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Reading self-concept, trait emotional intelligence and anxiety of primary school children with dyslexia

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Introduction: The association between the cognitive and the affective domain in reading is well documented in research, especially when difficulties are manifested. The aim of this study was (a) to investigate levels of reading self-concept, trait emotional intelligence, and anxiety of students with dyslexia and compare them to students with no previous assessment and (b) explore the hypothesis that reading self-concept and trait emotional intelligence are negative predictors of state and trait anxiety taking into account students' individual characteristics such as gender, school year, and school performance.

Methods: A total of 794, fifth- and sixth-grade Greek primary school children aged 10 to 12 years old participated in the study. Of them, 50 children had a statement of dyslexia. The State and Trait Anxiety Inventory for Children, the Reading Self-Concept Scale, and the Trait Emotional Intelligence Questionnaire—Short Form were administered to the participants.

Results: The results showed that children with dyslexia were more vulnerable in terms of their perceptions of reading self-concept and emotional intelligence as compared to typical peers. Moreover, students' characteristics, i.e., grades in math and language and dyslexia, had a direct positive path to trait emotional intelligence and reading self-concept while trait emotional intelligence and reading self-concept predicted negative anxiety.

Discussion: The implications of the results in terms of the possible protective role of reading self-concept and emotional intelligence on anxiety for children with dyslexia are discussed, and suggestions for future research are presented.

KEYWORDS

dyslexia, reading self-concept, trait emotional intelligence, anxiety, primary school children

1 Introduction

Coping with the academic challenges can be particularly demanding, and literacy difficulties have been associated with mental health, behavioral, and social difficulties such as depression (Sideridis, 2007; Polychroni et al., 2013), low self-esteem (Novita, 2016), loneliness (Heiman and Olenik-Shemesh, 2020), helplessness (Núñez et al., 2005), and stress and anxiety (Bryan et al., 2004; Elksnin and Elksnin, 2004). Among other studies, two large-scale longitudinal studies confirmed the hypothesis that difficulties with reading are more likely to lead to mental health difficulties and not vice versa (Jordan and Dyer, 2017; McArthur et al., 2021). Being unable to perform at required or desired levels of reading can lead to severe anxiety reactions and negative affect that may precipitate depression in later years. However, negative mental health trajectories are not always the case as according to the risk and resilience model, factors such as self-efficacy, self-regulation, and internal locus of control can buffer adversities and serve as protective factors in the lives of adults. In this introduction, we will briefly review academic and specifically reading self-esteem, trait emotional intelligence, and state and trait anxiety in the lives of children with dyslexia.

Substantial evidence suggests that children with dyslexia usually report negative academic self-concepts (McArthur et al., 2021) while the same is not supported for general self-concept. According to the multidimensional hierarchical model of self-concept, domain-specific aspects of self-esteem are affected by dyslexia implying that children adopt negative self-referential styles when they struggle with reading. In an earlier comprehensive literature review, Zeleke (2004) concluded that children with dyslexia report deficits in academic self-concepts compared to their typically achieving peers. Similarly, Polychroni et al. (2006) showed that among a sample of Greek primary school children, the dyslexic group consistently perceived their academic skills more negatively than their non-dyslexic peers. Such findings have significant implications, as achievement-related self-systems, including academic self-concept, are linked to academic performance. As with anxiety, the relationship may be bidirectional. If we adhere to the skill development model, academic self-concept is formed as a result of early achievement experiences while the self-enhancement model implies that academic achievement is caused primarily by one's self-concept. Guay et al. (2003) argued that a more realistic compromise between these two models is the *reciprocal effects model* asserting that there is a bidirectional interaction between academic self-concept and achievement. Along the same lines, children with dyslexia scored lower on measures of self-esteem for reading ability than their typically achieving peers (Polychroni et al., 2006; Boyes et al., 2019). The type of school that students attend may account for the variance in the findings for self-esteem. On the one hand, while it is suggested that inclusive settings are expected to protect students' with dyslexia self-image their academic self-esteem may be negative because of comparisons between them and their higher achieving peers (Jones and Heskin, 2010). On the other hand, children who attend specialist schools for dyslexia are less likely to report low academic self-esteem, suggesting that special schools can make a positive contribution to the self-concept (Humphrey and Mullins, 2004). As far as gender differences in reading self-concept are concerned, girls are more likely to have positive reading perceptions (e.g., McArthur et al., 2021). Although gender perceptions about reading favor girls, there is evidence that gender

differences regarding reading self-concept may be attributed to teachers' stereotypical beliefs (Retelsdorf et al., 2015).

