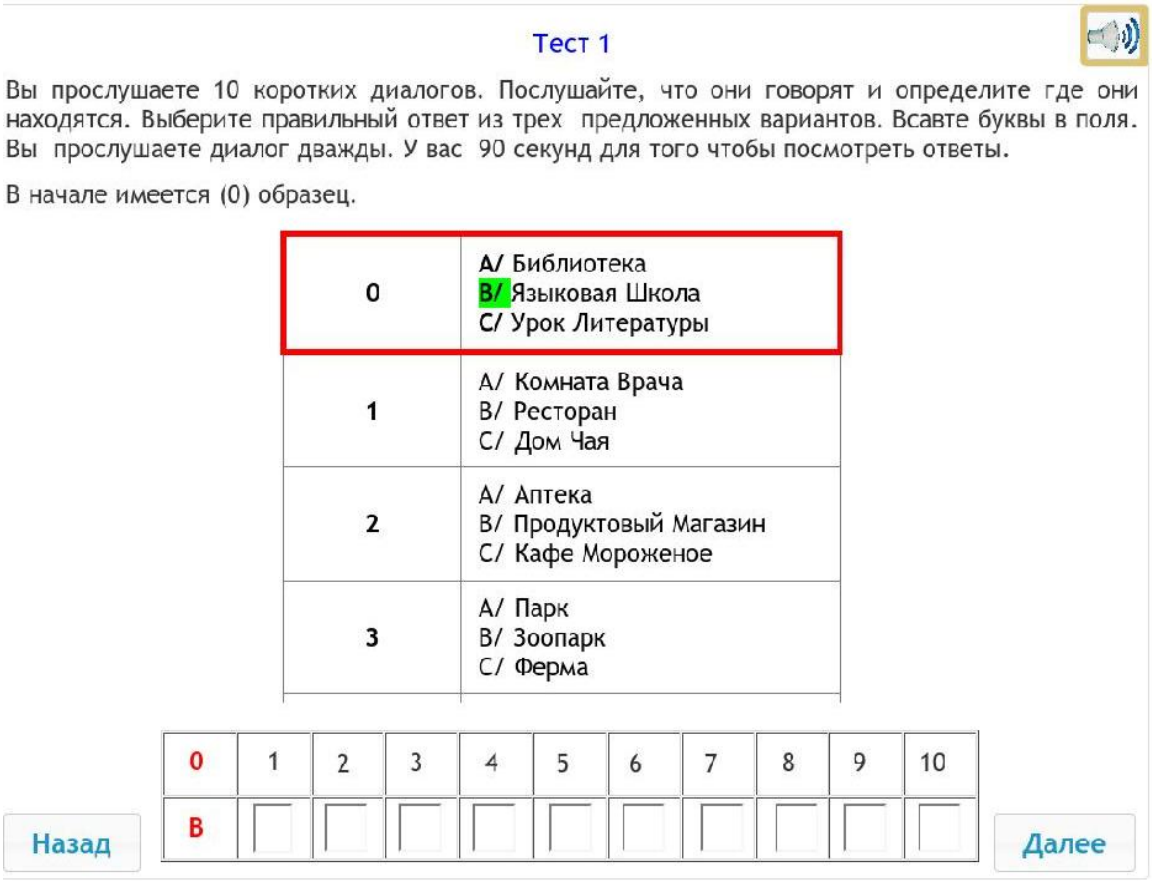
Answers

0	1	2	3	4	5	6	7	8	9	10
J										

Back

Next

Appendix C: Russian Listening and Reading Tests (A2 Level)



Тест 1

Вы прослушаете 10 коротких диалогов. Послушайте, что они говорят и определите где они находятся. Выберите правильный ответ из трех предложенных вариантов. Всавте буквы в поля. Вы прослушаете диалог дважды. У вас 90 секунд для того чтобы посмотреть ответы.

В начале имеется (0) образец.

