Predictors of Academic Self-Efficacy of University Students: Grades, Learning Disabilities and ADHD

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ABSTRACT:

Academic self-efficacy (ASE) is a key concept for academic success as individuals with high ASE are, among other things, ambitious, see problems as challenges, focus on solving tasks, therefore have higher class participation and persevere in difficult tasks. Learning disabilities (LD) and ADHD have been found to be related to academic success, specifically the aspect of taking tests and demonstrating knowledge. Studies of ASE in LD and ADHD students have shown it to be lower in those populations. Most research has focused on ASE as a precursor to academic success. Therefore, we wanted to investigate the opposite, namely how prior academic experiences predict ASE. 287 Croatian students, fifty-three of whom had LD and/or ADHD, participated in the online study. ASE in the learning process and in achieving the desired learning outcomes was lower in the LD/ADHD group. Regression analysis showed that failing an exam, university and middle school grades were significant predictors for both ASE facets, with LD/ADHD diagnosis being a significant predictor only for ASE in achieving the desired learning outcome. Previous negative experiences with testing in the LD/ADHD group and overall relatively recent academic experience have a significant role in students' ASE. Given the importance of academic self-efficacy, the practical implications of these findings point to the importance of supporting students with LD and ADHD during their education.

Keywords: Academic Self-efficacy, Learning Disabilities, ADHD, Grades

INTRODUCTION

Although academic self-efficacy (ASE) is one of the key factors for motivation and learning success, it has been under-researched in students with learning disabilities (LD) and/or attention deficit and/or hyperactivity disorder (ADHD). The purpose of this study is to expand the knowledge of academic self-efficacy in these students.

Academic self-efficacy is based on Bandura's social cognitive theory, which assumes a reciprocal influence of personal, behavioral and social/environmental factors (Bandura,1993). Bandura defines it as an individual's perceived ability to fulfil the tasks necessary for success (Bandura, 1993). It relates to a person belief that they can perform various steps and tasks to achieve academic success (Bandura, 1993). Regardless of cognitive ability, individuals with high academic self-efficacy view problems as challenges, strive for high levels of success, focus on solving tasks, and view failures as a lack of knowledge rather than a lack of ability (Bandura, 1993). Academic self-efficacy is very important in educational process because it influences students' academic motivation and success (Chemers et al., 2001; Feldman & Kubota, 2015; Putwain et al., 2013). Students with higher self-efficacy are more engaged in learning, participate more, work and invest in achieving goals, and "struggle" longer with difficulties (Hsieh et al., 2007; Linnenbrink & Pintrich, 2003).

Academic self-efficacy can be associated with several context-specific learning-related skills and behaviors important for self-regulated learning (Schunk, 2005). Students' belief in their ability to engage in self-regulated learning is most prominent in higher education, which requires more autonomy and self-management (Sander & Sanders, 2009).

According to Bandura's theory, there are four sources of self-efficacy: one's own previous experiences in similar situations, exposure to and identification with effective models (vicarious learning from returned information and emotional arousal) (Bandura, 1978). Above all, one's own experiences characterize self-efficacy; repeated experiences of failure, for example, reduce self-efficacy (Bandura, 1978).

Marsh and colleagues speak of the reciprocal relationship between academic achievement and ASE and have confirmed this in their research (Marsh et al., 2016). In another study, academic performance was found to influence ASE more than self-efficacy affects performance (Hwang et al., 2016).

Academic self-efficacy in students with LD and/or ADHD

According to one of the most detailed definition, learning disabilities (LD)" refer to a number of disorders which may affect the acquisition, organization, retention, understanding or use of verbal or nonverbal information. These disorders affect learning in individuals who otherwise demonstrate at least average abilities essential for thinking and/or reasoning. As such, learning disabilities are distinct from global intellectual deficiency" (Learning Disabilities Association of Canada, 2015). Students with LD, due to their primary disability, may experience significant difficulties in a variety of academic areas. Trainin and Swanson (2005) point out that having problems in reading, writing, mathematics or language can lead to students failing and dropping out at university.

