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Academic Self – Efficacy, Heteronomous and Autonomous Evaluation of Academic Achievement of Adolescents

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Abstract

In the research we focused on an analysis of relationship between academic self-efficacy (ASE), heteronomous (AAH) and autonomous evaluation (AAA) of academic achievement of adolescents. We also analyse the intersexual differences in ASE, AAH and AAA in adolescents. The sample consisted of 107 adolescents (57 girls, 50 boys). We used Morgan-Jinks Student Efficacy Scale. We measured academic achievement by GPA. Autonomous evaluation of academic achievement was measured by perceived self-evaluation of academic achievement (expressed by a self-perceived quality level of knowledge and skill in 3 study subjects - Mathematics, Slovak language, English language and in all study subjects). Among adolescent boys and girls we noted significant differences in GPA (t=2.608, p=.010), the girls GPA was better than boys GPA. In the AAA we determined no evidenced significant intersexual differences (t=.724, p=.471), and in the ASE of adolescents there were no evidenced significant intersexual differences either (t=.019, p=.985). We identified a significant relationship between ASE and GPA (r =.269**, p =.005) and between ASE and AAA (r =.385**, p =.000). Analysing the relationship of autonomous evaluation of success in Mathematics, Slovak language and English language (as study subjects) we have come to the identical finding - there was a significant relationship with ASE of adolescents. We found out that GPA as an indicator of AAH strongly correlates with AAA of adolescent (r =.700**, p =.000).

Keywords: Heteronomous, autonomous, evaluation, academic achievement, academic self-efficacy, adolescents.

1. Introduction

When analysing school achievement understood as an evaluation of learning outcomes we can distinguish two approaches. A heteronomous approach (AAH) which involves evaluation of a student from the outside (usually made by teachers in a school environment) and an autonomous approach (AAA), when a student compares own achievements with intended objectives, values or criteria and is

expected to evaluate achieved results from the inside (Lukášová, 2010). Malá (2013) understands academic achievement as an evaluation of a student's attainments (student's performance in individual subjects) in accordance with school requirements and objectives, while school ability includes a complex of dispositions determining a student's academic achievement. The heteronomous evaluation of academic achievement (AAH) of a student in researches is usually expressed by GPA (grade point average). The autonomous or self-evaluation of academic achievement (AAA) permits various approaches. The source of self-evaluation is the internal awareness and acceptance of the heteronomous evaluation. The self-evaluation of academic achievement becomes a source of a self-regulated learning process when a student sets realistic goals, makes effort to achieve them, overcomes possible obstacles and having fulfilled them sets new goals. An important component in the autonomous evaluation of school achievement is also the feedback that could include both heteronomous evaluation of school achievement and verbal evaluations of classmates, parents, etc. The autonomous evaluation of academic achievement guides a student towards an ability to asses quality of his or her own performance and based on it towards an ability to plan own ways of improvement. It leads a child to independence, gives a chance to recognise own strengths and weaknesses, provides a space to create a reliable self-image and guides towards balanced academic achievement. Grade point averages (GPAs) and standardized test scores have long been considered benchmarks for judging students' academic achievement/success (Kuncel, Crede, & Thomas, 2005, Malá, 2013). However, equally important are internal characteristics (e.g., self-efficacy, self-evaluation and motivation) that are highly related to academic achievement/success (Bandura, 1997, Jinks, & Morgan, 1999, Zimmerman, 2000, Chemers, Hu, & Garcia, 2001, Valentine, DuBois, & Cooper, 2004, Zajacová, Lynch, & Espenshade, 2005, McIlroy, Poole, Ursavas, & Moriarty, 2015).

