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Self-Confidence in Metacognitive Processes in L2 Learning

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Abstract: The study aims to identify the role of self-confidence, meta-cognition, personality traits, and motivation (predictive variables) as factors of success in second language (L2) learning. It is assumed that there is a high correlation between the observed variables in the meta-cognitive process, which distinguishes academically gifted students from regular students, and that self-confidence is an autonomous factor of success and has a significant role in the self-regulated motivation of gifted students. The results on the Language Proficiency Test are a criterion variable, while gender, residence in the country of the native speaker, duration of L2 learning, and average grade in studies are moderator variables. The sample is convenient, and consists of 460 students from the University of Novi Sad and the University of Belgrade. The research was carried out using a quantitative approach and a method of systematic non-experimental observation. The following instruments are used: the Big Five Personality Traits Questionnaire, the Meta-cognitive Awareness Inventory, the Memory and Reasoning Competence Inventory, the English Language Motivation Questionnaire, the Rosenberg Self-esteem Scale, and the L2 Proficiency Test. The main findings confirmed the hypothesis of a high correlation between the observed variables in the meta-cognitive process that distinguishes academically gifted students from regular students, as well as that self-confidence is an autonomous factor of success and plays an important role in the self-regulated motivation of the gifted. This confirms the significance of self-confidence in self-regulation and provides an indirect role in L2 learning achievements. Students should be aware of meta-cognitive processes and try to self-regulate their knowledge and learning strategies.

Keywords: gifted, self-confidence, meta-cognition, self-regulated motivation, L2 language.

Introduction

The research is focused on the importance of self-confidence in the self-regulated motivation of the gifted for L2 learning. The theoretical context for exploring this phenomenon consists of Sternberg's (2020) Triarchic Theory of Intelligence and the Theory of Self-Determination (Ryan and Deci, 2000). What makes this question interesting? Understanding motivation for L2 learning and its relationship with intelligence and other important cognitive and non-cognitive constructs is still insufficient for what L2 pedagogy would need to effectively teach and direct students to self-regulated learning (SRL), i.e., learning autonomy. However, self-confidence increasingly attracts the attention of researchers in this field of study.

In the last few decades, self-confidence has been an important notion in cognitive psychology, general didactics, and L2 pedagogy. Thus, the "self-confidence movement" (Singal, 2017) considers the lack of self-confidence as one of the factors of mental or emotional difficulties, and in the field of learning, it is believed that improving self-confidence can result in better performances (Zimmerman et al., 1997).

The results of studies on the complexity of the phenomenon of self-confidence indicate differences between the overlapping concepts of self-efficacy, self-confidence, and self-esteem (Oney and Oksuzoglu-Guven, 2015). Self-efficacy is defined as the individual's belief in their own ability to influence events in their life and resolve future situations (Bandura, 1990), while self-esteem is based on ideas about the value or dignity of the individual. Therefore, it is concluded that self-esteem is more present-oriented, while self-efficacy is a more future-oriented belief. The third related term is self-confidence, which is defined as an individual's expectations for performances and self-evaluation of abilities and previous performances (Lenney, 1977; 1981; Lenney, Gold and Browning, 1983). The main idea in this concept is

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the individuals' confidence in their own abilities, capacities, and assessments, or confidence that they can succeed in facing everyday challenges and demands (Colman, 2008). Self-confidence has been related to self-belief, satisfaction with one's abilities and successes, and also to the energy and motivation to take action and achieve goals. Thus, self-confidence is similar to self-efficacy in that it tends to focus on an individual's future performances. However, it is considered to be based on previous performances, and thus, it is focused on the past as well. Many scholars refer to self-efficacy when looking at individuals' beliefs in their abilities in relation to a particular task, while self-confidence is more often seen as a broader and more stable trait relating to individuals' perception of overall ability.

Through the mediating function of motivation, studies have also established interrelationships between the aforementioned success factors as well as their individual relationship with L2 knowledge (Noels and Giles, 2009). The findings of several studies that consider the meaning and definition of this term will be mentioned further in the discussion. The findings of Stankov (2013) and Stankov and Lee (2014) refer to the statement that the success of individuals with high self-confidence lies in the following properties: a higher sense of self-worth; higher enjoyment in activities and life in general; lack of self-doubt and apprehension; social anxiety and stress reduction; more energy and motivation to act; enjoyment of interacting with other people at social gatherings; relaxation; and confidence that others feel at ease in our presence.

In addition to previous findings that are related to self-confidence and support its significance for a wide range of aspects of an individual's life, studies also provide opposite findings. It has been noted that increasing trust does not always lead to improved positive outcomes (Brinkman et al., 2015; Forsyth et al., 2007), and there are also negative correlations with self-confidence. Kremer and his associates (2013) conclude that self-confidence has been constantly increasing during the last decades, leading to increasing narcissism and unrealistic expectations. It is thought that more caution is needed while encouraging self-confidence in children and youth (Singal, 2017). Thus, the belief that a positive self-image is essential for a happy and successful life focuses solely on its positive attributes and creates an age of self-confidence in which children of these generations are taught in schools and at home to view themselves as special. Children are praised for modest accomplishments, but recent research indicates that this practise and these beliefs may contribute to low motivation and a decrease in goal-directed behaviour rather than protecting individuals from depression (Dweck, 1999; Blackwell, Trzesniewski and Dweck, 2007). It is even believed that strengthening self-confidence leads more effectively to an increase in narcissism and a decrease in ambition than to achievement and success. Therefore, the question is whether the idea of improving self-confidence should be rejected. Some researchers (Baumeister et al., 2003) noted that there are certain contexts in which strengthening self-confidence can improve performances, and that these opportunities should be supported. The same authors advocate strengthening self-confidence, but in a more moderate and cautious way (Baumeister et al., 2003), providing support for self-confidence with praise, and increasing self-confidence as a reward for socially desirable behaviour. Accordingly, it encourages the development of healthy self-confidence and avoids the risk that children become convinced of their own competence without investing any effort. In addition, children and young people should be allowed to experience failure and cope with consequences and disappointment, which will probably help them to develop resilience and success in coping skills (Pajares, 1996; Kudinov et al., 2020).