Attention-deficit/hyperactivity disorder (ADHD) is one of the most common neurodevelopmental disorders, characterized by pervasive and impairing symptoms of inattention and/or hyperactivity/impulsivity, according to the DSM-V (American Psychiatric Association, 2013). Students with ADHD have problems in the regulation of attention and executive functions, which affects learning (Barkley, 2011). Similar to students with LD, they generally have lower grades and are less likely to graduate than their peers without difficulties (Advokat et al., 2011; Reid et al., 2013; Weyandt et al., 2013). Both students with LD and those with ADHD may have difficulties in self-regulated learning (Reid et al., 2013). Additionally, they have problems in test taking and showing what they have learned (Lewandowski et al., 2016; Lewandowski, et al., 2015). During exams, college students with LD often had problems with attention and were concerned about a lack of time (Heiman & Precel, 2003) while students with ADHD make more errors due to attention deficit (Du Paul, 2007).

Due to mentioned difficulties, students with LD and ADHD have the right to some educational accommodations in primary and secondary schools, as well as in higher education, which is regulated by law in many countries, including Croatia.

Although academic self-efficacy has been researched extensively, there is relatively little research on the population of students with disabilities. Studies have shown that college students with LD have consistent feelings of lower self-efficacy (Ben Naim et al., 2017; Sharabi et al., 2016; Hen & Goroshit, 2014). Adolescents with LD had lower self-regulatory efficacy and reading self-efficacy than their NLD peers (Klassen, 2010). They also had significantly lower self-efficacy in performing tasks in the classroom,

in organizing school-related activities and in self-efficacy in mathematics and history (Lackaye & Margalit, 2008). Compared to studies of students with LD, there are few studies of academic self-efficacy in students with ADHD. In two studies, students with LD/ADHD as a unified group scored lower on ASE than students without LD/ADHD (Tabassam & Grainger, 2002; Sarid & Lipka, 2024).

On the contrary, one study shows that some students with LD may be overly optimistic about their writing abilities even though they have specific writing deficits Klassen (2002). This may be explained by lower meta-cognition in students with LD or as self-protection, as the author suggests.

Academic self-efficacy and gender

A meta-analysis of 187 studies with 247 independent studies (N = 68,429) on gender differences in academic self-efficacy showed an overall effect size of 0.08, with a small difference in favor of males (Huang, 2013). Females showed higher self-efficacy in language subjects than males and males showed higher self-efficacy in mathematics, computers and social sciences than females. According to the available literature, there is only one study that measured differences in academic self-efficacy in students with ADHD. In terms of self-efficacy in self-regulated learning, the study shows that females with ADHD had the lowest self-efficacy, while male youth with ADHD had similar levels of self-efficacy (Major et al., 2013). In contrast, in another study, girls with LD showed higher self-efficacy in self-regulated learning than boys with LD (Klassen, 2010).

Research aim

There is limited research on academic self-efficacy in students with LD and/or ADHD. To date, more research has been conducted on the influence of academic self-efficacy on achievement and less on the influence of prior achievement on academic self-efficacy. Academic self-efficacy is usually operationalized and measured in a task-specific manner (Ferla et al., 2009), for example in writing or self-regulated learning. Although interrelated, self-efficacy in the learning process and self-efficacy in achieving desired learning outcomes can be observed and measured separately (Lončarić, 2014). To date, there is no study on self-efficacy in achieving desired learning outcomes in students with LD and/or ADHD in the available literature. As previously mentioned, students with LD and ADHD have difficulties in test taking so it can be assumed that this could affect self-efficacy. As previous research has shown that the development of

student self-efficacy is influenced by feedback (Hattie & Timperley, 2007), it is also reasonable to assume that prior academic achievement may predict academic self-efficacy. The studies on gender differences in self-efficacy in students with LD and ADHD yielded mixed results. To address this gap, the following research objectives were set.

The first objective is to find out if there is a significant effect of LD and ADHD on self-efficacy in in the learning process and self-efficacy in achieving desired learning outcomes.

The second objective was to determine whether previous academic achievements had effects on academic self-efficacy while controlling for the effect of LD and ADHD.

METHODS

Our sample consisted of 287 Croatian students of undergraduate (N=168, 58.5%), graduate (N=75, 26.1%) and integrated studies (N=52, 18.1%) form all universities in Croatia. Average age is 22,5 years, and age range from 18 to 55 years. Further characteristics of the sample can be found in Table 1 and Table 2.