According to Astin's Inputs-Environments-Outcomes model (1991, in Pascarella & Terenzini, 2005), academic success based on outcomes are viewed as functions of three sets of elements: inputs - the demographic characteristics, family backgrounds and academic and social experiences that students bring to school; environment - the full range of people, programs, policies, cultures, and experiences that students encounter in college, whether on or off campus; and outcomes - students' characteristics, knowledge, skills, attitudes, values, beliefs, and behaviors as they exist after college/school. York, Gibson & Rankin (2015) also argue, that the academic success is multidimensional concept comprising the following dimensions: attainment of learning objectives acquisition of desired skills and competencies, persistence, school satisfaction, academic achievement and career success. We note that the academic achievement is one dimension or part of the global concept of academic success.

Self-efficacy (SE) is a significant element of the self-regulatory human structure. It develops based on personal experiences linked with own successes, but also with observing other people and reflections on their performance and achievements. Self-efficacy is defined as beliefs in one's capabilities to organize and execute the courses of action required to produce a given attainment. Self-efficacy beliefs are self-perceptions of capability influencing how people think, feel, motivate themselves, and act (Bandura, 1997). Self-efficacy is associated with own beliefs concerning the ability to implement and organize the course of own behaviour towards actions related to work, education and then experiencing the success combined with achievement (Bandura, 1997, Blatný, & Pláková, 2003).

Zimmerman (2000) noted that self-efficacy beliefs have been found to be sensitive to subtle changes in students' performance context, to interact with self-regulated learning processes, and to mediate students' academic achievement (Zimmerman, 2000).

Within an academic context, self-efficacy is frequently described in terms of Academic Self-Efficacy (ASE), which defines a learner's judgements about one's ability to successfully attain educational goals (Elias, & MacDonald, 2007). From the perspective of existing researches self-efficacy as a significant element of self-regulatory personality is linked with academic achievement (Chemers, Hu, & Garcia, 2001, Valentine, DuBois, & Cooper, 2004, Zajacová, Lynch, & Espenshade, 2005, Khan, 2013). Academic self-efficacy is a construct which motivate a student's learning through the use of such self-regulatory processes as goal setting, self-monitoring, self-evaluation, and strategy use. Bandura (1989) demonstrated that self-efficacy beliefs and goal setting add significantly to the predictiveness of these measures. Self-efficacy beliefs also affect the self-evaluation = autonomous evaluation standards students use to judge the outcomes of their self-monitoring (in our research study as AAA). Self-efficacy beliefs also motivate students' use of learning strategies (Weber et al., 2013). Zimmerman (2000) claims that self-efficacy of students and their self-confidence associated with learning and performance are crucial for their educational achievement. High academic performance is linked with increased self-confidence and presumably it enhances students to accept greater responsibility for successful completion of tasks (Zimmerman, & Kitsantas, 2005). Some authors believe that students with higher self-efficacy achieve higher levels, because they are able to deal with cognitive demands more efficiently (Lane, & Lane, 2001), attempt to focus on master goals (Hsieh, Sullivan, & Guerra, 2007), perceive their learning as challenges/tasks that are interesting and valuable and apply reasonable learning strategies (Greene et al., 2004). McIlroy et al. (2015) relying on results of researches consider self-efficacy the strongest predictor of academic results and its direct influence on academic achievement. The authors agreed on a uniform naming of that phenomenon – academic self-efficacy – basically because of a wide scope of the concept of self-efficacy and its specific focus precisely on education. Detailed information about this aspect of self-efficacy are provided by Schunk & Pajares (2002) who indicate that academic self-efficacy reflects a student's perception of own competences with respect to tasks within the academic environment.