Accordingly, the scholars agree with the opinion of Seligman (1998), who argues that a positive image of oneself does not produce anything. A sustainable sense of self-confidence stems from positive and productive behaviour. Therefore, developing self-confidence means that it should be practiced, because progress toward personally significant goals is considered to be the foundation on which healthy self-confidence is built (Seligman, 1998). The path towards self-regulation implies being aware of the fact that failure is inherent to achievements, and in order to pursue their goals, individuals need to work hard and face their weaknesses (Altaras, 2006; Letić, 2015). Even those who are exceptional in particular areas of life perform less well in other areas. That is why the view that success does not come by chance but should be achieved and comes from giving our best has been increasingly accepted (Csikszentmihályi, 1988; Stankov and Crawford, 1997).

In contemporary conceptions of giftedness, there are differences starting with the personality profile, the ability to tolerate solitude, motivation, and intellectual-moral independence in the sense of autonomous, non-conformist thinking and behaviour of the gifted. There are disagreements in the research findings related to high self-confidence and hypersensitivity (Lee and Olszewski-Kubilius, 2006).

Subotnikova and Džarvinova (Subotnik and Jarvin, 2005) emphasise the importance of self-confidence in the musical development of the gifted, which goes beyond the level of technical skill. There are also well-known studies regarding the predictive value of self-efficacy in gifted individuals (McCormick, 2003).

According to the research findings, self-esteem, a construct developed by the Self-Esteem Movement (Singal, 2017) could not explain poor performance and emotional problems in gifted students in the field of learning (Zimmerman et al., 1997). The new wave of research into the significance of non-cognitive factors for the achievements of gifted students also included research into the overlapping concepts of gifted and regular students' self-efficacy, self-confidence, and self-esteem (Oney and Oksuzoglu-Guven, 2015). According to the research findings, self-efficacy is more pronounced in the gifted and can be considered a significant factor of good self-assessment and belief on the part of the gifted individuals in their own ability to influence events and is linked to their success in solving challenges and life problems (Benabou and Tirole, 2002). The findings also indicate that the individual's expectations of performance and self-evaluation of abilities and previous performance are more pronounced in gifted individuals (Lenney, 1981; Lenney, Gold and Browning, 1983), as is the individual's confidence in their own abilities, capacities, and assessments, or their belief that they can successfully face daily challenges and demands (Colman, 2008). Researchers refer to self-efficacy when observing an individual's beliefs about their abilities in relation to a specific task, whereas self-confidence of the gifted appears more frequently as a broader and more stable trait concerning the perception of their overall abilities (Kleitman and Stankov, 2007). Research has also determined mutual connections between self-confidence and the success of the gifted, as well as with L2 knowledge through the mediating function of motivation (Noels, Pelletier and Vallerand, 2000).

This research is exploratory, based on a quantitative approach and systematic non-experimental observation. The aim of the research is to identify relationships and the role of self-confidence, meta-cognition, personality traits, and motivation (predictive variables) in L2 learning, i.e., to examine these factors within the taxonomy of cognitive and meta-cognitive processes.

The assumption is that there is a high correlation between the observed variables in the meta-cognitive process, which distinguishes academically gifted students from other students, as well as that self-confidence has an autonomous and significant role in the self-regulated motivation of the gifted. In addition to the above predictor variables, the research takes success on the Proficiency Test as a criterion variable. Gender, residence in the country of the native speaker, years of learning L2 language, and average grade in studies were taken as moderator variables.

Materials and Methods

The sample is convenient and consists of students from the University of Belgrade and the University of Novi Sad. Four hundred and sixty respondents participated in the research, of which 345 (75%) were female participants. Of the total number of respondents, 105 stated that they resided in the country of the native speaker, and the length of residing time ranged from one week (7 days) to 17 years. The sample consisted of 205 academically gifted students (with an average grade above 9) and 255 regular students.

Instruments

The Big Five Personality Traits Questionnaire (Goldberg, 2001) The questionnaire was intended to assess the "big five" personality traits, where each trait was measured through 10 items on a five-point Likert scale (1 = completely disagree, 5 = completely agree). The reliability of the scales measured by Cronbach's alpha were: extraversion = 0.78, emotional stability = 0.83, openness to experience = 0.63, agreeableness = 0.67, and conscientiousness = 0.61. Thus, the reliability values of the scales ranged from acceptable to good.

The Meta-cognitive Awareness Inventory (Schraw and Dennison, 1994) consists of 52 items with a binary response format (True or False). It consists of two scales: knowledge of cognition and regulation of cognition. The reliability of the scales measured by Cronbach's alpha was: knowledge about cognition = 0.62 and regulation of cognition = 0.76, indicating acceptable reliability.

English Language Motivation Questionnaire (LLOS-IEA; Noels, Pelletier and Vallerand, 2000). The questionnaire consists of 21 items on a five-point Likert scale that measure seven types of motivation for L2 learning: amotivation, external regulation, introjected regulation, identified regulation, knowledge, achievement, and stimulation. Cronbach's alpha reliability values were as follows: Motivation = 0.82; external regulation = 0.61; introjected regulation = 0.71; identified regulation = 0.83; knowledge = 0.84; achievement = 0.88; stimulation = 0.93, indicating acceptable reliability.

The Memory and Reasoning Competence Inventory (Stankov and Crawford, 1997) is a scale consisting of 16 items measured on a six-point Likert scale. The instrument is divided into two subscales intended to measure memory competence and reasoning competence. The reliability of the scales

measured by Cronbach's alpha was: memory competence = 0.85 and reasoning competence = 0.81, indicating acceptable reliability.

The Rosenberg Self-esteem Scale (Rosenberg, 1965; Rosenberg, Schooler and Schoenbach, 1989), which was partially adjusted for self-confidence in this study, is a 10-item scale measured on a four-point Likert scale and measures the overall level of self-esteem and self-confidence by assessing the person's positive and negative feelings about themselves. Cronbach's alpha calculated the scale's reliability to be 0.87, indicating excellent reliability.