Emotional intelligence (EI) is conceptualized as the intelligence involved in an individual's problem-solving and social relationships. Emotionally intelligent individuals can effectively manage change by realistically and flexibly coping with the immediate situation, solving problems, and making decisions and are more likely to recognize and regulate their own and other people's emotions, an attribute that is generally related to wellbeing. Petrides and Furnham (2001) distinguished between trait EI and ability EI, based on the choice of measure (self-report vs. maximum performance). In this line of study, ability EI concerns emotion-related cognitive abilities, while trait EI (TEI) is the trait of emotional self-efficacy. In childhood and adolescence, high TEI levels are positively related to adaptive behaviors such as socioemotional competence and resilience (Petrides et al., 2018) and negatively related to maladaptive behaviors such as bullying and psychopathological symptoms (Frederickson et al., 2012).

A few studies carried out with young children with dyslexia measuring a number of dimensions of emotional intelligence indicated lower scores as compared to students without dyslexia (Brooks et al., 2015; Mammarella et al., 2016). Nevertheless, children's emotional and interpersonal abilities can compensate for weaknesses and can be considered as coping resources or protective factors for difficulties in learning. Despite the positive link between TEI and academic achievement for dyslexic students, the outcomes are still lower than the ones for non-dyslexic students (Zysberg and Kasler, 2017). One possible explanation for this could be the fact that dyslexic students' perceptions of their socioemotional dispositions and skills are more negative compared to those of non-dyslexic students (Mavrouli and Sánchez-Ruiz, 2011) and this is also confirmed in studies with young adults (Zysberg and Kasler, 2017).

As far as anxiety is concerned among school-age children, it can interfere with academic functioning among other important life aspects. Spielberger (1989) distinguished between state anxiety, a transitory emotional reaction, and trait anxiety, a relatively stable individual characteristic. Trait anxiety is defined as a person's tendency to interpret situations as threatening. As a result a person with high trait anxiety usually reacts more intensely compared to others with low trait anxiety (Psychountaki et al., 2003). Previous empirical studies and meta-analyses suggest that, overall, children with dyslexia report higher anxiety levels than their non-dyslexic peers (Nelson and Harwood, 2011; Mammarella et al., 2016; Livingston et al., 2018).

The sources of anxiety and its association with dyslexia remain an issue of debate. A bidirectional relationship may exist in that certain types of anxiety predict lower reading ability (primary disorder model). A growing number of studies have shown an interference in the concentration, memory functioning, and/or information processing of children with high anxiety levels, potentially contributing to literacy difficulties and, consequently, decreasing academic performance (Bryan et al., 2004; Ramirez et al., 2018). Similarly, Nachshon and Horowitz-Kraus (2019) showed that dyslexic students with emotional difficulties (e.g., anxiety, peer rejection, depression, and low self-esteem) scored lower in reading. This type of anxiety is more associated with a cognitive load rather than are physiologically based (Livingston et al., 2018).

According to the secondary reaction model, students may start presenting anxious symptoms as a response to constant failures and negative experiences at school. Supporting this model,

previous studies have found that students identified as poor readers scored significantly higher on a scale assessing trait anxiety in comparison with typical readers (Arnold et al., 2005) and were more likely to be diagnosed with an anxiety disorder (Carroll et al., 2005). More recently, in the first systematic review and meta-analysis exploring the associations between poor reading and internalizing problems, Francis et al. (2019) showed that poor readers are at greater risk for anxiety than typical readers. Finally, other studies examined the bidirectional association between anxiety and dyslexia showing that students who experience difficulties with literacy are likely to experience increased anxiety, which, in turn, could lead to ongoing literacy difficulties (Ramirez et al., 2018). Such an approach suggests that a common biological mechanism explains the comorbidity between dyslexia and anxiety.