Data collection

The participants were contacted via social networks and student associations. Participation was anonymous and voluntary. Participants were given informed consent (information about the research and the implementation of the principles of anonymity and confidentiality) and agreed to participate. The study was approved by the Educational Rehabilitation Studies Committee, University of Zagreb, Faculty of Education and Rehabilitation Sciences, in February 2022. It was conducted following the Code of Ethics of the University of Zagreb, and the Ethics Guidelines for Internet-Mediated Research of the British Psychological Society. Data was collected online in October and November of 2022.

Measures

The sociodemographic questionnaire was created for the purposes of this research. It consisted of 10 items used to determine the gender and age of the respondents, diagnoses of LD and /or ADHD, study program and the year and level of study they are in, as well as academic success during their whole education. Academic success in the form of average grades was measured as a self-assessment with three questions (average grades in primary school, secondary school, and undergraduate studies).

Table 1. **Participant's characteristics (N= 257)**

	N	%
Gender		
Male	70	24.4
Female	217	75.6
Diagnosis	N	%
ADHD and /or LD	53	18.5
No	234	81.5
Study year	N	%
1	95	36.9
2	30	11.7
3	62	24.1
4	39	15.2
5	63	24.5
6	2	.01
Type of study	N	%
Social sciences	144	50.2
Technical sciences	51	17.8
Biomedicine, health sciences	34	11.8
Natural sciences	24	8.4
Biotechnological sciences	8	2.8
Art	5	1.7
Interdisciplinary sciences	1	.00

Table 2. **Average grades during education (N = 287)**

	Primary school	Secondary school	University
Excellent (5)	219 (73.6%)	105 (36.6%)	18 (6.3%)
Very good (4)	66 (23%)	162 (56.4%)	109 (38%)
Good (3)	2 (0.7%)	20 (7%)	65 (22.6%)
Sufficient(2)	-	-	4 (1.4%)
Freshman	-	-	91 (31.7%)

Students' self-efficacy

The Academic Self-Efficacy Scale (ASE) by Lončarić (2014) is intended for pupils and, therefore requires minor adaptation for our student population. The adaptation was of a linguistic nature, for example, the school subject was replaced by the word "course", the word "school" by the word "faculty" and so on. The scale consists of two subscales: Self-efficacy in the learning process and Self-efficacy in achieving desired learning outcomes, each consisting of four items. Participants rate the extent to which the statements apply to them on a scale from 1 ("Does not apply to me at all") to 5 ("Completely applies to me"). Lončarić (2014) states that the result on each subscale of academic self-efficacy is obtained by summing up the answers on the items belonging to that subscale, which means that the sum of all items represents the total academic self-efficacy. Higher results signify higher self-efficacy. Lončarić (2014) states that the internal consistency

(Cronbach Alpha) for the subscale of Self-efficacy in the learning process is 0.75, and for the subscale of Self-efficacy in achieving the desired learning outcomes is 0.87 while the reliability coefficient for the entire academic self-efficacy scale is 0.87. In our research, Cronbach's alpha for the subscale Self-efficacy in the learning process is 0.87; for the subscale Self-efficacy in achieving desired learning outcomes 0.85, while the internal consistency reliability coefficient for the entire scale is 0.9.

RESULTS

All the analyses were performed using SPSS 25 for Windows (IBM, Chicago, IL, USA). A descriptive analysis of our variables is shown in Table 3. As can be seen, our average results for students with and without LD and ADHD are statistically equal in all but the subscale *Self-efficacy in achieving desired learning outcomes*. Students with LD and ADHD have lower self-efficacy in achieving learning outcomes (Table 3).

Table 4 shows the correlation between our predictor and outcome variables. We performed collinearity diagnosis for the regression analysis, and our Tolerance indexes and VIF values were in a range that suggested the collinearity was acceptable (the Range of Tolerance indexes was .48 - .98, and the range of VIF 1.02 - 2.11); (Table 4).