Data analysis

The average summation scores were calculated for all instruments in order to reduce them to the scale for the answers of each particular instrument for easier interpretation and comparison. Relationships between self-confidence, meta-cognition, personality traits, motivation, and success on the L2 proficiency test were determined by calculating Pearson's correlation coefficient. In order to examine the influence of self-esteem and self-confidence, meta-cognition, personality traits, and motivation more systematically (with mutual control of predictors) on success in L2 learning, a hierarchical regression analysis was conducted. In the first step of the analysis, personality traits (extraversion, emotional stability, openness to experience, agreeableness, and conscientiousness) were introduced as predictors, while in the second step, types of motivation, self-confidence, meta-cognition scales, and memory and reasoning competences were introduced, with success in the L2 language proficiency test as the criterion variable.

The t-test for independent samples was used to test the idea that gifted (average grade above 9) and regular students are different in meta-cognitive processes and self-confidence.

In the PROCESS macro for SPSS, the moderator role of specific variables between meta-cognitive processes, self-confidence, and L2 proficiency test success was investigated using moderator analyses. Here, the moderator variables were gender, residence in the country of a native speaker, years of L2 learning, and average grade in studies. The PROCESS macro moderation examined the relationship between one predictor, one moderator, and one dependent variable per analysis.

Results

Descriptive statistics

The basic descriptive indicators for the variables in the study are shown in Table 1. For all variables, skewness and kurtosis values are in the recommended range of ± 2 (George and Mallery, 2010) indicating that the variables do not deviate significantly from the univariate normal distribution. It is important to note that the higher scores on the scales of the questionnaire on meta-cognition were closer to 1, because the number 1 indicated agreement with the item and 0 indicated disagreement. The average grade in L2 was measured in the range of 6 to 10, and it was 8.55, indicating a good performance of the sample in L2 learning.

Table 1

Descriptive indicators of research variables

	Minimum	Maximum	Arithmetic mean	Standard deviation	Skewness	Kurtosis
Extraversion	1.50	4.90	3.26	0.70	0.02	-0.56
Emotional stability	1.00	4.80	3.19	0.77	-0.23	-0.55
Openness to experience	2.20	5.00	3.64	0.49	0.09	-0.41
Agreeableness	2.30	5.00	3.88	0.54	-0.61	0.36
Conscientiousness	2.20	5.00	3.75	0.53	-0.19	-0.16
Knowledge (MTK)	0.31	1.00	0.77	0.19	-0.68	-0.21
Regulation (MTK)	0.34	1.00	0.75	0.14	-0.33	-0.33
Amotivation	1.00	3.67	1.45	0.76	1.58	1.42
External regulation	1.00	5.00	3.04	1.06	-0.29	-0.39
Introjected regulation	1.00	5.00	2.57	1.06	0.25	-0.71
Identified regulation	1.00	5.00	3.82	1.12	-0.60	-0.68
Knowledge	1.00	5.00	3.37	1.13	-0.31	-1.00
Achievement	1.00	5.00	3.33	1.18	-0.18	-1.10
Stimulation	1.00	5.00	3.27	1.21	-0.20	-1.09
Memory	1.00	6.00	3.98	0.93	-0.43	-0.07
Reasoning	1.63	6.00	4.13	0.78	-0.26	0.35
RSA	1.00	4.00	1.99	0.66	0.75	0.16
Grade	6.00	10.00	8.55	1.31	-0.51	-0.82

Correlation of variables

Pearson's correlation coefficient between the research variables is shown in Table 2. The grade on the L2 proficiency test shows a significant correlation with most scales, although these correlations are of low intensity. The highest correlation with the grade is stimulation (r = 0.34) and knowledge (r = 0.33). Knowledge, achievement, and stimulation are highly correlated, with coefficients close to r = 0.70. Among personality traits, the highest correlation is between openness to experience and conscientiousness (r = 0.32), but all correlations are of low to moderate intensity. A high correlation (r = 0.70) also existed between the scales of the Memory and Reasoning Competence Inventory.

Hierarchical regression, influence on the grade in L2

Since some of the correlations between the variables were high, the VIF criterion was used to find problems with multicollinearity. Since none of the predictors in the analysis had a VIF criterion higher than 4, all of the predictors were kept in the model.

In the first step of the hierarchical regression analysis (Table 3), personality traits were introduced as predictors, and they explain a significant part of the criterion variance, F (5, 453) = 14.61, p <0.001, R2 = 0.14, about 14% of the variance. In the first step of the analysis, extraversion appears as a positive predictor, and conscientiousness and emotional stability appear as negative significant predictors. Upon the introduction of other predictors, the model significantly improves, Fc (12, 441) = 9.22, p <0.001, R2c = 0.17, and about 17% of the additional variance has been explained, for a total of about 31% (R2 = 0.31, R2adjusted = 0.28). After the introduction of additional predictors, extraversion, emotional stability, and conscientiousness remain important predictors, while identified regulation, stimulation, and self-esteem (Rosenberg self-esteem and self-confidence scale) appear as additional important predictors, with all new predictors being positive. An increase in the average score on the L2 proficiency test is associated with an increase in the scales of these predictors.