Inconsistent results have been reported in the empirical literature, regarding gender differences in anxiety levels (or lack thereof) associated with dyslexia. Nelson and Harwood (2011) found no differences between boys and girls with dyslexia in anxiety symptoms. However, in a sample of children with reading disorders, Willcutt and Pennington (2000) documented significant gender differences, with girls admitting to more internalizing problems compared to boys. These findings are consistent with studies focusing on typically developing participants, with girls reporting increased anxiety symptoms as compared to boys (Roza et al., 2003). Further research is necessary to clarify the associations between anxiety, dyslexia, and relevant patterns of gender differences.

Although there is evidence confirming the association between anxiety and dyslexia (Mammarella et al., 2016; Francis et al., 2019; Hossain et al., 2021), reading self-concept and dyslexia (Chapman et al., 2000; Ramirez et al., 2018), and less so for TEI and dyslexia (Zysberg and Kasler, 2017), little is known of the interrelationships between all the above variables in primary school students with dyslexia, especially for state and trait anxiety. For the latter variables, the authors were not able to identify studies, including these variables, i.e., state and trait anxiety in students with dyslexia. Students with high levels of trait anxiety may manifest anxiety disorders (Knowles and Olatunji, 2020), and students with high state anxiety are more prone to feelings of anxiety in academic situations such as examinations with a direct impact on academic performance (Fishstrom et al., 2022). There is evidence from higher education students that TEI mediates the relationship between trait anxiety and self-concept (Guil et al., 2019), acting as a protective factor. Students who trust in their competencies and can control their emotional states report lower trait anxiety levels. In a more recent study, Italian students with high TEI levels were less likely to experience school anxiety and more likely to exhibit resilience, which, in turn, reduced school burnout risk (Fiorilli et al., 2020).

The main aim of the present study was to investigate the levels of reading self-concept, TEI, and anxiety of students with dyslexia and compare them to students with no previous assessment. We hypothesized that children with dyslexia will report lower levels of reading self-concept and lower levels of TEI as compared to children without dyslexia. Moreover, we expected higher scores in state anxiety for children with dyslexia, although we did not use a domain-specific tool of anxiety and we stated a research question for trait anxiety, i.e., do children with dyslexia differ from their typical

peers in terms of trait anxiety? Finally, we tested the hypothesis that reading self-concept and trait emotional intelligence are negative predictors of state and trait anxiety, taking into account students' individual characteristics such as gender, school year, and school performance. If this relationship exists, it may imply that these two affective variables can act as protective factors for anxiety.

2 Materials and methods

2.1 Participants

The sample consisted of 794 fifth- ($N=415$, 52.4%) and 6th- ($N=377$, 47.6%) grade primary school children, 407 girls (51.3%) and 387 (48.7%) boys, aged 10 ($N=157$), 11 ($N=316$), and 12 years ($N=321$) attending schools in the greater area of Athens, Greece. The study employed a convenience sampling method. Of the sample, 50 students (6.3%) had a formal statement of dyslexia by a state assessment center (e.g., Centres of Differentiated Diagnosis and Counselling Support, KE.DA.S.Y) and formed the dyslexia group (D) and 744 (93.7%) had no formal assessment nor were in the process of assessment or referral according to their teachers and formed the non-dyslexia group (ND). The children were selected based on information from the teachers and the school records. In the Greek education system, a dyslexia statement is provided for reading and spelling difficulties, following a detailed assessment by the State Assessment Centers. This excludes mathematics and writing production difficulties. The assessment and statement usually occur at the age of 9 or 10 years, and children participate in pull-out intervention programs at school.

Almost all dyslexic children received extra help, 26 attended pull-out programs at school ($N=15$ for 1 year, $N=4$, for 2 years, $N=3$ for 3 years, and $N=7$ for more than 4 years) and 22 participated in after-school intervention programs. Children with coexisting developmental disabilities (e.g., ADHD; developmental language disorder) were excluded from the study. From the sample with no difficulties, children who were in the process of assessment or encountered difficulties with reading according to the teachers' perceptions were excluded from the study.