Academic self-efficacy in the learning process correlates with grades in middle school and university. Academic self-efficacy in achieving desired learning outcomes correlates with disability and grades in middle school and university. Analyzing the correlation of grades

Table 3. **Descriptive and comparative data for variables between LD/ADHD (N 53) and control group (N 234).**

Varijable	Learning disabilities /ADHD	M	SD	t (df)	p
The Academic Self-Efficacy Scale	Yes	24.1	7.92	**-2.88**	
	No	27.5	6.46	**(285)**	**.01**
Self-efficacy in the learning process	Yes	14.4	4.23	-1.33	
	No	15.2	3.42	(285)	.19
Self-efficacy in achieving desired learning outcomes	Yes	9.7	4.33	**-3.94**	
	No	12.3	3.76	**(285)**	**.00**
Grades in primary school (PS)	Yes	4.7	.47	-1.33	
	No	4.8	.44	(285)	.19
Grades in middle school (MS)	Yes	4.2	.64	-1.73	
	No	4.3	.58	(285)	.09
Grades in university (Uni)	Yes	2.8	1.71	1.09	
	No	2.5	1.84	(285)	.35

Table 4. **Correlation between the predictor and outcome variables (N 287).**

Variables	Gender	LD/ADHD	Grades PS	Grades MS	Grades Uni	Repeating
Academic self-efficacy in the learning process	.03	.09	.07	**.20****	**.29****	-.01
Academic self-efficacy in achieving desired learning outcomes	-.04	**.25****	-.03	**.15***	**.15***	.01
Gender		-.02	.05	**.15***	-.07	**.15***
LD/ADHD			.08	.10	-.06	.11
Grades primary school (PS)				**.42****	**.16****	-.11
Grades middle school (MS)					.04	.01
Grades university (Uni)						**-.72****

Note. *p < .05, **p < .01, ***p < .001.

Table 5. **Results of hierarchical regression analysis predicting Academic self-efficacy from LD/ADHD, grades and repeating a study year (N = 287).**

Predictors	Academic self-efficacy in the learning process			Academic self-efficacy in achieving desired learning outcomes		
	1st Step	2nd Step	3rd Step	1st Step	2nd Step	3rd Step
LD/ADHD	.09	.09	.07	.25***	.25***	.24***
Grades primary school		-.07	-.06		-.16*	-.16*
Grades middle school		.21**	.19**		.18**	.17**
Grades university		.30***	.58***		.18**	.33***
Repeating a year			.39***			.21*
R	.09	.36***	.45***	.25***	.35***	.38***
R²	.01	.13***	.20***	.06***	.12***	.14***
R² Change		.12***	.07***		.06***	.02*

Note. *p < .05, **p < .01, ***p < .001.

shows that grades in middle school correlate with grades in elementary schools, but not with grades in university. Gender and elementary school grades were not correlated with either facet of academic self-efficacy.

To investigate possible predictors of Academic self-efficacy facets, hierarchical regression analyses were performed. In the first step we entered the LD/ADHD, in the second step grades from all levels of education, and in the third step repeating of the year at the university (Table 5).

The hierarchical multiple regression for ASE in the learning process revealed that at stage one, LD/ADHD did not contribute significantly to the regression model, F (1,285) = 2.30, p > .05. Introducing grades, the regression model explained an additional 12 % of the variation and this change in R² was significant, F (3,282) = 13.33, p < .001. Introducing year repetition explained another 7% of the regression model, which was a significant contribution F (1,281) = 25.69, p < .001. When all independent variables were included in stage three of the regression model significant predictors were middle school and university grades as well as year repetition, with university grades being the strongest predictor. Collectively, they explained 20% of ASE in the learning process variation (F (1,281) = 14.39, p < .001).

The hierarchical multiple regression for ASE in achieving desired learning outcomes revealed that at stage one, LD/ADHD contributed significantly to the regression model, F (1,285) = 18.56, p < .001, and explained 6% of the variance of the outcome. Introducing grades, the regression model explained an additional 6 % of the variation and this change in R² was significant, F (3,282) = 6.44, p < .001. Introducing

year repetition explained another 2% of the regression model, which was a significant contribution F (1,281) = 6.59, p < .05. All independent variables included in stage three of the regression model were significant predictors with university grades and LD/ADHD diagnosis being the strongest predictors. Collectively, they explained 14% of ASE in achieving desired learning outcomes variation (F (1,281) = 9.27, p < .001).