Table 2

Correlation of research variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Extraversion (1)	1	-.07	.26**	.29**	.05	.25**	.06	-.12**	-.02	-.08	-.02	.15**	.15**	.04	.09*	.11*	-.07	.27**
Emotional stability (2)		1	-.10*	.02	.21**	0.00	.16**	-.02	.08	-.07	-.00	-.14**	-.22**	-.13**	.13**	.16**	-.23**	-.22**
Openness to experience (3)			1	.19**	.32**	.31**	.22**	-.25**	.03	.13**	.19**	.18**	.12**	.12**	.40**	.46**	-.16**	.11*
Agreeableness (4)				1	.19**	.24**	.33**	-.08	-.08	-.01	.12**	.17**	.16**	.19**	.01	.00	-.13**	.09*
Conscientiousness (5)					1	.32**	.22**	-.18**	-.00	-.19**	.02	.05	.07	.03	.37**	.27**	-.26**	-.14**
Knowledge (MTK) (6)						1	.47**	-.22**	-.05	.02	.06	.21**	.21**	.24**	.43**	.38**	-.17**	.09*
Regulation (MTK) (7)							1	-.06	.07	.02	.23**	.13**	.13**	.14**	.14**	.30**	-.12**	.10*
Amotivation (8)								1	.00	.26**	-.37**	-.26**	-.20**	-.26**	-.42**	-.19**	0.04	-.14**
External reg. (9)									1	.21**	.25**	-.22**	-.11*	-.18**	.06	-.00	-.18**	.06
Introjected reg. (10)										1	.05	.20**	.18**	.21**	-.07	-0.02	.10*	.13**
Identified reg. (1) 1											1	.32**	.38**	.35**	.19**	.22**	-.11*	.29**
Knowledge (12)												1	.72**	.71**	.10*	.15**	.22**	.31**
Achievement(13)													1	.69**	.09*	.15**	.21**	.33**
Stimulation (14)														1	.09*	.18**	.34**	.34**
Memory (15)															1	.70**	-.27**	-.05
Reasoning(16)																1	-.20**	.00
RSA (17)																	1	.21**
Grade (18)																		1

*Note: RA – Rosenberg self-esteem scale; MTK – Meta-cognition questionnaire; * - p < 0.05; ** - p < 0.01.*

Table 3
Partial contribution of predictors in the hierarchical regression model

	Beta (model 1)	p (model 1)	Beta (model 2)	p (model 1)	VIF
Extraversion	0.24	0.000	0.27	0.000	1.31
Emotional stability	-0.17	0.000	-0.11	0.012	1.30
Openness to experience	0.08	0.120	0.04	0.401	1.65
Agreeableness	0.05	0.288	-0.04	0.430	1.42
Conscientiousness	-0.16	0.001	-0.11	0.027	1.47
Knowledge (MTK)			0.03	0.610	1.95
Regulation (MTK)			0.08	0.143	1.73
Amotivation			-0.04	0.412	1.77
External reg.			0.08	0.105	1.42
Introjected reg.			0.04	0.350	1.44
Identified reg.			0.22	0.000	1.81
Knowledge			0.02	0.764	2.84
Achievement			0.02	0.753	2.72
Stimulation			0.15	0.025	3.03
Memory			-0.07	0.293	3.05
Reasoning			-0.04	0.551	2.80
RSA			0.14	0.003	1.53

Differences between the academically gifted and other students

Results of the t-test for independent samples are shown in Table 4. These indicate differences across the three scales in the expected direction. On the scales of knowledge and regulation of cognition (meta-cognition), the academically gifted students scored higher, indicating higher levels of these meta-cognitive traits as well as higher self-confidence.

Table 4
Differences between academically gifted and regular students

	AS (gifted)	AS (others)	t	df	p
Meta-cognition knowledge	0.82	0.73	-4.72	458	0.000
Meta-cognition regulation	0.7	0.73	-3.29	458	0.001
Self-confidence	1.85	2.15	-4.96	458	0.000

Moderation analyses

Gender as moderator

All moderations were examined by introducing a moderator into the model in addition to only one main predictor and criterion. Gender is not a significant moderator in the case of the influence of knowledge of cognition (meta-cognitive process) on success in L2 learning, $F (1, 456) = 0.09$, $p > 0.05$; and the interaction of gender and knowledge of cognition does not improve the model. Gender is a significant moderator in the influence of regulation of cognition (me-ta-cognitive process) on L2 learning success ($F (1, 456) = 4.01$, $p = 0.046$), as well as the influence of self-confidence on L2 learning success ($F (1, 456) = 4.92$, $p = 0.027$). In order to better interpret the moderation effect, the significant interaction effects are presented in Chart 1, which shows moderation between regulation of cognition and gender. Here, the largest difference is in the grade among respondents with higher levels of regulation of cognition. In this case, females have significantly higher grades than males, while these differences are negligible at lower levels of regulation of cognition. Moderation of self-confidence and gender show that at lower levels of self-confidence, both males and females have nearly identical grades in L2, whereas increasing self-confidence improves grades for females but not for males.

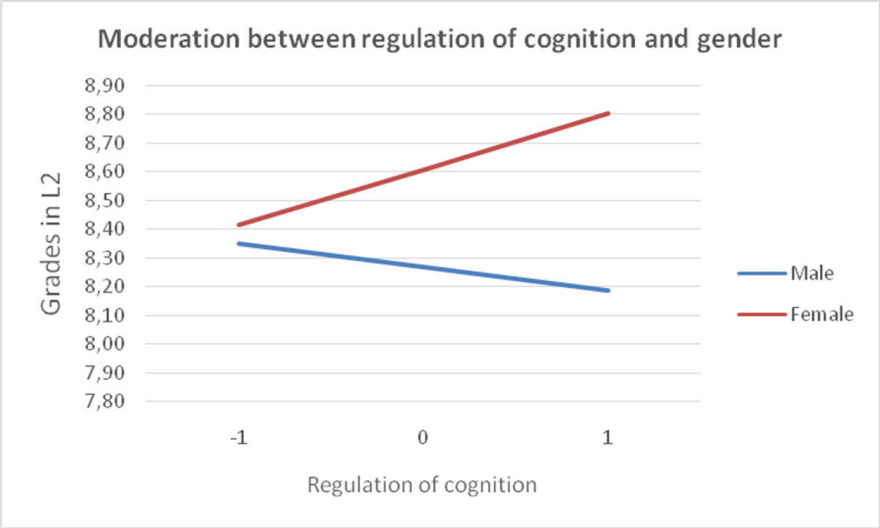

Chart 1. Moderation between regulation of cognition and gender based on the grade in L2

Chart 2. Moderation between self-confidence and gender based on the grade in L2

Residing in the country of native speaker as moderator

In the case of scales of meta-cognitive processes, knowledge, and regulation, residing in the country of a native speaker did not prove to be a significant moderator, $F(1, 456) = 0.61$, $p > 0.05$ and $F(1, 456) = 0.10$, $p > 0.05$, and the introduction of interaction does not improve the model. In the case of self-confidence, a significant interaction can be seen $F(1, 456) = 13.16$, $p < 0.001$, and the introduction of the interaction of self-confidence and residing in the country of a native speaker significantly improves the model. The interaction is shown in Chart 3. For the success in L2 of students' with low levels of self-confidence, it is more important whether they resided in the country of the native speaker or not, while this factor is insignificant for students with high levels of self-confidence, whose success does not depend on whether they resided in the country of the native speaker or not.

