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## **Structural Differences in the Self-determination of Upper Secondary Students with and without Disabilities in Vocational Education**

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### **ABSTRACT**

The aim of the study was to analyze the differences in degree of self-determination between students with and without disabilities and to relate these differences to grade point average and gender in both groups. Students in both groups were equalized in pairs by age, gender and school program (n = 122; 61 pairs). Results indicate that students with disabilities have a lower level of self-determination than their peers without disabilities. With regards to gender, girls with disabilities have the lowest level of self-determination. An analysis of differences in self-determination by grade point average (GPA) showed that students with and without disabilities who had high GPAs have higher levels of self-determination than students with low GPAs. Results of this study reveal important fields of intervention, especially for students with disabilities.

**Key words:** self-determination, vocational education, students with disabilities, academic achievement, gender

## **Strukturalne razlike v samoodločanju dijakov s posebnimi potrebami in brez posebnih potreb v srednjem strokovnem in poklicnem izobraževanju**

Izvirni znanstveni prispevek

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### **POVZETEK**

Namen raziskave je analizirati razlike v samoodločanju med dijaki s posebnimi potrebami in dijaki brez posebnih potreb ter razlike v samoodločanju obeh skupin dijakov glede na šolski uspeh in spol. Dijaki so bili izenačeni z metodo parov glede na starost, spol in izobraževalni program (n = 122 oz. 61 parov). Rezultati kažejo, da imajo dijaki s posebnimi potrebami nižjo raven samoodločanja kot njihovi vrstniki brez posebnih potreb. Analiza razlik glede na spol je pokazala, da imajo dekleta s posebnimi potrebami najnižjo raven samoodločanja. Analiza razlik glede na šolski uspeh pa kaže, da imajo dijaki z višjim šolskim uspehom ne glede na posebne potrebe višjo raven samoodločanja kot dijaki z nižjim šolskim uspehom. Rezultati raziskave osvetlijo pomembna področja za intervencijo, zlasti pri skupini dijakov s posebnimi potrebami.

**Ključne besede:** samoodločanje, poklicno izobraževanje, dijaki s posebnimi potrebami, šolski uspeh, spol

## Introduction

Research on self-determination among high-school students is important because self-determination skills enable students to cope with challenges in the educational environment during the transition to higher education or to the workplace (Wehmeyer, Agran, and Hughes, 2000). In various models, self-determination includes important facets such as self-regulation, autonomy, empowerment, self-reinforcement, self-instruction, self-realization, self-advocacy, self-awareness and problem solving (Soresi, Nota and Wehmeyer, 2011; Wehmeyer, Agran and Hughes, 2000; Deci and Ryan, 1985, 2008; Chirkov, Ryan, Kim and Kaplan, 2003). Application of the self-determination construct is a well-known disability and psychology-related issue. In psychology the theory of self-determination is based on the basic psychological needs (autonomy, competence and social relatedness) which motivate an individual to develop his potential (Deci and Ryan, 1985), while in the disability field, self-determination is more often presented within the areas of disability support, services and advocacy, as a concept involving skills that can be learned thorough curriculum materials and instructional models (Field and Hoffman, 1994; Martin and Marshal, 1995; Wehmeyer, 1996; Wehmeyer, Abery, Mithaug and Stancliffe, 2003).

Students with disabilities who pursue vocational education are at a disadvantage compared to their peers, since teachers lack the training for working with students with disabilities (Avramidis, Bayliss, & Burden, 2000). Teachers and peers tend to have negative beliefs about students with disabilities (Čagran and Schmidt, 2011; Bunch and Valeo, 2004; McDougall, DeWit, King, Miller and Killip, 2004). In upper secondary education, a certain pressure towards academic achievement exists, and individualized instructional approaches are not often assured (Stern, 2012). The population of students who enroll in vocational education is also specific in comparison to students in general upper secondary education, as it comprises students with special needs in a given generation (European Agency for Development in Special Needs Education, 2012; Harvey, 2001), who are more likely to drop out of education (Horn and Bobbitt, 1999), to achieve low levels of education and to be often unemployed (CEDEFOP – European Centre for the Development of Vocational Training, 2014; Statistical Office of the Republic of Slovenia – SURS, 2013).