0	A/ Библиотека B/ Языковая Школа C/ Урок Литературы
1	A/ Комната Врача B/ Ресторан C/ Дом Чая
2	A/ Аптека B/ Продуктовый Магазин C/ Кафе Мороженое
3	A/ Парк B/ Зоопарк C/ Ферма

0	1	2	3	4	5	6	7	8	9	10
B										

Назад Далее

Тест 2

Вы прослушаете десять отрывков из корокотметражных фильмов. Прослушав каждый отрывок выберите название для них и вставьте буквы в поля. Из 12 предложенных выберите только 10 названий. Вы прослушаете диалог дважды. У вас есть 90 секунд чтобы просмотреть ответы.

В начале имеется (0) образец.

A. Находка любви и золота.
B. Молодой Часовщик
C. Конец Спортивной Карьеры
D. Съемка Фильма
E. Путешествие с Незнакомцем
F. Книги и Скрипки
G. От богатого к Бедному
H. Любовь Друзей по Перу
I. Автогонки
J. Известные Астронавты
K. Подростковая Любовь
L. Богатый Водитель
M. Библиотекарь

0	1	2	3	4	5	6	7	8	9	10
J										

Назад Далее

Тест 3

Внизу вы найдете описание книг (0-10). Найдите название каждой книги в списке (A-M) и вставьте буквы в поле. Название двух книг не входят в данный список.

начале для вас приводится пример (o)

0.	Создайте потрясающие бумажные модели на тему управление космическим пространством ракетами и кораблями. Подарочный набор включает в себя инструкцию, 50 листов бумаги оригами, одну готовую ракету-модель оригами, а также девять потрясающих проектов!

1. Этот выдуманный рассказ с драматизмом, юмором и оригинальностью со счастливым концом, шарами и тортом написан с хорошей рифмой и цветными иллюстрациями. Три друга Джерри организовали вечеринку для него , но непредвиденные обстоятельства чуть не испортили этот день.

2. Оинк!- сказали Кошки. Двор фермы заполнен всеми этими звуками Мычанием, Шипением, Блеянием овец и Кудахтаньем. Когда Здоровенный Хью и Долговязый Лен планируют заговор с целью чтобы украсть прекрасную корову в качестве приза, это самое спокойное животное из всех, которое спасает положение!
На каждой странице этой замечательно срифмованной сказки изображенна крошечное красное животное с черными пятнами.

Ответы

0	1	2	3	4	5	6	7	8	9	10
J										

Назад Далее

Тест 4

В нижеприведенным тексте имеется десять (0-10) пробелов. Найдите недостающие части в списке (A-M) и вставьте буквы в соответствующие ячейки. Две части, являются лишними. Для начала вам приведен пример (0).

Первый день в школе.

Я не хочу идти в школу. Я ничего не хочу делать, только спать. Оставаясь в постели укутавщись одеялом _0_ Все дни.

" Дейв, прими душ" - говорит моя мама, утром перед школой. Умойся _1_. Могу поспорить, это уже седьмой день. Это так на тебя не похоже.

Она не права. Уже _2_ с того момента как я принял душ. Я знаю, я попахиваю, но мне все равно. Я поворачиваюсь и натягивая простыню прямо над своим ухом.

«Пожалуйста дорогой» говорит мама. «Не долго ждать, чтобы собраться в школу».

Словно я готов сейчас выпрыгнуть из постели и направится прямо в душ.

Она немного пожимает меня по плечу, чтобы убедится _3_ «Дейв, сделай это для меня, хорошо?»

