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Academic motivation in children with dyslexia

Ewa Łodygowska^{a,b}, Magdalena Chęć^{a,b}, and Agnieszka Samochowiec^b

^aPsychological and Pedagogical Counselling Centre no 4, Szczecin, Poland; ^bDepartment of Clinical Psychology, Institute of Psychology, University of Szczecin, Szczecin, Poland

ABSTRACT

The authors' purpose was to determine which form of therapeutic aid may influence academic approach and avoidance motivation in children with dyslexia. There were 165 children with dyslexia assessed with the use of "I and my school" questionnaire. The authors considered the children's previous therapeutic experience and on its basis they were divided into three groups. Children receiving systematic therapeutic treatment display a significantly higher level of academic approach motivation as compared to those from the two other groups. Those children also manifest a lower level of academic avoidance motivation compared to those receiving no form of specialist treatment. Girls, regardless of their therapeutic experience, demonstrate a higher level of approach motivation; boys, on the other hand, display a higher level of avoidance motivation. The study shows that the quality of provided therapeutic aid affects emotional-motivational sphere of children with dyslexia. Systematic therapeutic aid increases academic approach motivation and reduces avoidance motivation.

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Developmental dyslexia is a disorder affecting 10–15% of children (Bogdanowicz, 2006), conditioned by genetic (Haarlar, Spinath, Dale, & Plomin, 2005) and neurological factors (Habib, 2000).

The International Classification of Diseases–Tenth Revision (ICD-10; World Health Organization, 2010) considers developmental dyslexia as a form of specific disorders of scholastic skills (F81), involving specific reading (F81.0) and spelling (F81.1) disorder. In the ICD-10 it is also highlighted that there appear certain interrelations between specific reading difficulties and impairment in development of speech and language, as well as pointed out that the nature of those difficulties is dynamic (i.e., spelling problems may persist even in case of improvement in reading ability). Moreover, it is stressed that during their school years children may develop emotional and conduct disorders.

Children with dyslexia, due to the nature of their difficulties, begin to experience various failures from the very beginning of their education. They are incapable of accurately fulfilling typical developmental tasks or those associated with academic requirements, therefore they face setbacks early on in the educational process (Gindrich, 2004). Because of accompanying dyslexia language difficulties, children with dyslexia are reluctant to speak in front of the class and avoid participation in debates or public speaking (Dockrell, Peacey, & Lunt, 2002). Their academic performance is poorer, especially when it comes to subjects that involve reading and writing (Czerwińska, 2004).

And since reading and writing constitute fundamental abilities at school, then difficulties with them may undergo generalized assessment. As a consequence, a child begins to perceive him or herself as incapable and generally weak (Humphrey &

Mullins, 2002; Skaalvik, 2004), and situations that require reading and writing as stressful and threatening (Covington, 1992).

The perception of self and the challenges associated with certain situations determines the motivation to act, or to avoid. In accordance with the sociocognitive approach, motivated behaviors rely largely on external and internal reinforcements (Bandura, 2007). External reinforcements (i.e., reactions of the environment) and consequences of particular actions (e.g., achieved score) have an impact on the process of shaping certain behaviors (constructive or not), as well as reinforce motivation to repeat certain behaviors in the future (Bandura, 2007). Besides external reinforcements, there appear also internal ones (i.e., children's beliefs concerning their competences; Bandura, 2007). If in the course of experience a child gains a conviction that he or she can cope with a problem, this knowledge provides satisfaction and starts working as a reward, thus motivating them to undertake similar actions in the future. The consequence of this is a willingness to take certain actions (e.g., related to cognitive functioning), the driving force behind it being approach motivation (Ozer & Bandura, 1990).

The experience of failure, on the other hand, causes a stimulus originally considered to be neutral to start appearing as aversive, indicating the possibility of occurrence of unpleasant events (Bandura, 2007). The effect of this is activation of defensive behaviors, aimed at avoiding a specific threat. These behaviors are of durable nature, they do not disappear even when there is no longer a potential risk—because an individual supports them in the belief that by acting in a certain way they will avoid trauma (Bandura, 2007).

Children with dyslexia experience numerous failures, which determines negative emotions (Aleksander-Passe, 2008; Miller,

Hynd, & Miller, 2005). As a result of regularly experienced failures they begin to identify school situations with unpleasant consequences, for which reason they feel anxiety related to their functioning at school, leading to hindering of their activity and reluctance to make self-reliant attempts to overcome difficulties (Kim & Lorschbach, 2005). A leitmotiv of their functioning—in the face of potential threats—may become keeping away from undertaking activities induced by avoidance motivation (Ozer & Bandura, 1990).