Other challenges that put students with disabilities in disadvantaged positions are intrapersonal or are based on the family environment. Some students with disabilities have problems with accepting who they are, especially accepting and facing obstacles presented by their disability (Lerner, 2003). The influence of the family environment is very important; it could be either a support or a risk factor in the development of the child. The family can become a risk factor if family members don't support an individual's self-determination, and if they lack collaborative relationships with other professionals to build efficient home-school relationships (Palmer et al., 2013). Additional problems arise from social exclusion

among peers (Deshler, Ellis and Lenz, 1996). Students with disabilities have less opportunity for social interaction with their peers (they can be excluded from peer groups), and they can be exposed to various forms of peer violence (Owens, Shute and Slee, 2000). Some indirect forms of aggression have various negative consequences in a population of adolescents (Vršnik Perše, Kozina and Leban Rutar, 2010). Students with disabilities also have specific cognitive, learning and socio-emotional characteristics; for example, some of them have extraordinarily low or high self-esteem in adolescence or face difficult forms of identity crisis because of the many challenges of that particular life period (Edwards, Gates and Atherton, 2007; Deshler et al., 1996; San Miguel, Forness and Kavale, 1996).

For these reasons, students with disabilities in vocational education are an important target group that needs support. One of the main goals of inclusion during adolescence is efficient support, which should enable students to achieve as much independence as possible after the education period (Martin and Marshal, 1995; Wehmeyer, 1996; Ward and Kohler, 1996; King, Baldwin, Currie and Evans, 2005; Solberg, Howard, Gresham and Carter, 2012).

Many studies indicate (Test et al., 2004; Allen, Smith, Test, Flowers and Wood, 2001; Wehmeyer and Lawrence, 1995; Martin, Marshall and Sale, 2004; Martin et al., 2006) that self-determination in students with disabilities has a significant impact in postsecondary educational outcomes, such as living arrangements, current and past employment situations, postsecondary education status and community integration outcomes.

Consistent trends suggest that self-determined adolescents who are more self-regulated, have problem solving skills, are autonomous and know themselves well have more positive adult outcomes than their peers with lower levels of self-determination. Even drop-out youth in the high self-determination group earned significantly more than their peers in the low self-determination group (Wehmeyer and Palmer, 2003).

The self-determination model by Field and Hoffman (1994), which we have used in our research, focuses on variables related to self-determination that are within the individual's control and are potential targets for instructional intervention. The model has been used for students with disabilities, particularly with respect to the transition from school to adulthood (Hoffman, Field and Sawilowsky, 2004). It measures factors related to self-determination with four components, which are briefly explained in the instruments section of this paper (Hoffman, Field and Sawilowsky, 2004).

Several studies have demonstrated the positive impact of self-determination on the achievement of adolescents with disabilities when using this model. Sarver (2000) found a positive correlation between scores on the Self-Determination Student Scale (Hoffman, Field and Sawilowsky, 1996) and grade point average for postsecondary students with learning disabilities. Similar results are presented in a study by Martin et al. (2003), where self-determination positively correlates to

grades in math, reading, and language, as well as in Shogren, Palmer, Wehmeyer, Williams-Diehm, and Little's (2012) study on a sample of upper secondary students with learning disabilities and cognitive disabilities in mainstream education. Students with high self-determination are successful in their educational and personal goals.

Results from assessment tests of self-determination (Hoffman et al., 2004) can be used to inform transition planning and to collect information from a range of perspectives (students, teachers or parents), such as at the starting point of discussion in IEP meetings; such results can also help to promote greater self-awareness on the part of the student about his degree of self-determination. Self-determination offers educational and support strategies that have the potential to increase positive educational and employment outcomes for adolescents and adults with disabilities (Wehmeyer, Yeager, Bolding, Agran and Hughes, 2003).

Research evidence supports promoting self-determination as one possible way to overcome the obstacles to achieving quality and perspective in education for students with disabilities, while opening up opportunities for employment and autonomous living (Wehmeyer, Palmer, Soukup, Garner and Lawrence, 2007).