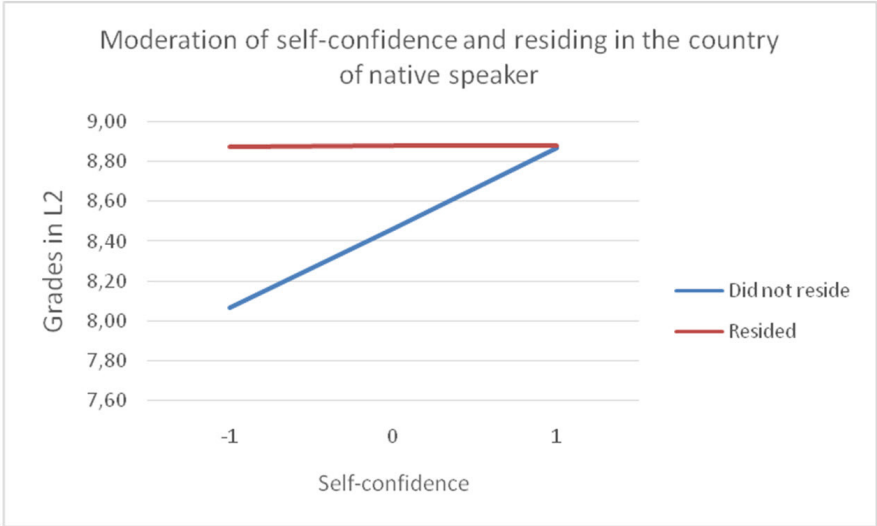

Chart 3. Moderation between self-confidence and residing in the country of native speaker based on the grade in L2

Length of residing in the country of native speaker

Moderation analysis in the case of the length of residing in the country of the native speaker was conducted on a subsample of students who stated that they resided in the country of the native speaker (n = 104). They were divided into two categories: students residing for less than a month (n = 44) and those residing for a month or longer (n = 66). The length of residence did not prove to be a significant moderator in any of the models: $F (1, 100) = 2.29$, $p > 0.05$, $F (1, 100) = 2.82$, $p > 0.05$ and $F (1, 100) = 0.28$, $p > 0.05$

Average grade in studies

The average grade in the studies does not prove to be a significant moderator in the case of meta-cognitive processes, $F (1, 456) = 1.77$, $p > 0.05$ and $F (1, 456) = 0.97$, $p > 0.05$, and self-confidence, $F (1, 456) = 2.51$, $p > 0.05$.

Length of L2 learning

The length of L2 learning proves to be a significant moderator in all models. Improvement of all three models, knowledge of cognition, $F (1, 456) = 8.12$, $p = 0.005$, regulation of cognition, $F (1, 456) = 11.23$, $p = 0.001$, and self-confidence, $F (1, 456) = 14.14$, $p < 0.001$, is statistically significant when introducing the interaction with the length of L2 learning. These moderation effects are shown in Charts 4, 5, and 6. In all charts, the different colours indicate different lengths of L2 learning (in standard deviations). Those who have been learning the language longer have the highest scores in cases of high knowledge of cognition, while their scores are the lowest in cases of low knowledge of cognition. This pattern is reversed in the case of those who have been learning L2 for a shorter period of time. In the case of moderation of regulation of cognition and length of L2 learning, for those with low regulation, the grade is lower and the same regardless of the length of L2 learning, while for those with high regulation, the grade is better for those who have been learning L2 for a longer period of time. A high level of self-confidence has been shown to be more important than the length of L2 learning for those with high levels of self-confidence, and they have high grades regardless of the length of learning. On the other hand, at lower levels of self-confidence, the length of L2 learning is more crucial for achieving a better result on the L2 proficiency test.

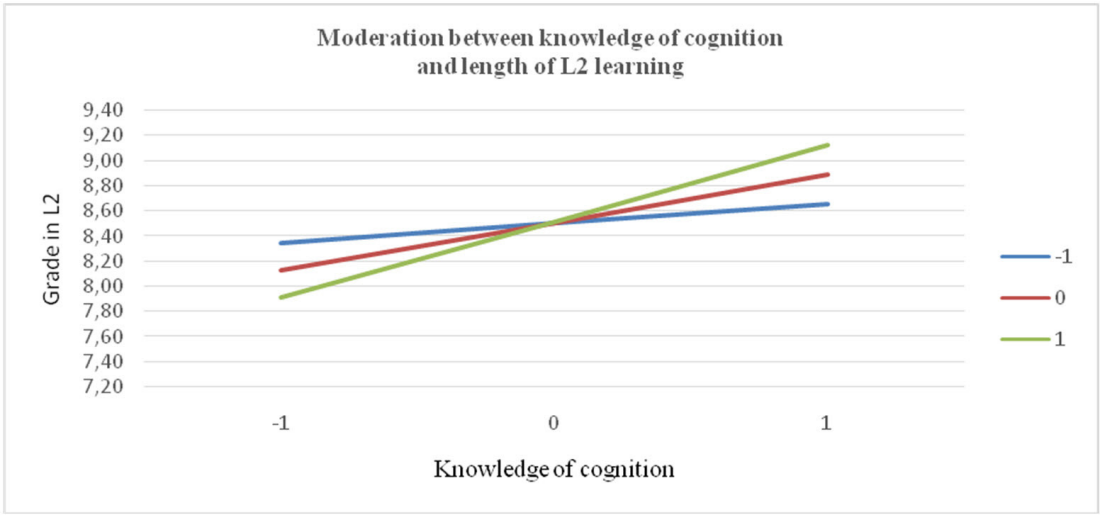

Chart 4. Moderation between knowledge of cognition and length of L2 learning based on the grade in L2