In terms of school performance, classroom teachers were asked to rate individual performance in language and math using a 4-point Likert scale from low to excellent. Grade in language was rated low for 28 students (3.6%), average for 126 students (16.0%), high for 254 students (32.2%), and excellent for 380 students (48.2%). Similarly, grade in math was rated low for 46 students (5.8%), average for 106 students (13.5%), high for 203 students (25.8%), and excellent for 433 students (54.9%).

2.2 Instruments

2.2.1 Reading self-concept

The Reading Self-Concept Scale (RSCS; Chapman and Tunmer, 1995 adapted in Greek by the first author) was administered to measure students' opinions concerning their reading abilities. It consists of three subscales in a 5-point Likert scale ranging from 1 (*No: Never*) to 5 (*Yes: Always*), i.e., perceptions of competence ("Can you work out what a story means?") ($\alpha=0.76$), perceptions of difficulty ("Is reading to the class hard for you?") ($\alpha=0.87$), attitudes toward

reading (“Do you feel good when you do reading work?”) ($\alpha=0.84$), and a total scale ($\alpha=0.79$).

2.2.2 Trait emotional intelligence

The 30-item Trait Emotional Intelligence Questionnaire—Short Form (TEIQue-SF, [Petrides and Furnham, 2006](#)) was adapted to Greek by [Petrides et al. \(2016\)](#) and measured students’ global trait emotional intelligence (TEI). Based on the long form, the short form was developed taking two items from each of the original 15 subscales including adaptability (e.g., “I find it hard to get used to a new school year”), affective disposition (e.g., “I’m a very happy kid”), emotion expression (e.g., “I always find the words to show how I feel”), emotion perception (e.g., “It’s easy for me to understand how I feel”), emotion regulation (e.g., “I can control my anger”), impulse control (e.g., “I do not like waiting to get what I want”), peer relations (e.g., “I listen to other children’s problems”), self-esteem (e.g., “I feel great about myself”), and self-motivation (e.g., “I always try to become better at school”). It is measured using a 7-point Likert scale ranging from 1 “Completely Disagree” to 7 “Completely Agree”. According to the authors, the scale in early childhood has a unidimensional factor structure (Cronbach’s $\alpha=0.81$).

2.2.3 Anxiety

Anxiety was measured with the Greek version of the State and Trait Anxiety Inventory for Children (STAIC; [Psychountaki et al., 2003](#)). The STAIC is a self-rated questionnaire designed to measure self-reported anxiety in children 9–12 years old and has been used extensively in research ([Spielberger, 1989](#)). The version used in the present study is adapted in Greek ([Psychountaki et al., 2003](#)). The STAIC consists of two 2-item scales: state anxiety (A-State) and trait anxiety (A-Trait). The A-State scale focuses on a particular moment in time and assesses temporary feelings of uneasiness, tension, and worry. The A-State items are scored on a 3-point rating scale. The items are valued 3, 2, or 1 for each of the three alternative choices in which the key term indicates the presence of anxiety (e.g., upset, nervous, and worried) or 1, 2, and 3 for items in which the key term indicates the absence of anxiety (e.g., calm, pleasant, and relaxed) (Cronbach’s $\alpha=0.64$). For this construct, further CFA was implemented in order to assess construct validity. The A-Trait scale focuses on general feelings and assesses one’s overall inclination to experience anxiety. Sample items include, “I worry about making mistakes” and “I have trouble deciding what to do.” The A-Trait scaling ranges from 1 (hardly ever) to 3 (very often) for all items

($\alpha=0.86$). The scores for each scale range from 20 (minimum) to 60 (maximum), with higher scores indicating higher levels of anxiety.

Moreover, teacher ratings of children’s school grades in language and mathematics and mean grades in the past semester were collected, ranging from 8 to 10 (excellent). Teacher ratings were preferred as it was considered that young children’s self-reports on grades would be less reliable.