To empower students with disabilities, interventions should be based on active participation and promotion of self-determination, individual independence, and autonomy (Wehmeyer, Palmer, Soukup, Garner and Lawrence, 2007; Test et al., 2004; Allen et al., 2001; Wehmeyer and Lawrence, 1995; Martin et al., 2004, 2006; Wehmeyer, Palmer, Shogren, William-Diehm and Soukup, 2013). Research work in the self-determination of adolescents is relevant, as it reveals opportunities and directions to focus interventions and take future steps in self-determination instruction.

The purpose of the study was (a) to determine structural differences in self-determination between upper secondary students with and without disabilities in vocational education, (b) to analyze gender differences in both groups, and (c) to determine differences in self-determination regarding grade point average (GPA) in both groups to achieve more accurate insight into the self-determination variable and to suggest possible interventions in support of students' self-determination.

## **Method**

### *Participants and procedure*

The research sample consisted of upper secondary students ( $n = 122$ , age = 15-18 years) from eight different vocational schools and was based on the method of pairs. Students in both groups were equalized in pairs by age, gender, school program and grade point average (GPA) as much as possible. The first group consisted of students with disabilities ( $n = 61$ ), and the second group consisted of students without disabilities ( $n = 61$ ); by gender, the sample was composed of 72 males and

50 females (36 males and 25 females in each group). Most students were age 16 ( $n = 79$ ) and age 17 ( $n = 36$ ), and a few students were 18 years old ( $n = 7$ ).

For the analysis of differences by grade point average, the GPA variable was constructed according to the grade assessment system in Slovenia. GPA is measured in five categories: excellent, very good, good, sufficient and insufficient. These grades are expressed in categories from 1 to 5: one is *insufficient* and five is *excellent*. Students with excellent school achievement have a GPA of at least 4.5 or higher; students with very good school achievement have a GPA between 3.5 and 4.5; (etc.) In our research we made three categories of GPA because of the lack of students with excellent and insufficient GPA in the research sample, and this way we avoided less relevant results of the analysis. In the first category we joined sufficient and insufficient GPA; in the second category we included students with a GPA between 2.5 to 3.4, and in the third category we put students with a GPA between 3.5 and 5. To analyze differences in self-determination by GPA, we used analysis of variance (ANOVA) for each group of students separately.

All students with disabilities were integrated into the regular classroom. They had the formal status of a special education needs student and were receiving additional professional support. The group of students with disabilities consisted mostly of students with (specific) learning disabilities (45 students) and with mild cognitive disabilities (10 students). Four students had emotional and behavioral disabilities, one had mild visual impairment and one had autism. There were no students with severe sensory-motor disabilities. All students with disabilities had additional professional support from a teacher or special education teacher, 1 to 3 hours per week, and all students had an individualized educational program.

### *Instruments*

The assessment instrument used was the Self-Determination Student Scale (Hoffman et al., 2004), which measures cognitive, affective and behavioral factors related to self-determination and was developed by Field and Hoffman (1994).

The Self-Determination Student Scale (SDSS) is a 92-item, self-report instrument that measures emotional and cognitive aspects of student self-determination. Answers are chosen from a dichotomy scale, with possible answers being "That's me" or "That's not me." With permission of the authors we translated this instrument into the Slovenian language for the purposes of this study.

The SDSS has five components: (a) know yourself, (b) value yourself, (c) plan, (d) act, and (e) experience outcomes and learn. Each component score and the self-determination total score are calculated on the basis of correct and false criteria for answers. Total self-determination score is the sum of the five subscales: Know Yourself, Value Yourself, Plan, Act, and Experience Outcomes and Learn. Analysis in this research was performed separately for the total score of self-determination and for the subscales. Some examples of items for the component Know Yourself are "I know what is important to me" and "I know my strengths"; for component Value Yourself, "I have the right to decide what I want to do" and "I like who I

am". Examples of items for the Plan component are "Before I give a report in class, I go over it in my mind" or "Goals give my life direction". Examples for the Act component are "I tell others what I want" and "If I want something, I keep at it" and for the component Experience Outcomes and Learn, examples include "I think about how I could have done something better" or "I feel proud when I succeed".