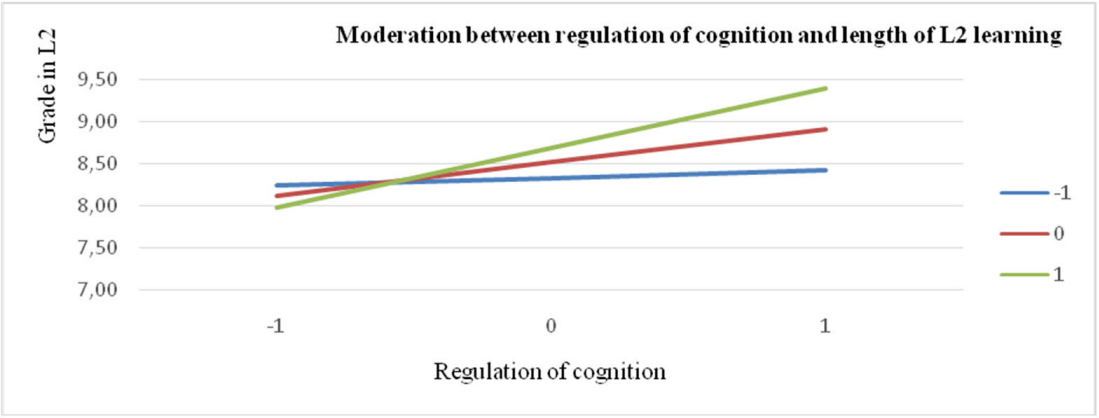

Chart 5. Moderation between regulation of cognition and length of L2 learning based on the grade in L2

Chart 6. Moderation between self-confidence and length of L2 learning based on the grade in L2

Discussion

The result of a close relationship between knowledge (MTK), achievement, and regulation (MTK with coefficients of correlation close to r = 0.70) and success L2 knowledge, referring to students from the category of academically gifted (with an average grade above 9.00), emphasises the close relation of intellectual potentials, i.e., academic giftedness, with cognitive and meta-cognitive variables, which, in synergy, each in its own way, contribute to self-regulation shown in the realisation of academic giftedness. From a theoretical point of view, the previous statements fit into the notions of the influence of contextual approaches and modern conceptions of intelligence, which emphasise the importance of social context for determining behaviour that will be considered a reflection of intelligence, and directly into Sternberg's concept of intelligence (2009) in which meta-cognition is seen as the regulation of intellectual functioning. So, it could be noted that the findings discussed here confirm the importance of this understanding, as well as the components by which Sternberg (2009) defined this concept (meta-cognition as a cognitive phenomenon of higher order - cognition about cognition, i.e., intellectualization of various cognitive functions, including the intellect itself - about the characteristics, powers and limitations of cognitive functioning; regulatory role in relation to cognition-strategies of monitoring and managing one's own cognition and behaviour (meta-cognitive decisions about what to look out for, what to check well, in which direction to search for a solution, etc.). The previous findings indicate that gifted individuals are using strategies and meta-cognitive abilities, especially for resolving complex and demanding tasks. Thus, it seems that efforts to improve the application of strategies and meta-memories of academically gifted individuals, in this case in the field of L2 learning, have shown significant effects, which is in line with previous studies (Gojkov Rajić et al., 2021; Šafranj and Gojkov Rajić, 2019), and it could be concluded that this direction is worth following.

The findings of this study are consistent with other researchers' findings on the importance of meta-cognition (Kleitman and Stankov, 2007). Trying to clarify self-confidence within the framework of a taxonomy of cognitive and meta-cognitive processes, they found that these phenomena are crucial in identifying factors that facilitate intelligent behaviour and that they cross the limited scope of traditional notions of intelligence. The same authors also accept the assumption that meta-cognitive knowledge and skills are essential components of successful learning because they can lead to the choice of strategies and, where necessary, anticipate their adaptation, which is emphasised by Sternberg (1997) as well. The results that confirm the importance of knowledge (MTK), meta-cognition, and the importance of assessing awareness of one's own cognitive weaknesses and strengths (Kleitman and Stankov, 2007) are in line with the findings discussed here. From the point of view of didactic implications, the findings of this research can help students work on developing an adequate level of success as well as confidence in their cognitive performance and self-help in the effective use of their own cognitive abilities and strategies in L2 learning.

The high correlation (r = 0.70) between memory and reasoning scales and self-confidence indicates the importance of another construct (self-confidence) for the prediction of success in L2 learning. The following were included in the composite of significant predictors of achievement in L2 learning: extraversion, emotional stability, conscientiousness, identified regulation, stimulation, and self-confidence. Furthermore, it could be concluded that there are several cognitive and non-cognitive components important for the self-regulation of gifted students in the field of L2 learning. The complexity of the phenomenon of self-regulation is also revealed in this finding.

The findings related to self-confidence, which Kleitman and Stankov (Kleitman and Stankov, 2007; Stankov, 2013) characterise as a broad psychological trait that intersects different cognitive domains, are pointed out for comparison. It was significant to include self-confidence in the variables that seek to answer the question of what their relationship is and how much individual contribution there is to achievement in L2. It helps teachers and students build meta-cognitive strategies for L2 learning. The findings of this research are in line with the above-mentioned in terms of their close relation to intellectual and meta-cognitive potentials. Thus, the correlation between self-confidence and meta-cognitive abilities of academically gifted students in their achievements in L2 places self-confidence in the meta-cognitive field of the cognitive/meta-cognitive taxonomy (Kleitman and Stankov, 2007). Moreover, when investigating the importance of self-confidence, which is shown to be more important for achievement than other moderator variables (length of L2 learning and residing in the country of a native speaker), the obtained results are in line with the findings confirming the specific place of self-confidence in the taxonomy of cognitive and meta-cognitive processes. It confirms the findings of other researchers (Teovanović, Knežević and Stankov, 2015) on self-confidence as a significant factor, but is also independent of other cognitive and non-cognitive factors in L2 learning. It functions independently in its contribution to the self-realization of

intellectual potentials for mastering foreign languages.