Numerous studies (Kim & Lorschbach, 2005; Polychroni, Koukoura, & Anagnostou, 2006; Ridscale, 2005; Skaalvik, 2004) have confirmed that children experiencing regular failures at school begin to doubt their ability to learn, which in turn adversely affects their motivation: namely, it increases their avoidance motivation and activates defense strategies. These strategies (devaluation of the situation and the activities in which they expect defeat; defensive attributions; self-handicapping), aimed at the protection of self-esteem, provide excuses for failures, or diminish the importance of failures. However, they do not solve real-world problems, and each of them reduces the level of approach motivation, reinforcing, and perpetuating avoidance motivation.

Studies (Alexander-Passe, 2008; Burden & Burdett, 2005; Butkowsky & Willows, 1980; Humphrey & Mullins, 2002; Kulas, 1987; Stevenson & Romney, 1984; Zimmerman & Allebrand, 1965) have confirmed that repeated academic failure of children with dyslexia leads to disturbances within self-esteem and emotional-motivational mechanisms. These children devalue not only their intellectual prowess, but also physical fitness, resistance to difficult situations, perseverance in their pursuit of goals (Kulas, 1987). They also have a tendency to manifest internal attribution when experiencing failures in tasks requiring reading and writing, and do not feel like the originators experiencing success (Butkowsky & Willows, 1980). They demonstrate learned helplessness more often (Humphrey & Mullins, 2002; Burden & Burdett, 2005), their sensitivity to criticism is higher (Stevenson & Romney, 1984), and they manifest a higher level of school-related anxiety (Alexander-Passe, 2008; Zimmerman & Allebrand, 1965).

Although there have been reports attesting to the impact of failures on the motivational processes in children with dyslexia (Kim & Lorschbach, 2005; Polychroni et al., 2006; Skaalvik, 2004), there is little research that shows how therapeutic aid may affect the development of children with dyslexia's motivation to learn. Therefore the purpose of this research is to determine how specialist treatment (its systematicity or lack thereof) influences academic motivation of children with dyslexia.

Methods

The study included 165 pupils in Grades 6–8 (primary and middle school children) with a diagnosed developmental dyslexia. The research was conducted in several stages. Altogether, it comprised more than 500 children who had come to psychological and pedagogical counseling centers and other diagnostic institutions due to experienced problems with reading and writing. The purpose of this phase of the study was to either confirm or exclude the existence of developmental dyslexia. Children diagnosed with dyslexia were qualified to participate

in the following stages of the study. We also verified their experience in the area of therapy. Our subjects (school children) were all Caucasians of Polish stock, mainly from urban background (i.e., towns or cities of more than 2,000 inhabitants).

They were divided into three equal groups ($n = 55$) with the same sex ratio (30 boys, 25 girls). Group 1 comprised children and adolescents with dyslexia who had attended specialist therapy for at least three years before the study commenced. Group 2 comprised participants with nonsystematic therapeutic experience. Qualified to this group were children who ceased to attend therapy in the period at least two years before the study. Moreover, their therapy was not conducted in a regular fashion, with at least one six-month break. Group 3 comprised children and adolescents who had never experienced any form of specialist therapeutic aid. The subjects in our study were recruited in primary and junior high schools so it is fair to say that all of our subjects were covered by the Polish general education curriculum.

To collect information concerning children's experience with therapy, or lack thereof, we used a psychological interview and questionnaires for the teacher and therapist prepared by E. Łodygowska.

Groups were compared in terms of demographic variables. Analyzed in the comparison was the intellectual level of the participants (measured by means of the Wechsler Intelligence Scale for Children–Revised [WISC-R]) as well as the specificity of their dyslexic disorders. Groups turned out to be homogeneous.

The “I and my school” questionnaire by E. Skrzypek-Siwińska was used in the full-scale research. This paper-and-pencil tool allows to determine a general level of a child's motivation to learn. The questionnaire is characterized by good reliability (the internal consistency coefficient Cronbach's alpha for the motivation to learn scale is 0.863) and satisfactory absolute stability (test–retest method: 0.75; Zwierzyńska & Matuszewski, 2002).

Theoretical foundations of the questionnaire—that learning is a process influenced by motivation to achieve success, or to avoid failure or threat—allowed to divide Motivation to learn scale into two subscales, defined as: academic approach motivation (SMD) and academic avoidance motivation (SMU). “Academic approach motivation” i.e., scholarly motivation stands for the motivation to study and learn, for the ability to undertake any action geared towards achieving set objectives in the paradigm of learning.