2.3 Procedure and ethics

The data were collected in the spring semester of the academic year 2017–18. Parental consent was granted beforehand. Permission for admission to schools was obtained by the school head teachers. For the data collection in schools, approval by the Departmental Research Ethics Committee was granted (Department of Philosophy, Pedagogy, and Psychology, which was the first author’s former affiliation).

3 Results

Means, standard deviations, minimum, maximum, skewness, and kurtosis for all participants were estimated and are presented in [Table 1](#).

Comparisons of the means of the study variables in terms of the group (dyslexia/non-dyslexia) indicated statistically significant results for mean school grade and math grades, which were significantly lower for dyslexic students, but not for language. Dyslexic students reported significantly lower RSC—Competence [$t(766)=-3.414, p=0.001$], higher RSC—Difficulty [$t(64.77)=2.762, p=0.007$], more negative RSC—Attitudes [$t(774)=-2.072, p=0.039$], and lower TEI [$t(756)=-4.729, p<0.001$] ([Table 2](#)). Hedges’ g index used for effect size due to the difference in the sample sizes between the two groups showed large effect sizes for grades (>0.80), moderate effect sizes for reading competence and TEI (>0.50), and small to moderate effect sizes for reading attitudes (>0.20).

Comparisons of the means of the study variables in terms of the school year (Year 5/Year 6) indicated statistically significant results for STAIC—State [$t(760)=-2.784, p=0.006$], higher for older children. Comparisons of the means in terms of gender indicated statistically significant results for RSC—Total [$t(739)=-3.392, p=0.001$], RSC—Attitude [$t(769)=-5.893, p<0.001$] more positive for girls, and STAIC—Trait [$t(765)=2.442, p=0.015$] higher for boys.

TABLE 1 Descriptive statistics of reading self-concept, state and trait anxiety, and trait emotional intelligence (N = 794).

Scales and subscales	M	SD	Min/Max	Skewness	Kurtosis
Mean school grade	9.27	0.83	6–10	–1.12	1.16
RSC—total	108.60	15.74	54–150	0.04	0.12
RSC—competence	41.38 [38.32]	6.38	17–50	–0.90	0.61
RSC—difficulty	27.67 [30.60]	10.89	10–50	0.29	–1.14
RSC—attitude	39.42 [36.94]	8.75	10–50	–0.99	0.33
STAIC—state	45.09 [44.72]	3.53	31–56	–0.05	0.12
STAIC—trait	46.90 [45.12]	7.34	24–60	–0.45	–0.14
TEI	147.48 [132.68]	23.45	78–210	1.45	0.69

RSC, reading self-concept; STAIC, state and trait anxiety inventory for children; TEI, trait emotional intelligence.

TABLE 2 Mean comparisons of reading self-concept, state and trait anxiety, and trait emotional intelligence in terms of group.

Mean comparisons							
Scales and subscales	Group	Mean	SD	df	t	p-value	Effect size Hedges g
Mean school grade	D	8.53	0.97	786	-6.755	<0.001	0.987
	ND	9.32	0.79				
Greek language grade	D	8.54	0.97	786	-6.186	0.067	0.906
	ND	9.30	0.82				
Mathematics grade	D	8.52	1.05	786	-6.104	0.024	0.889
	ND	9.34	0.91				
RSC—competence	D	38.32	7.53	766	-3.414	0.001	0.514
	ND	41.58	6.25				
RSC—difficulty	D	30.60	7.49	762	2.762	0.007	0.289
	ND	27.46	11.06				
RSC—attitude	D	36.94	8.67	774	-2.072	0.039	0.303
	ND	39.59	8.74				
RSC—total	D	106.26	14.91	739	-1.055	0.292	0.159
	ND	108.76	15.79				
STAIC—state	D	44.72	3.96	762	-0.762	-0.393	0.110
	ND	45.11	3.50				
STAIC—trait	D	45.12	7.36	765	-1.778	0.076	0.260
	ND	47.03	7.33				
TEI	D	132.68	20.25	756	-4.729	<0.001	0.692
	ND	148.62	23.21				

RSC, reading self-concept; STAIC, state and trait anxiety inventory for children; TEI, trait emotional intelligence; D, dyslexia group; ND, non-dyslexia group.