Я встаю с постели, чувствую себя вялым из-за отсутствия физических упражнений и недостатка пищи. И я направляюсь _4_

Ответы

0	1	2	3	4	5	6	7	8	9	10
J										

Назад Далее

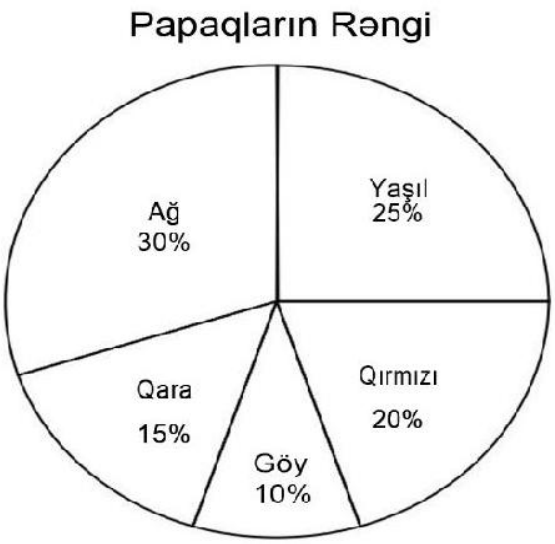
Appendix D: Math Tests for the 8 Graders

1. Kəsri həll edin.

$$\frac{4}{100} + \frac{3}{1000} =$$

- A. 0.043
- B. 0.1043
- C. 0.403
- D. 0.43

2. Gördüyünüz qrafik idman maqazinində satılmaq üçün papaqların faizini göstərir. Əgər 200 papaq varsa, ağ və yaşıl papaqlar cəmi nə qədərdi?



- A. 55
- B. 100
- C. 110
- D. 145

3. Hansı cavab 36 ədədini sadə ədədlərlə ifadə edir?

- A. 6×6
- B. 4×9
- C. $4 \times 3 \times 3$
- D. $2 \times 2 \times 3 \times 3$

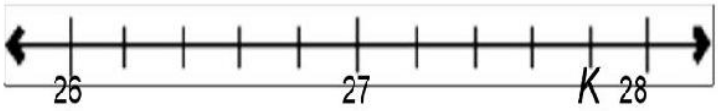
4. Cədvəldən istifadə edərək 256 x 4,096 nəticəsini 4 üstündə ifadə edin.

Cədvələ baxın:

4^1	4^2	4^3	4^4	4^5	4^6
4	16	64	256	1,024	4,096

- 4^{10}
- 4^{16}
- 4^{20}
- 4^{24}

5. Xətt üzərindəki *K* hərfi hansı rəqəmi ifadə edir?



- A. 27.4
- B. 27.8
- C. 27.9
- D. 28.2

Kəsrlər $\frac{4}{14}$ və $\frac{\blacksquare}{21}$ bərabər olarsa,

$\blacksquare$ hansı rəqəm olmalıdır ?

- A. 6
- B. 7
- C. 11
- D. 14

8. Hansı üsul düzgün həll yoludur $\frac{1}{3} - \frac{1}{4}$?

- A. $\frac{1 - 1}{4 - 3}$
- B. $\frac{1}{4 - 3}$
- C. $\frac{3 - 4}{3 \times 4}$
- D. $\frac{4 - 3}{3 \times 4}$

9. Orta $2n$ olan üç ardıcıl tam ədədin cəmi nə qədərdi?

- A. $6n + 3$
- B. $6n$
- C. $6n - 1$
- D. $6n - 3$

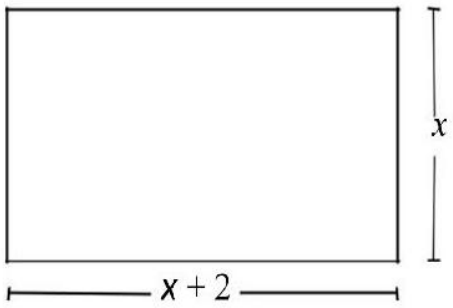
10.Şənlikdə *m* sayda oğlan və *n* sayda qız var idi. Hər birinin əlində 2 şar var idi.Gördüyünüz ifadələrdən hansı şənlikdəki şarların ümumi cəmini ifadə edir?

- A. $2(m + n)$
- B. $2 + (m + n)$
- C. $2m + n$
- D. $m + 2n$

11. $xy + 1$ nəyi ifadə edir?