Such an approach was based on item analysis of the motivation to learn scale, and then confirmatory factor analysis. To estimate the relevance of the established model were used chi-square and Lind and Steiger's root mean square error of approximation fit index analyses. Confirmatory analysis showed that the two factors identified within the framework of the motivation to learn scale meet the conditions of the factor validity.

We posed two hypotheses:

Hypothesis 1: That children with dyslexia participating in the systematic therapy would show a higher level of academic approach motivation than would children with different therapeutic experience (nonsystematic therapy, or lack thereof).

Table 1. Descriptive statistics for the variables of academic approach motivation and academic avoidance motivation.

Group	<i>n</i>	SMD			SMU			
		<i>M</i>	<i>SD</i>	<i>SEM</i>	<i>M</i>	<i>SD</i>	<i>SEM</i>	
Group 1	Boys	30	16.00	4.526	0.826	12.50	5.244	0.957
	Girls	25	16.44	5.417	1.083	11.08	5.958	1.192
	Total	55	16.20	4.908	0.662	11.85	5.572	0.751
Group 2	Boys	30	11.43	5.969	1.090	14.73	5.988	1.093
	Girls	25	15.20	5.583	1.117	13.00	6.252	1.250
	Total	55	13.15	6.047	0.815	13.95	6.114	0.824
Group 3	Boys	30	11.63	5.586	1.020	16.17	6.587	1.203
	Girls	25	16.08	4.396	0.879	12.92	6.013	1.203
	Total	55	13.65	5.505	0.743	14.69	6.483	0.874

Note. SMD = academic approach motivation; SMU = academic avoidance motivation.

Hypothesis 2: That children with dyslexia with different therapeutic experiences would differ in the level of academic avoidance motivation.

Statistical verification of the hypotheses was carried out by means of a two-factor analysis of variance (ANOVA), planned comparisons (Helmert contrasts), post hoc tests, and Tukey's HSD. The project was implemented in the northwest part of Poland.

Results

Table 1 presents descriptive statistics of individual variables, taking into account the division into groups on the basis of the criterion of therapeutic experience and sex.

A two-factor 3 (Type of therapeutic experience) \times 2 (Sex) ANOVA in the model, where the dependent variable is SMD showed a statistically significant main effect of impact of therapeutic experience and impact of sex on the level of approach motivation (see Table 2). No statistically significant interaction effect was found for both these factors, which means that they operate independently.

Quite small, though statistically significant main effect of impact of therapeutic experience indicates that the compared groups differ in the level of academic approach motivation.

Due to the directional nature of the hypotheses, in the further proceedings were used planned comparisons—Helmert contrasts, enabling to compare the mean of each of the groups

(except for the last one) with the mean of all the successive groups. The obtained results showed that the group with systematic therapeutic experience is characterized by significantly higher levels of approach motivation than children from the other groups ($p = .003$), whereas there were no statistically significant differences ($p = .595$) regarding approach motivation between the children with nonsystematic therapeutic experience and children without therapy.

Girls are characterized by a higher level of academic approach motivation and such tendency occurs regardless of their therapeutic experience (see Figure 1).

The analysis helped confirm Hypothesis 1, that children with dyslexia participating in systematic therapy would be characterized by a higher level of academic approach motivation than would children with different therapeutic experience.

In order to verify Hypothesis 2 we used a two-factor ANOVA in the 3×2 model (Type of therapeutic experience \times Gender); the results are presented in Table 3.

The analysis showed a small but statistically significant main effect for both factors. Still, as in the case of approach motivation, there was no statistically significant interaction effect of both these factors on avoidance motivation.

Post-hoc tests using Tukey's HSD method applied to obtain more precise information have shown that children without therapeutic experience show a higher level of avoidance motivation than children with regular therapeutic experiences ($p = .038$) and a similar level of motivation to children with non-systematic therapeutic experiences ($p = .793$). The group with nonsystematic therapeutic experience, having achieved a medium result, does not differ substantially from the other two groups.

Boys—not taking into account their therapeutic experience—show significantly higher levels of avoidance motivation than girls.

Therefore, there are grounds for a partial confirmation of the Hypothesis 2, assuming that children with dyslexia with different therapeutic experiences would differ in the level of academic avoidance motivation: A significant difference relates to children with systematic therapeutic experience and children without therapy—the former of these groups is characterized by a significantly lower level of avoidance motivation (see Figure 2).