This finding is another confirmation of the opinion (Seligman, 1998) that a positive self-image is insufficient for a sense of security and self-realization and that supporting the development of self-confidence implies the need for practice, because self-confidence is based on making progress towards personally important goals. Thus, self-regulation entails being aware that failure is inherent in accomplishments, and achieving self-realization and self-confidence necessitates exerting effort as well as confronting our own weaknesses. Gifted students have weaknesses as well; in some areas, they are stronger than others. Based on self-regulation, they accept the fact that success does not come by chance but rather stems from dedication and self-correction (Csikszentmihályi, 1988), which certainly has significant implications for L2 pedagogy. Therefore, it could be concluded that the findings of the studies on negative correlates with self-confidence cannot be accepted (Brinkman et al., 2015; Kremer, Brannen and Glennerster, 2013), but the agreement remains regarding the need to promote self-confidence in children and youth in order to prevent narcissism and an unrealistic sense of self-confidence, an illusion that in L2 knowledge is usually quickly shattered.

Conclusion

The main findings confirmed the hypothesis of a high correlation between the observed variables in the meta-cognitive process that distinguishes academically gifted students from regular students, as well as that self-confidence is an autonomous factor of success and has a significant role in the self-regulated motivation of the gifted. This further confirms the significance of self-confidence in self-regulation and, as can be seen from the results, provides an indirect role in L2 learning achievements. Thus, students and L2 teachers should be aware of meta-cognitive processes and try to self-regulate their knowledge and learning strategies so that they are consistent with other cognitive and non-cognitive factors, such as personality traits and types of motivation.

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Conflict of interests

The authors declare no conflict of interest.

Author Contributions

Conceptualization, A.G.R., J.Š. and D.G.; methodology, A.G.R.; software, J.Š.; formal analysis, D.G. and J.Š.; writing—original draft preparation, A.G.R. and D.G.; writing—review and editing, J.Š. and A.G.R. All authors have read and agreed to the published version of the manuscript.

References

Altaras, A. (2006). *Darovitost i podbacivanje* [Giftedness and underachievement]. Mali Nemo, Institut za psihologiju & Centar za primenjenu psihologiju Društva psihologa Srbije: Pancevo-Beograd, Serbia.

Bandura A. (1990). Self-regulation of motivation through anticipatory and self-reactive mechanisms. Nebraska Symposium on Motivation. *Nebraska Symposium on Motivation. 38*: 69-164.

Baumeister, R., Jennifer, F,. Campbell, D., & Krueger, J. I. (2003). Does High Self-Esteem Cause Better Performance, Interpersonal Success, Happiness, or Healthier Lifestyles? *Psychological Science in the Public Interest, 4*(1), 1-44. https://doi.org/10.1111/1529-1006.01431.

Benabou, R., & Tirole, J. (2002). Self-confidence and personal motivation. *The Quarterly Journal of Economics, 117*(3), 871–915. https://doi.org/10.1162/003355302760193913

Blackwell, L. S., Trzesniewski, K. H., & Dweck, C. S. (2007). Implicit theories of intelligence predict achievement across an adolescent transition: A longitudinal study and an intervention. *Child development, 78*(1), 246-263. https://doi.org/10.1111/j.1467-8624.2007.00995.x

Brinkman, D.J., Tichelaar, J., Agtmael, M.A., Vries T.P.G., & Richir, M.C. (2015). Self-reported confidence in prescribing skills correlates poorly with assessed competence in fourth-year medical students, *The Journal of Clinical Pharmacology, 55*(7), 825-830. https://doi.org/10.1002/jcph.474