- A. 1-i y-lə toplyın, sonra x əlavə edin.
- B. 1-i x və y-ə vurun.
- C. x y-lə toplayın, sonra 1-i əlavə edin.
- D. x y-ə vurun, sonra 1 toplayın.

12. Düzbucaqlının sahəsini tapın.



- A. X2 + 2
- B. X2 + 2x
- C. 2x + 2
- D. 4x + 4

13. Hansı ifadə bu $4(3 + x)$ ifadənin bərabəridir?

- A. $12 + x$
- B. $7 + x$
- C. $12 + 4x$
- D. $12x$

4. $3p^2 + 2p + 2p^2 + p$ ifadəni sadələşdirin və bu ifadəyə bərabər tənliyi tapın?

- $8p$
- $8p^2$
- $5p^2 + 3p$
- $7p^2 + p$

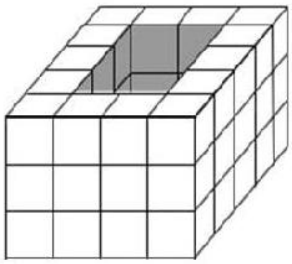
15. $y = \frac{a}{c} + \frac{b}{}$

$a = 8$, $b = 6$, and $c = 2$ bərabər olarsa,

y qiymətini tapın?

- A. 7
- B. 10
- C. 11
- D. 14

16. Aşağıda gördüyünüz forması eyni ölçüdə olan kublardan təşkil olunmuşdu. Formanın daxilində deşik var. Nə qədər kub lazımdır ki, deşik dolsun?



- A. 6
- B. 12
- C. 15
- D. 18

17. Kvadratın sahəsi 144 sm^2. Kvadratın perimetrini tapın.

- A. 12 cm
- B. 48 cm
- C. 288 cm
- D. 576 cm

18. Kvadratın perimetri 36 sm. Kvadratın sahəsi nə qədərdi?

- $81\ cm^2$
- $36\ cm^2$
- $24\ cm^2$
- $18\ cm^2$

Appendix E: Self-Concept Questionnaires

1- Strongly disagree Qətiyyən razılaşmıram
2- Disagree Razılaşmıram
3- Agree Razılaşıram
4- Strongly agree Qətiyyətlə razılaşıram

Translation of Questionnaire:

Affective and cognitive components of students' language self-concept
Şagirdlərin dilinin öz anlayışının affektiv və koqnitiv komponentləri

Think of your English rate the following sentences **İngilis diliniz haqqında fikirləşin və aşağıdakı cümlələri qiymətləndirin**.					
1.	I am good in English. Mən ingilis dilini yaxşı bilirəm.	1	2	3	4
2.	Study English is much easier for me. İngilis dilini öyrənmək asandır.	1	2	3	4
3.	I like English. Mən ingilis dilini öyrənməyi xoşlayıram.	1	2	3	4
4.	I enjoy learning English. Mən İngilis dilini öyrənməkdən zövq alıram.	1	2	3	4
5.	I learn English quickly. Mən İngilis dilini tez öyrənirəm.	1	2	3	4
6.	I am interested in English. Məni ingilis dili maraqlandırır.	1	2	3	4

Think of your Russian and rate the following sentences **Rus diliniz haqqında düşünün və aşağıdakı cümlələri qiymətləndirin.**					
7.	I am good in Russian. Mən rus dilini yaxşı bilirəm.	1	2	3	4
8.	Study Russian is much easier for me. Rus dilində öyrənmək asandır	1	2	3	4
9.	I like Russian. Mən rus dilini öyrənməyi xoşlayıram.	1	2	3	4
10.	I enjoy learning Russian. Mən rus dilini öyrənməkdən zövq alıram.	1	2	3	4
11.	I learn Russian quickly. Mən rus dilini tez öyrənirəm	1	2	3	4
12.	I am interested in Russian. Məni rus dili maraqlandırır.				
Think of your Math and rate the following sentences **Riyazi biliyiniz haqqında düşünün və aşağıdakı cümlələri qiymətləndirin**					
13.	I am good in math. Mən riyaziyyatı yaxşı bilirəm.	1	2	3	4
14.	Study math is much easier for me. Riyaziyyatı öyrənmək asandır	1	2	3	4
15.	I like math. Mən riyaziyyatı öyrənməyi xoşlayıram.	1	2	3	4
16.	I enjoy learning math. Mən riyaziyyatı öyrənməkdən zövq alıram.	1	2	3	4
17.	I learn math quickly. Mən riyaziyyatı tez öyrənirəm	1	2	3	4
18.	I am interested in math. Məni riyaziyyat maraqlandırır.	1	2	3	4