Considering that there is no bivariate correlation between ASE facets and year repetition, we see the repetition variable as a suppressor due to its high correlation with university grades. That can also be seen in the change in the university grades beta-coefficient, which has become the most significant predictor in the third step of both regressions.

DISCUSSION

The purpose of the study was to increase knowledge of academic self-efficacy in students with LD and ADHD who have similar difficulties in learning and test-taking. We were interested in the effects of disability as well as previous achievement on academic self-efficacy now, with the complex demands of higher education. Academic self-efficacy is operationalized as academic self-efficacy in the learning process and academic self-efficacy in achieving desired learning outcomes.

LD and ADHD groups have lower self-efficacy in achieving desired learning outcomes than typical students, but not in the learning process. Most previous studies show lower academic self-efficacy in students with LD and ADHD than in typical students (Ben Naim, 2017; Sharabi, et al., 2016; Hen & Goroshit, 2014; Ta-

bassam & Grainger, 2002; Sarid & Lipka, 2024). The similar self-efficacy in the learning process in both groups may be attributed to the characteristics of the group of persons with LD and ADHD who participate in higher education. More youth who have better self-regulated learning skills are likely to enroll in undergraduate and graduate studies.

On the other hand, students with LD and ADHD have had many past experiences with difficulty on tests, especially when there were no special testing accommodations (extended time or fewer questions/tasks, etc.), that could impact their self-efficacy in achieving learning outcomes. Despite good self-regulated learning skills that may help them learn well, they may not demonstrate the knowledge as typical students especially if there was no testing support. For these students, learning is more under their control than the exam situation. The results of Heiman and Precel's study (2003) confirmed that college students with LD were more stressed, nervous, frustrated, helpless, or insecure during exams than students without LD.

There was no correlation between gender and both domains of academic self-efficacy. Based on the results of previous meta-analyses in the general population showing gender differences in academic self-efficacy depending on the specific domains measured (Huang, 2013) we can explain our results with those specific domains of academic self-efficacy that we selected to examine.

The results of the hierarchical multiple regression show that middle school grades and university grades predict both aspects of ASE, which is consistent with the results of other studies on the influence of prior achievement on self-efficacy (Marsh, et al., 2016; Hwang et al., 2016). Additionally, the experience of failing an exam had a detrimental effect on ASE, which further proves the importance of academic experience on academic self-efficacy. Elementary school grades were a significant negative predictor of ASE in achieving desired learning outcomes and were not predictors of ASE in the learning process. We are inclined to interpret this as pure statistical curiosity, as we lack lacking bivariate correlation of elementary school grades and ASE. We believe that such long ago experiences do not affect the actual academic self-efficacy.

LIMITATIONS AND FUTURE DIRECTIONS

This is the first study in Croatia that investigated the academic self-efficacy of students with LD and ADHD in Croatia and to our knowledge the first study about self-efficacy in achieving desired learning outcomes in students with LD and/or ADHD. The results of the study represent a contribution to research on academic self-efficacy in students enrolled in higher education.

The study has several shortcomings. It is a preliminary study and due to the convenient sample, it is possible that students with special characteristics, e.g. with better self-regulation skills, agreed to participate (especially students with disabilities). We would suggest repeating the study on a larger representative sample with a similar number of male and female students.

There are also some practical implications. From the results on the prediction of academic self-efficacy in terms of achieving desired learning outcomes later in higher education, we can conclude that more attention should be paid in middle school to maximizing the learning success of students with LD and ADHD, such as training test-taking skills in students with LD and ADHD, but also providing appropriate testing accommodation in the middle schools and higher education.

CONCLUSION

This study examines academic self-efficacy in university students with LD and/or LD. The results showed that students with LD or ADHD have lower self-efficacy in achieving desired learning outcomes than typical students, but not in the learning process. This may suggest that those students with LD and/or ADHD who have better self-regulated learning skills continue their education. We can also confirm that academic self-efficacy cannot be considered a unique construct, but rather a complex construct. Considering that LD and/or ADHD students have lower self-efficacy in achieving desired outcomes, one can draw practical implications for academic accommodation and support for this group of students.