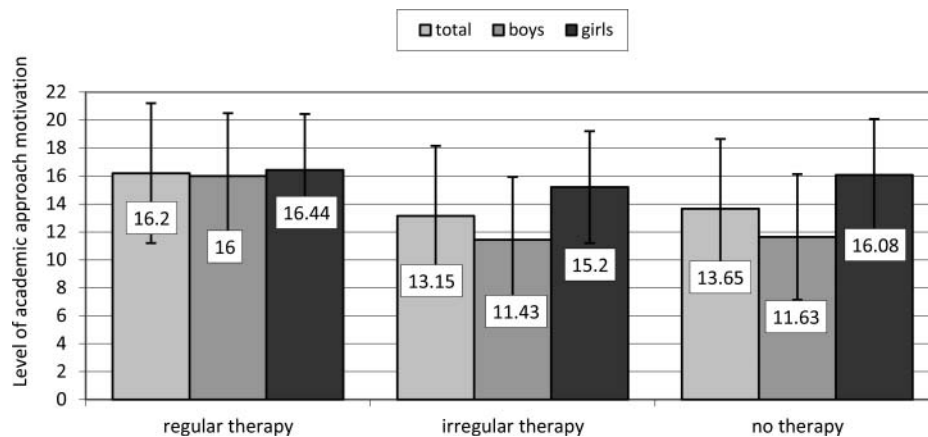


Figure 1. Level of academic approach motivation in compared groups of boys and girls.

Table 2. Summary of the ANOVA for the estimation of the impact of therapeutic experience and gender on the level of academic approach motivation.

	Approach motivation			
	<i>F</i>	<i>df</i>	<i>p</i>	η^2
Type of therapeutic experience	4.649*	2, 159	.011	.055
Sex	12.166**	1, 159	.001	.071
Type of therapeutic experience \times Sex	2.241	2, 159	.110	.027

* $p < .05$; ** $p < .01$.

Discussion

The study has demonstrated that motivation at school, exercised by children with dyslexia, is largely related to the type of their therapeutic experience.

In this research we analyzed the impact of therapeutic aid on children with dyslexia. This means structured pedagogical therapy, carried out according to the principles of general didactics, methodology of teaching, special education–orthodidactics, and revalidation. Pedagogical therapy differs from psychotherapy, its main goal being improvement of impaired functions and development of learning abilities. To not disrupt the homogeneity of the group, the results presented in this report do not include the examination of children subjected only to pure psychotherapy focused purely on their emotional sphere. Therefore, the terms used in this paper such as *systematic therapy* or *nonsystematic therapeutic experience* relate to various forms of pedagogical therapeutic aid.

In Poland there is no consistent therapeutic aid system for children with dyslexia. Most primary and secondary schools hold regular therapeutic classes for students with a diagnosed developmental dyslexia; this applies in particular to urban areas. Some diagnostic facilities also provide therapeutic assistance to students with dyslexia. It should be noted, however, that in Poland the use of this type of aid is not compulsory in its nature, so there is a large group of children who do not participate in any activities aimed at improving an impaired function.

A systematic therapeutic aid leads to a lower level of school-related anxiety in children with dyslexia (Łodygowska & Czepita, 2012), as well as contributes to the increase in their sense of efficacy (Łodygowska, 2011) and their own agency (Smith, 1989). A systematically implemented form of therapeutic aid makes children “embrace” the problem of dyslexia—they learn positive strategies for coping with difficulties, they gain corrective experience. As a consequence, they begin to perceive school situations as less threatening and stressful. Not

experiencing a sense of threat and positively assessing their own efficacy—they do not have reasons to avoid a particular type of tasks associated with their functioning at school (Polychroni et al., 2006; Pajares & Valiante, 1997). They may therefore show greater activity in the actions oriented to solve the problem, and—due to years of receiving specialized treatment—they can use more effective strategies for coping with situations that require reading and writing. As a result, they manifest a higher level of approach motivation, and at the same time they are forced to resort to using avoidance motivation far less frequently.

Surprising is the fact that the group of children with dyslexia and adolescents with nonsystematic therapeutic experience reveal a similarly low level of approach motivation to children who have never been subject to any form of professional help. This means that any ad hoc, sporadic, nonsystematic therapeutic actions are not sufficient to create children’s beliefs about their self-efficacy, develop their perseverance (Łodygowska, 2011) and help them build stable enough strategies to deal with problems in school so that they can turn to patterns of behavior aimed at problem-solving. At the same time, it is worth noting that this group obtain medium results as regards their level of avoidance motivation, not differentiating it from the groups of children with and without therapy, which could mean that systematic therapeutic experience, if only due to its characteristics, shapes a certain form of passivity in children with dyslexia (Łodygowska, 2011), not contributing to strengthening avoidant behaviors, but not reinforcing activity or performance orientation either.