Skill- specific language self-concept
Dil xüsusi bacarıqlarında öz anlayışı

Think your English studies and rate the following sentences **İngilis diliniz haqqında düşünün və aşağıdakıları qiymətləndirin.**					
13.	Study English is easy for me. Mənim üçün ingilis dilində öyrənmək asandır.	1	2	3	4
14.	I am good in English. Mən ingilis dilini yaxşı bilirəm.	1	2	3	4
15.	I believe I can learn English quickly. Mən inanıram ki, İngilis dilini tez öyrənə bilirəm.	1	2	3	4
Think your reading in English and rate the following sentences **İngilis dilində oxunuz haqqında düşünün və aşağıdakı cümlələri qiymətləndirin**					
16.	Study reading in English is easy for me. Mənim üçün İngilis dilində oxumağı öyrənmək asandır.	1	2	3	4
17.	I am good at reading in English. Mənim ingilis dilində oxumam yaxşıdır	1	2	3	4
18.	I believe I can learn reading in English quickly. Mən inanıram ki, mən ingilis dilini tez öyrənə bilirəm.	1	2	3	4
Think your listening in English and rate the following sentences **İngilis dilində dinləməniz haqqında düşünün və aşağıdakı cümlələri qiymətləndirin**					
19.	Study listening in English is easy for me. Mənim üçün ingilis dilində dinləməyi öyrənmək asandır.	1	2	3	4
20.	I am good at listening in English. Mənim ingilis dilində dinləməm yaxşıdır.	1	2	3	4
21.	I believe I can learn listening in English quickly. Mən inanıram ki, mən ingilis dilində dinləməyi tez öyrənə bilirəm.	1	2	3	4
Think your Russian and rate the following sentences **Rus diliniz haqqında düşünün və cümlələri qiymətləndirin**					
22.	Study Russian is easy for me. Mənim üçün rus dilində öyrənmək asandır.	1	2	3	4
23.	I am good in Russian. Mən rus dilini yaxşı bilirəm.	1	2	3	4
24.	I believe I can learn Russian quickly. Mən inanıram ki, mən rus dilini tez öyrənə bilirəm.	1	2	3	4

Think your reading in Russian and rate the following sentences Rus dilində oxumağınız haqqında düşünün və aşağıdakı cümlələri qiymətləndirin					
25.	Study reading in Russian is easy for me. Mənim üçün rus dilində oxumağı öyrənmək asandır	1	2	3	4
26.	I am good at reading in Russian. Mənim rus dilində oxumam yaxşıdır.	1	2	3	4
27.	I believe I can learn reading in Russian quickly. Mən inanıram ki. Rus dilində oxumağı tez öyrənə bilirəm.	1	2	3	4
Think your listening in Russian and rate the following sentences Rus dilində dinləməyinizi düşünün və aşağıdakı cümlələri qiymətləndirin					
28.	Study listening to Russian is easy for me. Mənim üçün rus dilində diləməyi öyrənmək asandır.	1	2	3	4
29.	I am good at listening in Russian. Mənim rus dilində dinləməm yaxşıdır.	1	2	3	4
30.	I believe I can learn listening in Russian quickly. Mən inanıram ki, mən rus dilində dinləməyi tez öyrənə bilirəm.	1	2	3	4