Validity of the scale was measured by principal component analysis. The percentage of the explained variance of the first component is 74.75 %. The eigenvalue diagram showed one main component, that is, self-determination. Reliability of SDSS was measured by Cronbach's alpha, which was 0.91 in the original version (Hoffman et al., 2004, p. 26); in our research, the Cronbach's alpha was 0.90.

### Analysis

To analyze structural differences in self-determination between students with and without disabilities, we used discriminant analysis. To analyze gender differences in self-determination, we used the *T* test, and to analyze differences in self-determination by grade point average, we used analysis of variance (ANOVA).

### Results

#### *Structural differences in self-determination between high school students with and without disabilities*

The aim of this analysis was to find the dimension(s) on which groups differ and to create classification functions. The second goal was to determine the predictors that are most important for group membership and, third, to estimate the parameters of self-determination for students with disabilities.

Table 1: Results of discriminant analysis

Function	Eigenvalue	Percentage of variance	Canonical correlation coefficient	Wilks' Lambda	Chi square	
1	$\lambda$	% var	Cc	$\Lambda$	$\chi^2$	<i>P</i>
	1.675	100	0.791	0.374	115.604	0.000

We found one significant discriminant function ( $\Lambda = 0.374$ ;  $p = 0.000$ ), with eigenvalue  $\lambda = 1.675$ . The correlation coefficient with linear function is  $Cc = 0.791$ .

Table 2: The structure of discriminant functions

Self-determination components	Standardized discriminant function coefficients	Correlation coefficients
	$\beta$	<i>r</i>
Act	0.74	0.93
Experience Outcomes and Learn	0.28	0.64
Value Yourself	0.24	0.68
Know Yourself	0.00	0.60
Plan	-0.06	0.55

Standardized discriminant function coefficients indicated the contribution (weight) of each predictor, showing that differences between students with and without

disabilities are mostly expressed in the Act component, less in the components Learning from Experience and Value Yourself, and even less in Know Yourself and Plan, which is a rather surprising result, at least for the Plan component. Correlation coefficients for the self-determination components are between 0.93 (for Act) and 0.55 (for Plan).

In the self-determination components, we can recognize cognitive, behavioral, and emotional facets of students' functioning. Differences between the two groups showed that they are similar in Know Yourself and Value Yourself; however, in behavior, when self-determination should be executed in life, we can notice significant differences between students with disabilities and students without disabilities. Many researchers (Geary, 2006; Siegel and Ryan, 1989; Meltzer, 2007) have noted that problems (especially for students with learning disabilities) correlate with slow cognitive development, weak motivation and self-regulation, low executive function, and poor organizational skills, time management, learning cognition and metacognition. Problems in executive function can be perceived through students' below average performance in learning, school work and persistence. These findings can be helpful in seeking more effective interventions for perceived weaknesses in self-determination (Hoffman et al., 2004, p. 14).

Further examination of variables for the Act component indicated that the student's functioning in the academic and social environments makes the difference. Variables consisted of student's self-reported assessment in (a) ability to find support from other sources (for example, in statements like "I do not know how to get support when I need it," "I do not know where to get help to decide what I should do after I finish school," and "If my friends criticize something I'm wearing, I would not wear it again"), (b) ability to persist in activities (for example, "When I want good grades, I work until I get them," "I give in when I have differences with others," "I'm easily discouraged when I fail," and "If I'm unable to solve a puzzle quickly, I get frustrated and stop"), and (c) emotional self-regulation (for example, "Criticism makes me angry," "I'm too shy to tell others what I want," "I'm too scared to take risks," and "I imagine myself failing before I do things" (Hoffman et al., 2004, p. 31).