REFERENCES

Advokat, C., Lane, S. M., & Luo, C. (2011). College students with and without ADHD: Comparison of self-report of medication usage, study habits, and academic achievement. *Journal of Attention Disorders, 15*(8), 656-666. https://doi.org/10.1177/1087054710371168

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders (5th ed.).* https://doi.org/10.1176/appi.books.9780890425596

Bandura, A. (1978). Self-efficacy: Toward a unifying theory of behavioral change. *Advances in behaviour research and therapy*, *1*(4), 139-161. https://doi.org/10.1016/0146-6402(78)90002-4

Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational psychologist*, *28*(2), 117-148. https://doi.org/10.1207/s15326985ep2802_3

Barkley, R. A. (2011). The important role of executive functioning and self-regulation in ADHD. *Journal of Child Neuropsychology 113*(21), 41-56. https://russellbarkley.org/factsheets/ADHD_EF_and_SR.pdf

Ben-Naim S, Laslo-Roth R, Einav M, Biran H, Margalit M. (2017). Academic self-efficacy, sense of coherence, hope and tiredness among college students with learning disabilities. *European Journal of Special Needs Education*, *32*(1), 18-34. https://doi.org/10.1080/08856257.2016.1254973

Chemers, M. M., Hu, L. T., & Garcia, B. F. (2001). Academic self-efficacy and first year college student performance and adjustment. *Journal of Educational Psychology*, *93*(1), 55. https://doi.org/10.1037/0022-0663.93.1.55

DuPaul, G. J. (2007). School-based interventions for students with attention deficit hyperactivity disorder: Current status and future directions. *School Psychology Review*, *36*(2), 183-194.

Feldman, D. B., & Kubota, M. (2015). Hope, self-efficacy, optimism, and academic achievement: Distinguishing constructs and levels of specificity in predicting college grade-point average. *Learning and Individual Differences*, *37*, 210-216. https://doi.org/10.1016/j.lindif.2014.11.022

Ferla, J., Valcke, M., & Cai, Y. (2009). Academic self-efficacy and academic self-concept: Reconsidering structural relationships. *Learning and individual differences*, *19*(4), 499-505. https://doi.org/10.1016/j.lindif.2009.05.004

Hattie, J., & Timperley, H. (2007). The power of feedback. *Review of Educational Research*, *77*, 81–112. https://doi.org/10.3102/003465430298487

Heiman, T., & Precel, K. (2003). Students with learning disabilities in higher education: Academic strategies profile. *Journal of learning disabilities*, *36*(3), 248-258. https://doi.org/10.1177/002221940303600304

Hen, M., & Goroshit, M. (2014). Academic procrastination, emotional intelligence, academic self-efficacy, and GPA: A comparison between students with and without learning disabilities. *Journal of learning disabilities*, *47*(2), 116-124. https://doi.org/10.1177/0022219412439325

Hsieh, P., Sullivan, J. R., & Guerra, N. S. (2007). A closer look at college students: Self-efficacy and goal orientation. *Journal of advanced academics*, *18*(3), 454-476. https://doi.org/10.4219/jaa-2007-500

Huang, C. (2013). Gender differences in academic self-efficacy: A meta-analysis. *European journal of psychology of education*, *28*, 1-35. https://doi.org/10.1007/s10212-011-0097-y

Hwang, M. H., Choi, H. C., Lee, A., Culver, J. D., & Hutchison, B. (2016). The relationship between self-efficacy and academic achievement: A 5-year panel analysis. *The Asia-Pacific Education Researcher*, *25*, 89-98. https://doi.org/10.1007/s40299-015-0236-3

Klassen, R. (2002). A question of calibration: A review of the self-efficacy beliefs of students with learning disabilities. *Learning disability quarterly*, *25*(2), 88-102. https://doi.org/10.2307/151127

Klassen, R. M. (2010). Confidence to manage learning: The self-efficacy for self-regulated learning of early adolescents with learning disabilities. *Learning Disability Quarterly*, *33*(1), 19-30. https://doi.org/10.1177/07319487100330010

Lackaye, T., & Margalit, M. (2008). Self-Efficacy, Loneliness, Effort, and Hope: Developmental Differences in the Experiences of Students with Learning Disabilities and Their Non-Learning Disabled Peers at Two Age Groups. *Learning Disabilities: A Contemporary Journal*, *6*(2), 1-20.