General statistics and researches in education show that females outperform males at different stages in the school system, have better grades, better academic achievement and reach post-school qualifications in higher numbers (Pullmann, & Allik, 2008, Vantieghem, Vermeersch, & Van Houtte, 2014, Fisher, Schult, & Hell, 2013, Diseth, Meland, & Breidablik, 2014, Carvalho, 2016). However, according to, for example, Fisher, Schult, & Hell (2013) males scored significantly higher in self-perceived academic achievement (in our terminology expressed as the autonomous academic achievement). In the context of academic self-efficacy we have found no such unanimous findings in any of previous researches, respectively there are some ambiguous results, although generally most studies confirm higher general self-efficacy or academic self-efficacy among boys compared with girls (Todor, 2014, Fisher, Schult, & Hell, 2013, Diseth, Meland, & Breidablik, 2014). On the other hand Huang (2013, in Vantieghem, Vermeersch, & Van Houtte, 2014) notes that gender differences in self-efficacy only start to occur in adolescence and tend to be mostly subject-specific, with girls having

higher self-efficacy in language arts and boys in mathematics. Webb-Williams (2014) in her research identified that boys scored significantly lower than girls in self-efficacy (two measures).

Based on the above assumptions, we intend to verify the following hypotheses: 1. There is a significant difference in heteronomous evaluation of academic achievement (AAH) between adolescent boys and girls with a tendency to better GPA among girls; 2. There is no significant difference between adolescent boys and girls concerning autonomous evaluation of academic achievement (AAA); 3. Boys are characterized with higher academic self-efficacy compared with adolescent girls; 4. There is a strong correlation between academic self-efficacy (ASE) and heteronomous evaluation of academic achievement (AAH); 5. There is a strong correlation between academic self-efficacy (ASE) and autonomous evaluation of academic achievement (AAA); 6. There is a correlation between autonomous (AAA) and heteronomous evaluation (AAH) of academic achievement of adolescents.

2. Methods

2.1. Instrument

We used Morgan-Jinks Student Efficacy Scale (MJSES) which consisted of 30 items (instrument consists of three subscales: talent, context, and effort). It is intended to determine information about the student efficacy beliefs that might relate to school success (Jinks & Morgan, 1999). All of the items used a four-interval Likert scale response - from really agrees to really disagree. The reliability of an overall scale in our research was Cronbach's alpha=.645.

Academic achievement was measured by GPA (heteronomous evaluation of academic achievement in all study subjects) and in 3 study subjects (Mathematics, Slovak language, English language) by subject grades at the end of the school year 2015/2016.

Autonomous evaluation of academic achievement was measured by perceived self-evaluation of academic achievement (expressed as a self-perceived quality level of knowledge and skill in 3 core study subjects - Mathematics, Slovak language, English language and in all study subjects). The adolescents subjectively rated their success at school on a six-interval scale - from excellent to absolutely unsatisfactory.

2.2. Participants

The sample consisted of 107 adolescents from secondary schools in Slovakia (57 girls, 50 boys) aged from 15 through 17 years (mean age 16.64).

3. Findings

Results of our research in terms of intersexual differences among adolescent students (Table 2) allow us concluding that:

- Heteronomous evaluation of academic achievement of girls is significantly better than GPA of boys (t=2.608, p=.010). We thus confirm our hypothesis that there is a significant difference between adolescent boys and girls linked with heteronomous evaluation of academic achievement (AAH) with a tendency to better GPA among girls,

- We have identified no significant intersexual differences in autonomous evaluation of academic achievement (t=.724, p=.471), which allows us accepting the hypothesis that there is no significant difference between adolescent boys and girls in autonomous evaluation of academic achievement (AAA),
- In two key subjects that are linked with the acquisition of knowledge and abilities in the native language (Slovak language) and the main foreign language (English language) there are significant differences in both autonomous and heteronomous evaluation of academic achievement between genders with a tendency towards better GPA of adolescent girls in both these subjects (AAH: Slovak language: t= 3.792, p=.000, AAH: English language: t=2.364, p=.020) and higher subjective evaluation of academic achievement of girls compared with adolescent boys (AAA: Slovak language: t= 2.743, p=.007, AAA: English language: t=2.563, p=.012),
- We have found no significant intersexual difference among adolescents concerning both heteronomous evaluation of academic achievement (t=.792, p=.430) and autonomous evaluation of academic achievement (t=1.197, p=.234) related to Mathematics,
- We have detected no intersexual differences in academic self-efficacy of adolescents (t=.019, p=.985) and thus we reject our hypothesis that boys are characterized with higher academic self-efficacy compared with girls during adolescence.