Table 3: Group centroids and classification results

Group	Function 1			
	without Disabilities	1.283		
with Disabilities	-1.283			
	without Disabilities		with Disabilities	
	<i>f</i>	<i>f</i> (%)	<i>f</i>	<i>f</i> (%)
without Disabilities	52	85,2	9	14.8
with Disabilities	1	1.6	60	98.4

Group centroid signs prove the differences between groups. Students without disabilities attained higher values, especially in the Act component. The Classification results show the percentage of correctly classified students in the

group (85 % without disabilities and 98.4 % with disabilities). The estimated actual group membership is high. The latent reason for the lower number of students without disabilities being correctly classified (85.2 %) may be because of the population specifics of students in this research sample. The population of students without disabilities may also contain some students who actually need additional professional help and the official status as a student with disabilities, but who don't have it for various reasons.

## Gender differences in self-determination for students with and without disabilities

In this section we analyze gender differences in both groups. Results are shown for self-determination and its five components, divided by groups (students with and without disabilities).

Table 4: Results of T tests for gender differences in self-determination in the group of students with and without disabilities

Group		Gender	Numerus	Mean	Standard deviation	Levene test of homogeneity of variances		t test (independent samples)	
						F	P	t	P
			n	M	SD				
Students with D	Self-Determination	Male	36	56.11	7.32	0.01	0.89	2.19	0.03
		Female	25	51.68	8.33				
	Know Yourself	Male	36	10.5	2.28	0.00	0.97	1.73	0.08
		Female	25	9.48	2.21				
Value Yourself	Male	36	9.86	1.69	0.00	0.97	2.35	0.02	0.02
	Female	25	8.80	1.77					
Plan	Male	36	10.91	2.38	0.00	0.95	0.58	0.55	0.55
	Female	25	10.56	2.25					
Act	Male	36	15.02	2.67	1.10	0.29	0.96	0.34	.034
	Female	25	14.28	3.39					
	Experience Outcomes and Learn	Male	36	9.77	1.75	0.01	0.89	2.57	0.01
		Female	25	8.56	1.89				
Students without D	Self-Determination	Male	36	65.19	12.74	0.46	0.49	-1.77	0.08
		Female	25	71.12	12.87				
	Know Yourself	Male	36	12.94	1.92	0.02	0.88	-2.29	0.02
		Female	25	14.16	2.17				
Value Yourself	Male	36	12.69	1.73	1.14	0.28	0.26	0.79	0.79
	Female	25	12.56	2.18					
Plan	Male	36	14.55	3.22	1.43	0.23	-0.20	0.84	0.84
	Female	25	14.72	3.03					
Act	Male	36	21.16	2.27	1.96	0.16	-0.48	0.63	0.63
	Female	25	21.48	2.80					
	Experience Outcomes and Learn	Male	36	12.36	2.23	0.00	0.97	-1.69	0.09
		Female	25	13.36	2.32				

The hypothesis of the homogeneity of variances is justified for all variables. Results of the *T* test showed significant gender differences in self-determination in the group of students with disabilities; males have a higher average self-determination score than females. Higher male average scores are also noted for all components of self-determination, although statistically significant gender differences are found only for the Value Yourself and Experience Outcomes and Learn components for students with disabilities.

Results for students without disabilities do not show significant gender differences in self-determination, although there is tendency for females to have higher average self-determination scores than males, which is the opposite result from the group of students with disabilities. Significantly higher female average scores occurred for the Know Yourself component, while just slightly higher female average scores were found for the three components, Plan, Act, and Experience Outcomes and Learn.

Results for gender differences in self-determination are mixed, as differences did not occur in all components. In the group of students with disabilities, males had higher scores than females for all five components of self-determination; significant differences were found for the components Value Yourself and Learning from Experience. Other significant differences also arose in the general self-determination score, which indicates that male students with disabilities have higher self-esteem (higher score for Value Yourself) and cope with challenges better than females with disabilities (higher score for Learning from Experience).

*Differences in self-determination by grade point average for students with and without disabilities*

In this chapter we present results for differences in self-determination by grade point average (GPA) in the group of students with and without disabilities.