Learning Disabilities Association of Canada. (2015). *Official definition of learning disabilities*. http://www.ldac-acta.ca/learn-more/ld-defined/officialdefinition-of-learning-disabilities

Lewandowski, L. J., Berger, C., Lovett, B. J., & Gordon, M. (2016). Test-taking skills of high school students with and without learning disabilities. *Journal of Psychoeducational Assessment*, *34*(6), 566-576. https://doi.org/10.1177/0734282915622854

Lewandowski, L., Hendricks, K., & Gordon, M. (2015). Test-taking performance of high school students with ADHD. *Journal of Attention Disorders*, *19*(1), 27-34. https://doi.org/10.1177/1087054712449183

Linnenbrink, E. A., & Pintrich, P. R. (2003). The role of self-efficacy beliefs in student engagement and learning in the classroom. *Reading &Writing Quarterly*, *19*(2), 119-137. https://doi.org/10.1080/10573560308223

Lončarić, D. (2014). Motivacija i strategije samoregulacije učenja: teorija, mjerenje i primjena [Motivation and self-regulatory learning strategies: theory, measurement, and application]. *Psychology*, *84*(3), 261-271.

Major, A., Martinussen, R., & Wiener, J. (2013). Self-efficacy for self-regulated learning in adolescents with and without attention deficit hyperactivity disorder (ADHD*). Learning and Individual Differences*, *27*, 149-156. https://doi.org/10.1016/j.lindif.2013.06.009

Marsh, H. W., Pekrun, R., Lichtenfeld, S., Guo, J., Arens, A. K., & Murayama, K. (2016). Breaking the double-edged sword of effort/trying hard: Developmental equilibrium and longitudinal relations among effort, achievement, and academic self-concept. *Developmental psychology, 52*(8), 1273. https://doi.org/10.1037/dev0000146

Putwain, D., Sander, P., & Larkin, D. (2013). Academic self-efficacy in study-related skills and behaviours: Relations with learning-related emotions and academic success. *British Journal of Educational Psychology*, 83(4), 633-650. https://doi.org/10.1111/j.2044-8279.2012.02084.x

Reid, R., Lienemann, T. O., & Hagaman, J. L. (2013). *Strategy instruction for students with learning disabilities.* Guilford Publications.

Sander, P., & Sanders, L. (2009). Measuring academic behavioural confidence: the ABC scale revisited. *Studies in Higher Education*, *34*(1), 19-35. https://doi.org/10.1080/03075070802457058

Sarid, M., & Lipka, O. (2024). The relationship between academic self-efficacy and class engagement of self-reported LD and ADHD in Israeli undergraduate students during COVID-19. *European Journal of Psychology of Education*, *39*, 253–274. https://doi.org/10.1007/s10212-023-00677-6

Schunk, D. H. (2005). Self-regulated learning: The educational legacy of Paul R. Pintrich. *Educational psychologist*, *40*(2), 85-94. https://doi.org/10.1207/s15326985ep4002_3

Sharabi, A., Sade, S., & Margalit, M. (2016). Virtual connections, personal resources, loneliness, and academic self-efficacy among college students with and without LD. *European Journal of Special Needs Education*, *31*(3), 376-390. https://doi.org/10.1080/08856257.2016.1141542

Tabassam, W., & Grainger, J. (2002). Self-concept, attributional style and self-efficacy beliefs of students with learning disabilities with and without attention deficit hyperactivity disorder. *Learning disability quarterly*, *25*(2), 141-151. https://doi.org/10.2307/1511280

Trainin, G., & Swanson, H. L. (2005). Cognition, metacognition, and achievement of college students with learning disabilities. *Learning Disability Quarterly*, *28*(4), 261-272. https://doi.org/10.2307/4126965

Weyandt, L., DuPaul, G. J., Verdi, G., Rossi, J. S., Swentosky, A. J., Vilardo, B. S., ... & Carson, K. S. (2013). The performance of college students with and without ADHD: Neuropsychological, academic, and psychosocial functioning. *Journal of psychopathology and behavioral assessment*, *35*, 421-435. https://doi.org/10.1007/s10862-013-9351-8