Table 1. Self-efficacy and Academic Achievement of Adolescents: Descriptive Statistics

Variable	Minimum	Maximum	Mean	Std. Deviation
ASE	54	78	65.73	5.58
AAH: English language	1	3	1.64	.62
AAA: English language	1	4	1.76	.78
AAH: Slovak language	1	3	1.78	.60
AAA: Slovak language	1	3	1.87	.70
AAH: Mathematics	1	4	2.01	.86
AAA: Mathematics	1	6	2.30	1.14
AAH: GPA	1	2	1.51	.37
AAA: Autonomous	1	6	2.22	.87

Table 2. Intersexual Differences in Self-efficacy and Academic Achievement of Adolescents

	Gender	N	Mean	Std. Deviation	T-test	Sig.
ASE	Male	50	65.74	6.57	.019	.985
	Female	57	65.71	4.60		
AAH: English language	Male	50	1.78	.46	2.364	.020
	Female	57	1.51	.71		
AAA: English language	Male	50	1.96	.76	2.563	.012
	Female	57	1.58	.78		
AAH: Slovak language	Male	50	2.00	.61	3.792	.000
	Female	57	1.58	.53		
AAA: Slovak language	Male	50	2.06	.61	2.743	.007
	Female	57	1.70	.73		
AAH: Mathematics	Male	50	2.08	.78	.792	.430
	Female	57	1.95	.93		

AAA: Mathematics	Male	50	2.44	1.09	1.197	.234
	Female	57	2.18	1.18		
AAH: GPA	Male	50	1.61	.34	2.608	.010
	Female	57	1.43	.37		
AAA: Autonomous	Male	50	2.28	.73	.724	.471
	Female	57	2.16	.97		

Table 3. Correlation Analysis of Academic Self-efficacy and Academic Achievement

		ASE
AAH: GPA	Pearson Correlation	.269**
	Sig.	.005
AAA: Autonomous	Pearson Correlation	.385**
	Sig.	.000
AAH: English language	Pearson Correlation	.284**
	Sig.	.003
AAA: English language	Pearson Correlation	.225*
	Sig.	.020
AAH: Slovak language	Pearson Correlation	.279**
	Sig.	.004
AAA: Slovak language	Pearson Correlation	.220*
	Sig.	.023
AAH: Mathematics	Pearson Correlation	.267**
	Sig.	.005
AAH: Mathematics	Pearson Correlation	.309**
	Sig.	.001

The results of our research concerning the correlation between academic achievement and academic self-efficacy in group of adolescents (Table 3) allow us concluding that:

- Academic self-efficacy of adolescents significantly positively correlates with heteronomous evaluation of academic achievement expressed by GPA (r=.269, p=.005) which confirms our hypothesis that there is a strong correlation between academic self-efficacy (ASE) and heteronomous evaluation of academic achievement (AAH),
- Academic self-efficacy of adolescents strongly positively correlates with heteronomous evaluation of academic achievement expressed by GPA in all three key subjects (Slovak language, English Language and Mathematics),
- Academic self-efficacy strongly positively correlates with self-evaluation of academic achievement (r=.385, p=.000) which confirms our hypothesis that there is a significant correlation between academic self-efficacy (ASE) and autonomous evaluation of academic achievement (AAA) among adolescents,
- Academic self-efficacy of adolescents strongly positively correlates with autonomous evaluation of academic achievement in all three key study subjects (Slovak language, English Language and Mathematics).

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Table 4. Correlation Analysis of Autonomous and Heteronomous Evaluation of Academic Achievement

		AAA: Autonomous
AAH: GPA	Pearson Correlation	.700**
	Sig.	.000

In the area of identifying a direct relation between heteronomous and autonomous evaluation of academic achievement (Table 4) we have found that both concepts of academic self-efficacy are strongly correlated (r=.700, p=000) which allows us accepting our hypothesis that there is a significant correlation between autonomous (AAA) and heteronomous evaluation (AAH) of academic achievement of adolescents.