*Table 5: Differences in self-determination by grade point average in the group of students with and without disabilities*

Group	GPA	Numerus	Mean	Standard deviation	Levene test of homogeneity of variances		Variance analysis	
		n	M	SD	F	P	F	P
without D	insufficient, sufficient (GPA = 1-2.4)	7	57.00	13.29	1.10	0.34	3.40	0.04
	good (GPA = 2.5-3.4)	32	67.50	13.46				
	very good, excellent (GPA = 3,5-5)	22	71.18	10.75				
with D	insufficient, sufficient (GPA = 1-2.4)	7	50.14	7.33	1.96	0.17	1.43	0.24
	good (GPA = 2.5-3.4)	33	53.21	8.86				
	very good, excellent (GPA = 3.5-5)	21	55.47	4.65				

Results of ANOVA showed significant differences in the group of students without disabilities. Students without disabilities and with higher GPA had significantly higher self-determination mean scores than students with lower GPA. Students with disabilities and high GPA also had relatively high mean scores in self-determination. Those with a GPA between 3.5 and 5 had higher self-determination mean scores than students with disabilities and a GPA between 1 and 2.4, although differences are not statistically significant.

Table 6: Differences in self-determination components by grade point average in the group of students with and without disabilities

Group	Self-determination Components	Insufficient, sufficient (GPA=1-2.4)		Good (GPA= 2.5-3.4)		Very good, excellent (GPA= 3.5-5)		Levene test of homogeneity of variances		Variance analysis	
		M	SD	M	SD	M	SD	F	P	F	P
without D	Know Yourself	13.00	1.73	13.50	2.19	13.50	2.13	0,52	0.59	0.17	0.84
	Value Yourself	13.42	1.27	12.53	2.01	12.56	1.94	0.92	0.40	0.66	0.51
	Plan	14.28	3.59	14.31	3.49	15.18	2.38	2.11	0.12	0.54	0.58
	Act	20.85	2.67	21.12	2.57	21.68	2.35	0.13	0.87	0.44	0.64
	Experience Outcomes and Learn	13.00	2.23	12.71	2.45	12.77	2.20	0.37	0.68	0.04	0.95
with D	Know yourself	10.00	1.63	9.63	2.52	10.28	1.55	0.66	0.52	0.59	0.55
	Value Yourself	8.42	1.61	9.21	1.84	9.61	1.43	0.36	0.68	1.33	0.27
	Plan	10.57	2.57	10.60	2.57	10.28	1.84	1.42	0.24	0.12	0.88
	Act	13.00	2.08	14.54	3.31	15.57	2.39	1.35	0.26	2.17	0.12
	Experience Outcomes and Learn	8.14	1.57	9.18	2.18	9.71	0.78	3.56	0.06	2.13	0.12

Our results indicate that there were no significant differences in self-determination components' mean score according to GPA, perhaps because of the limitations of this study (small sample size). Students without disabilities and with high GPA had higher mean scores in Know Yourself, Plan and Act than students without disabilities and with lower GPA. Students with disabilities and with high GPA (between 3.5 and 5) had higher mean scores in Know Yourself, Value Yourself, Act and Experience Outcomes and Learn than students with disabilities and with lower GPA (between 1 and 2.4). From the mean scores of students with the lowest GPA, some extraordinarily high means occur, e. g. mean scores in Value Yourself in students without disabilities and Know Yourself and Plan in students with disabilities.

## Discussion

This study revealed (a) structural differences in self-determination between students with and without disabilities; (b) differences in self-determination by gender in the groups of students with and without disabilities, and (c) differences in self-determination by GPA in both groups. Our intention was to achieve more accurate knowledge of the self-determination variable and to suggest possible interventions of professional support for students in vocational education.

### *Differences in self-determination between students with and without disabilities*

Results indicate that students with disabilities show lower self-determination mean scores than students without disabilities. With structural analysis, we analyzed which components of self-determination indicate deficits in students with disabilities compared to their peers.

Results of the discriminant function showed strong differences between students with and without disabilities in the Act component, moderate differences in the components Learning from Experience and Value Yourself and almost no differences in Know Yourself and Plan. Students with disabilities show similar scores in self-knowledge, self-valuation and planning, but differences occur on behavioral components, when self-determination needs to be enforced. The lowest component of self-determination in group of students with disabilities occurred in Act, which is related to the executive functions and is also a well-documented problem among adolescents with learning disabilities (Lerner, 2003).