Children with dyslexia deprived of any therapeutic aid, on the other hand, are characterized by a significantly higher level of avoidance motivation than children experiencing systematic treatment. This imbalance can be justified by a completely different nature of their experience. Children, in the course of therapy, develop not only their skills to cope with difficulties in reading and writing, but are convinced that the problem of dyslexia is not a fatalistic category, completely independent of them. In contrast, children who are not offered any form of aid are sent a message that the problem of difficulties in reading and writing is incurable (as there is nothing that can be done about it), it is beyond their control and influence. The consequence of this may be perception of school situations related to reading and writing on the one hand as nasty and disheartening, and on the other—impossible to modify. Therefore these children resign from implementing measures that are beyond their control, while at the same time acting in accordance with the socio-cognitive approach—they aim to avoid aversive stimuli that may bring about negative consequences. As a result, they can manifest avoidant behaviors, diminish the meaning of school-related situations (demonstrating little commitment and avoiding involvement) and seek compensation in other spheres of life. The study also revealed differences between the sexes in terms of approach and avoidance motivation, independent of the children’s therapeutic experience. This is a question which undoubtedly requires more extensive research, with the recognition of aspects such as the social context of expectations concerning gender roles. The limitations of our study may be due to the fact that our subjects

Table 3. Summary of the ANOVA for the estimation of the impact of therapeutic experience and gender on the level of academic avoidance motivation.

	Avoidance motivation			
	<i>F</i>	<i>df</i>	<i>p</i>	η^2
Type of therapeutic experience	3.103*	2, 159	.048	.038
Sex	5.145*	1, 159	.025	.031
Type of therapeutic experience \times Sex	0.360	2, 159	.699	.005

* $p < .05$.

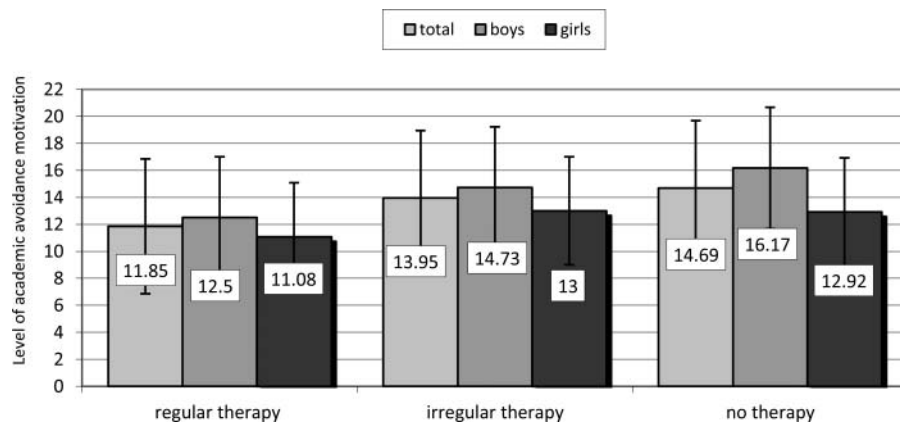


Figure 2. Level of avoidance motivation in compared groups of boys and girls.

were healthy children, attending a general access school. The study did not examine children with additional illnesses (e.g., mental disorders or physical disability) who might be covered by other methods of teaching, such as individual (one on one) or home instruction.

It is essential that while providing children with dyslexia with the necessary support and therapeutic intervention, long-term regular and constant assistance should also be available to them.

As our findings show, it is only through appropriately organized help that tangible results can be achieved. Therefore, it is important that any efforts undertaken by teachers and therapists to help children with dyslexia should not be limited to incidental support only. Contrary to this, these efforts should be systemic and long-term. Thus, school children can be helped not only to improve their reading and writing skills but also to sustain a certain level of motivation to overcome problems they might be facing.

Conclusions

Specialist therapy positively affects motivational mechanisms in children with dyslexia, provided that it takes the form of systematic, long-term, consistently carried out actions. Unsystematic therapeutic experience, or lack of any support for a dyslexic child destabilizes his or her motivational processes, leading to a reduction in their academic approach motivation and encouraging—in the case of children without therapy—avoidance motivation.

It is worth noting that the activity associated with school is extremely important in the life of a child and adolescent. Successes and failures in this area shape children's self-esteem, which may be affected by the right kind of motivational tendencies. So it is important for the help offered to children with dyslexia to be so organized that its effects be not only to improve reading and writing skills, but also to encourage constructive motivational mechanisms.

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