4. Discussion and Conclusion

Academic self-efficacy has been defined as personal judgments of one's capabilities to organize and execute courses of action to attain designated types of educational performances (Bandura, 1997). Many researchers have reported a direct positive relationship between academic self-efficacy and academic achievement (e. g., Bandura, 1997, Jinks, & Morgan, 1999; Greene, Miller, Crownson, Duke, & Akey, 2004, Pintrich, 2004, Hsieh, Sullivan, & Guerra, 2007, Lennon, 2010).

Among Slovak adolescent boys and girls we noted significant differences in GPA (the girls GPA was better than boys GPA). In the autonomous evaluation of academic achievement we have no evidenced significant intersexual differences and in the academic self-efficacy of adolescents we have no evidenced significant intersexual differences either. Our findings support conclusions of researches that indicate better academic achievement of female students (Pullmann, & Allik, 2008, Vantieghem, Vermeersch, & Van Houtte, 2014, Diseth, Meland, & Breidablik, 2014, Carvalho, 2016). In the resulting evaluation of three key subjects (Slovak language, English language and Mathematics) at the end of the second grade in secondary school , we have found out that although heteronomous evaluation made by teachers for all three subjects is better for girls, only for two of them – Slovak language and English language – the difference is significant. Researchers have observed that students typically view such areas as mathematics, science, and technology as male domains (Eisenberg et al., 1996, in Schunk, & Pajares, 2002). In our research we reached a conclusion that girls and boys during adolescence do not differ in terms of heteronomous evaluation of academic achievement made by teachers in mathematics nor in self-evaluation of academic achievement. In the other two key subjects that are associated with acquisition of knowledge and abilities in the native language (Slovak language) and the main foreign language (English language) we have identified significant differences both in autonomous and heteronomous evaluation of academic achievement between genders. In heteronomous evaluation of academic achievement made by teachers at the end of the school year girls were on average better than boys, and adolescent girls subjectively evaluated their annual school performance better compared with boys.

Among adolescents, intersexual differences in self-efficacy should not be expected when students receive clear performance information about their capabilities or progress in learning (Schunk, &

Pajares, 2002). This statement fully supports results of our research, because we have not identified any significant differences in academic self-efficacy of adolescent girls and boys.

Self-efficacy had a direct relationship to academic achievement (heteronomous and autonomous) and demonstrating the importance of academic achievement as one part of multidimensional academic success of Slovak adolescents. Our findings complement and support already numerous existing results of other authors (Bandura, 1997, Jinks, & Morgan, 1999; Greene, Miller, Crownson, Duke, & Akey, 2004, Pintrich, 2004, Hsieh, Sullivan, & Guerra, 2007, Fisher, Schult, & and Hell, 2013). High academic self-efficacy is important in predicting academic achievement to mislead heteronomous and autonomous evaluation. We identified a significant relationship between academic self-efficacy and GPA (heteronomous evaluation of academic achievement) and between academic self-efficacy and autonomous evaluation of academic achievement. Analysing the relationship of autonomous evaluation of academic achievement in Mathematics, Slovak language and English language (as study subjects) we have come to the identical findings (there was a significant relationship with academic self-efficacy of adolescents). We agree with the statement of Lennon (2010) that general measures of academic self-efficacy can be good predictors of more general or aggregated academic achievement. But, in general, the best predictors of specific academic performances will be self-efficacy beliefs about those specific academic problems (Pajares, 1996).

We found out that GPA as indicator of heteronomous evaluation of academic achievement is in close relationship with autonomous evaluation of academic achievement of adolescent. The above presented outcomes support conclusions of studies performed by Noftle & Robins (2007, official GPA and self-reported GPA) and Anaya (1999, in Komarraju & Nadler, 2013 - reported and actual scores on the Graduate).

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