Shogren and colleagues (2006) also reported differences in the mean score between students with disabilities and students without disabilities on many self-determination components. Students with disabilities have lower self-regulation, empowerment, self-realization, optimism and life satisfaction. Other studies report that students with disabilities also express less self-determination, self-regulation (Mithaug, Mithaug, Agran, Martin and Wehmeyer, 2003; Wehmeyer and Garner, 2003), and empowerment (Wehmeyer, 1994) and have fewer opportunities to control their circumstances (Wehmeyer and Kelchner, 1996).

We can conclude that self-determination is a very complex skill which enables us to successfully adapt to social situations. To achieve social success, adolescents should use cognitive, social, and emotional resources within themselves, but unfortunately these functions are often low in this population of students (Gresham, Sugai and Horner, 2001). Therefore it is vital to help these students develop self-determination skills to cope better with the many challenges they face.

### *Gender differences in self-determination*

In the group of students with disabilities, males had higher mean scores than females on all five components; statistically significant differences were found for the components Value Yourself and Experience Outcomes and Learn. In general self-determination, males had statistically significant higher scores than females, which might indicate that boys have higher self-esteem and cope better with

stressful situations than girls with disabilities. Quite interesting is the difference in self-determination scores between girls with and without disabilities. The low scores in females with disabilities compared to females without disabilities are meaningful: In the components for general self-determination, Value Yourself, Learning from Experience, and Act, the differences were quite high (e.g., Act: females without disability  $M = 21.38$ ; females with disability  $M = 14.28$ ). Although interpretation of these results is complex, we presume that girls with disabilities have more problems with accepting themselves, might have more negative perceptions about obstacles related to their disability and might more often suffer from emotional stress. Results indicated more frequent depressive moods in girls with disabilities than in girls without disabilities, which may be related to problems of accepting and facing obstacles related to their disability (Lerner, 2003) and be additionally related to the identity crisis that is typical among adolescents, but might be more problematic for girls with disabilities. Another possible explanation might involve the adverse social interaction taking place, especially among girls in this period and because of negative beliefs and prejudices related to their educational incapacity, which can influence their levels of self-determination and self-esteem. Perceptions of self-competence, self-realization, and self-confidence might also be related to specific social interactions, which occur more often in the girls' groups. Some studies have shown that in communication among girls there is considerable negative communication, which is often covert, e.g. exclusion from the group, gossip, contempt and other forms of passive aggression (Owens, Slute and Slee, 2000; Nickerson, Singleton, Schnurr and Collen, 2014). Other reasons might pertain to negative beliefs about and prejudices toward the low capabilities of girls with learning disabilities in the learning environment. All this might be the reason behind the lowest self-determination scores among girls with disabilities.

Results of our research indicate that intervention in the development of self-determination should be more intensive for girls with disabilities and that further research work should be done to focus on the reasons for differences among girls in this population.

#### *Self-determination and academic achievement*

Academic achievement (measured by GPA) was analyzed in both groups of students for overall self-determination and each individual component. Results of ANOVA in the group of students without disabilities indicate significant differences in self-determination with regard to academic achievement. Students with high GPA have higher self-determination scores than students with low GPA. No differences were found in self-determination components, although the mean scores of students with high GPA are higher than the scores of students with low GPA. Students without disabilities and with high GPA have higher scores on overall self-determination and the Plan and Act components.

In the group of students with disabilities, we found no statistically significant differences regarding self-determination and academic achievement, although the

mean scores of students with disabilities and with high GPA are higher in overall self-determination and in the components Know Yourself, Value Yourself, Act, and Experience Outcomes and Learn than the mean scores of students with low GPA.

Results of our research show that self-determination doesn't directly relate statistically to academic achievement. We presume the reasons for the lack of these data are (a) the small sample of students, (b) the low number of students with disabilities and with high GPA, and (c) the low variation coefficient in the self-determination score of students with disabilities; the mean score is in the range from 50.14 to 55.47. From the mean scores, we can see that students with disabilities and high GPA report higher scores for self-determination, and students with disabilities and low GPA report lower scores for self-determination, which is consistent with most of the research that compares these two variables. For example, Sarver (2000), who analyzed correlations between self-determination and academic achievement, found that high levels of self-determination do correlate with GPA. Similarly, Martin et al. (2003) found that high levels of self-determination correlate with high grades in math, reading and language in a smaller sample of students with disabilities. Research on adolescents with learning disabilities and intellectual disabilities in inclusive education showed that adolescents with high levels of self-determination achieve more learning and personal goals than their peers with low self-determination levels (Shogren et al., 2012). Some authors note the importance of the process through which students develop self-determination competences (Solberg et al., 2012).