Colman, A. M. (2008). *A Dictionary of Psychology*, Edition 4th. Oxford University Press, https://doi.org/10.1093/acref/9780199534067.001.0001
Csikszentmihályi, M. (1988). The flow experience and its significance for human psychology. In M. Csikszentmihályi & I. S. Csikszentmihályi (Eds.), *Optimal experience: Psychological studies of flow in consciousness* (pp. 15–35). Cambridge University Press. https://doi.org/10.1017/CBO9780511621956.002
Dweck, C.S. (1999). *Self-theories: Their Role in Motivation, Personality, and Development* (1st ed.). Psychology Press. Taylor & Francis Group https://doi.org/10.4324/9781315783048
Forsyth, D. R., Lawrence, N.K., Burnette, J. L., & Baumeister, R.F. (2007). Attempting to Improve the Academic Performance of Struggling College Students by Bolstering Their 2007 Self–esteem: An Intervention that Backfired; *Journal of Social and Clinical Psychology 26*(4):447-459. https://doi.org/10.1521/jscp.2007.26.4.447
George, D. & Mallery, M. (2010). *SPSS for Windows Step by Step: A Simple Guide and Reference*, 17.0 update (10a ed.) Boston: Pearson.
Gojkov-Rajić, A., Stojanović, A., Šafranj, J. & Gojkov, G. (2021). Didaktički aspekti samoregulacije učenja darovitih [Didactic aspects of self-regulation of gifted learning], *monografija*, Srpska akademija obrazovanja, Beograd.
Goldberg, L. R. (2001). *International personality item pool*.
Kleitman, S. & Stankov, L. (2007). Self-confidence and meta-cognitive processes, *Learning and Individual Differences, 17*(2), 161-73. https://doi.org/10.1016/j.lindif.2007.03.004.
Kremer, M., Brannen, C., & Glennerster, R. (2013). The challenge of education and learning in the developing world. *Science, 340*(6130), 297-300. https://doi.org/10.1126/science.1235350
Kudinov, I. S., Kudinov, S. S., Mikhailova, B. O., Kudinov, S. V., & Imomberdieva, M. N. (2020). Different self-attitude indicators in students and their self-realization in a University, *International Journal of Cognitive Research in Science, Engineering and Education (IJCRSEE), 8*(3), 47-59. https://doi.org/10.23947/2334-8496-2020-8-3-47-59
Lee, S.-Y., & Olszewski-Kubilius, P. (2006). The Emotional Intelligence, Moral Judgment, and Leadership of Academically Gifted Adolescents. *Journal for the Education of the Gifted, 30*(1), 29 - 67. https://doi.org/10.1177/016235320603000103
Lenney, E. (1977). Women's self-confidence in achievement settings. *Psychological Bulletin, 84*(1), 1–13. https://doi.org/10.1037/0033-2909.84.1.1
Lenney, E. (1981). What's fine for the gander isn't always good for the goose: Sex differences in self-confidence as a function of ability area and comparison with others. *Sex Roles, 7*, 905–924 https://doi.org/10.1007/BF00290974
Lenney, E., Gold, J. & Browning, C. (1983). Sex differences in self-confidence: The influence of comparison to others' ability level. *Sex Roles, 9*, 925–942. https://doi.org/10.1007/BF00290054
Letić, (2015). Značaj moralnih i liderskih svojstava za ostvarenje darovitosti [The importance of moral and leadership qualities for the realization of giftedness], *Doktorska disertacija*, Filozofski fakultet, Univerzitet u Novom Sadu.
McCormick, C. B. (2003). Meta-cognition and learning. In W. M. Reynolds & G. E. Miller (Eds.), *Handbook of psychology: Educational psychology, Vol. 7*, pp. 79–102). John Wiley & Sons, Inc.. https://doi.org/10.1002/0471264385.wei0705
Noels, K. A., Pelletier, L. G., & Vallerand, R. J. (2000). Why are you learning a second language? Motivational orientations and self-determination theory. *Language Learning, 50*(S1), 57–85. https://doi.org/10.1111/0023-8333.00111
Noels, K.A., & Giles, H. (2009). Social identity and language learning. In W. Ritchie & T. Bhatia (Eds.) *The New Handbook of Second Language Acquisition*. (pp. 647-670). Bingley, UK: Emerald.
Oney, E., & Oksuzoglu-Guven, G. (2015). Confidence: A critical review of the literature and an alternative perspective for general and specific self-confidence. *Psychological Reports, 116*(1), 149–163. https://doi.org/10.2466/07.PR0.116k14w0.
Pajares, F. (1996). Self-Efficacy Beliefs in Academic Settings. *Review of Educational Research. 66*(4), 543-578. https://doi.org/10.3102/003465430660045
Rosenberg, M. (1965). *Rozenbergova skala samopoštovanja* [Rosenberg Self-Esteem Scale], Retrieved from https://www.scribd.com/document/395539719/Rosenbergova-skala-samopo%C5%A1tovanja
Rosenberg, M., Schooler, C., & Schoenbach, C. (1989). Self-Esteem and Adolescent Problems: Modeling Reciprocal Effects. *American Sociological Review, 54*, 1004-1018. https://doi.org/10.2307/2095720
Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*(1), 68–78. https://doi.org/10.1037//0003-066X.55.1.68. PMID: 11392867.
Šafranj, J., & Gojkov-Rajić, A. (2019). The Role of Personality Traits in the Choice and Use of Language Learning Strategies, *Društvena istraživanja, 28*(4): 691-709. https://doi.org/10.5559/di.28.4.07
Schraw, G., & Dennison, R. S. (1994). Assessing meta-cognitive awareness. *Contemporary Educational Psychology, 19*(4), 460 475. https://doi.org/10.1006/ceps.1994.1033
Seligman, B. A. (1998). Trust and sociability on the limits of confidence and role expectations. *American Journal of Economics and Sociology, 57*, 391–404. https://doi.org/10.1111/j.1536-7150.1998.tb03372.x
Singal, J. (2017). *How the Self-Esteem Craze Took Over America And why the hype was irresistible*. https://www.thecut.com/2017/05/self-esteem-grit-do-they-really-help.html; Retrieved 2. 06. 2021.
Stankov, L. & Crawford, J. D. (1997). Self-confidence and performance on tests of cognitive abilities, *Intelligence 25*(2), 93-109. https://doi.org/10.1016/S0160-2896(97)90047-7.
Stankov, L. (2013). Non-cognitive predictors of intelligence and academic achievement: An important role of confidence. *Personality and Individual Differences, 55*(7), 727–732. https://doi.org/10.1016/j.paid.2013.07.006
Stankov, L., & Lee, J. (2014). Quest for the best non-cognitive predictor of academic achievement. *Educational Psychology, 34*(1), 1-8. https://doi.org/10.1080/01443410.2013.858908
Sternberg, R. J. (1997). The concept of intelligence and its role in lifelong learning and success. *American Psychologist, 52*(10), 1030–1037. https://doi.org/10.1037/0003-066X.52.10.1030
Sternberg, R. J. (2009). The theory of successful intelligence. In J. C. Kaufman, E. L. Grigorenko (Eds.) & R. J. Sternberg, *The essential Sternberg: Essays on intelligence, psychology, and education* (pp. 71–100). Springer Publishing Co.
Sternberg, R. J. (2020). *Understanding the Triarchic Theory of Intelligence*, Retrieved from https://www.thoughtco.com/triarchic-theory-of-intelligence-4172497.
Subotnik, R. F., & Jarvin, L. (2005). Beyond Expertise: Conceptions of Giftedness as Great Performance. In R. J. Sternberg & J. E. Davidson (Eds.), *Conceptions of giftedness* (pp. 343–357). Cambridge University Press. https://doi.org/10.1017/CBO9780511610455.020

Teovanović, P., Knežević, G., & Stankov, L. (2015). Individual differences in cognitive biases: Evidence against one-factor theory of rationality. *Intelligence, 50*, 75–86. https://doi.org/10.1016/j.intell.2015.02.008

Zimmerman, M. A., Copeland, L. A., Shope, J. T., & Dielman, T.E. (1997). A Longitudinal Study of Self-Esteem: Implications for Adolescent Development. *Journal of Youth and Adolescence 26*, 117–141. https://doi.org/10.1023/A:1024596313925