Academic achievement is important for successfully coping with the challenges of adolescents with disabilities, which we mentioned in the introduction. It would therefore be necessary for them to acquire self-determination skills, especially skills related to executive functions like planning and acting. Instruction for learning these skills could be promoted in individualized education plans, through other activities in the classroom in teacher's work and at every grade level (Wall and Datillo, 1995).

Additionally, with better academic achievement in the population of students with disabilities in vocational education, we could reduce school dropout rates, increase levels of education, improve levels of employment and reduce the barriers to active participation in the community, all of which are predictable issues for adolescents with disabilities but ones that should not be tolerated. Academic achievement is one more reason for promoting the development of self-determination within this population of students.

## **Conclusions**

Students with disabilities should be empowered to actively participate and act as causal agents, which might be the starting point for changes in the professional

support and procedures related to individualized education programs, transitions in education and even employment.

For more specific applications at the level of secondary education, we suggest implementing the self-determination model in schools as project work, as well as the systematic education of teachers and other education professionals. In countries where self-determination is not very well known, elements of self-determination could be implemented in various ways, for example:

- By promoting an ethos and school culture that allows self-determination and inclusion.
- By encouraging school leadership to promote self-determination.
- By encouraging students with disabilities to speak up about themselves and their needs, so their voices are (a) heard, (b) listened to, and (c) seriously considered. These three elements are very important in communication with others and should enable students to develop self-determination skills.
- By educating teachers and other education professionals about the meaning of self-determination and its possible implications for education and life transitions.
- By educating teachers about learning models of self-determination and methods of instruction.
- By developing the self-determination learning model with activities including art, dance, drama, role play and communication-building.
- By including goals for the development of self-determination in the curriculum for teachers and other education professionals.
- By making individualized plans for teachers and students that include self-determination and active participation of the student.
- By planning transitions to employment for students with disabilities, practicing self-determination skills in potential employment environments.

The focus of student support should be on goal planning and goal performance, persistence in learning and assignments, efficient functioning, adjustment when obstacles occur and learning from experience (Field, Sarver and Shaw, 2003; Gerber, Ginsberg and Reiff, 1992, 1994; Gerber and Reiff, 1994). In the school environment, relationships and circumstances that promote self-determination should be developed (Palmer and Wehmeyer, 2003), and students should learn self-advocacy, self-regulation and autonomy (Martin, Mithaug, Cox, Peterson, Van Dycke and Cash, 2003). Students need many opportunities for active choice making, positive interaction and participation in all decision-making processes and need considerable economic, academic and social encouragement and personal persistence and effort (Powers, Wilson, Matuszewski, Phillips, Rein, Schumacher and Gensert, 1996).

Development of self-determination does not take place automatically and cannot be learned from passive learning. Therefore, a systematic approach through specific activities and content is needed. An important opportunity (and challenge)

is the development of methods and strategies for learning self-determination skills, self-advocacy and autonomy in all segments of education. The role of the family is also crucial and should not be neglected, since family members are the key support factor and can promote one's self-determination throughout the adolescent development period and into later adulthood (Palmer et al., 2013).

We believe self-determination might prevent dependency, learned helplessness, the loss of self-value and low self-esteem and also mitigate the consequences and deficits of various disabilities among children and adolescents (Wehmeyer, 1996). Challenges are mostly seen in practice or, more accurately, in putting theory into practice. The role of special education teachers, mainstream education teachers, parents and other professionals is crucial; they are the ones who, together with students, can make the self-determination story come alive and flourish. They should actively participate in promoting self-determination and help students with and without disabilities to learn the skills they will need and use all their life.

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