TABLE 3 Pearson’s r correlations between reading self-concept, state and trait anxiety, and trait emotional intelligence for the dyslexia group.

Pearson’s r correlations								
	Mean school grade	RSC—total	RSC—competence	RSC—difficulty	RSC—attitude	STAIC—state	STAIC—trait	TEI
Mean school grade	1	0.19**	0.19**	0.18**	0.03	0.16**	0.02	0.14*
RSC—total		1	0.79**	0.41**	0.65**	0.06	0.17**	0.14*
RSC—competence			1	0.10*	0.41**	0.07	0.42**	0.21**
RSC—difficulty				1	-0.27**	-0.10*	-0.08*	0.23**
RSC—attitude					1	0.18**	-0.01	-0.13*
STAIC—state						1	0.15**	0.19**
STAIC—trait							1	0.51**
TEI								1
Grade language		0.16**	0.16**	0.08*	0.09*	0.10*	-0.02	0.13*
Grade mathematics		0.22**	0.21**	0.26**	-0.02	0.20**	0.06	0.15**

* = $p < 0.05$. ** = $p < 0.01$. RSC, reading self-concept; STAI, state and trait anxiety inventory; TEI, trait emotional intelligence.

Correlations were estimated for the D and ND separately. Correlations for the LD participants between the scales and the subscales of the study variables demonstrated variability ranging from 0.02 to 0.79 (Table 3). All reading self-concept subscales except perceptions of reading self-concept attitude were positively correlated with TEI. Grades (mean school grade, grades in math, and language) were significantly positively correlated with perceived reading

competence and TEI. Grades showed positive correlations with STAIC—State only.

Correlations for the ND participants between the scales and the subscales of the study variables ranged from 0.01 to 0.66 (Table 4). All reading self-concept subscales except perceptions of reading self-concept difficulty (non-significantly correlated) and STAIC—State were positively correlated with TEI. Grades (mean school grade,

TABLE 4 Pearson's *r* correlations between reading self-concept, state and trait anxiety, and trait emotional intelligence for the non-dyslexia group.

Pearson's <i>r</i> correlations								
	Mean school grade	RSC—total	RSC—competence	RSC—difficulty	RSC—attitude	STAIC—state	STAIC—trait	TEI
Mean school grade	1	0.17**	0.36**	−0.02	0.08*	−0.01	0.19**	0.22**
RSC—total		1	0.52**	0.61**	0.66**	−0.15**	0.17**	0.37**
RSC—competence			1	−0.13**	0.39**	−0.08*	0.42**	0.47**
RSC—difficulty				1	−0.08*	−0.06	−0.11**	−0.05
RSC—attitude					1	−0.14**	0.15**	0.38**
STAIC—state						1	−0.02	−0.16**
STAIC—trait							1	0.59**
TEI								1
Grade language		0.17**	0.31**	−0.02	0.09*	−0.00	0.16**	0.17**
Grade mathematics		0.15**	0.35**	−0.02	0.05	−0.02	0.20**	0.22**

* = $p < 0.05$. ** = $p < 0.01$. RSC, reading self-concept; STAIC, state and trait anxiety inventory; TEI, trait emotional intelligence.

grades in math and language) were significantly positively correlated with perceived reading competence and TEI. Grades showed positive correlations with STAIC—Trait only.

3.1 Structural equation modeling

3.1.1 Assessment of structural relationships

In this section, we will present our effort to map a potential structural model for the associations among students' individual characteristics (gender, school year, dyslexic group, and grades in math and language), reading self-concept (perceived competence, perceived difficulty, and positive attitudes), trait emotional intelligence, and state and trait anxiety (Figure 1). Analysis of moments structures using AMOS revealed that there is a good fit of the suggested structural model (TLI = 0.982 > 0.95, RMSEA = 0.076 < 0.080, CFI = 0.964 ≥ 0.900, and SRMR = 0.037 < 0.080).

The results of direct paths indicated that grades in the language ($\beta = 0.84$, $p < 0.001$), math ($\beta = 0.85$, $p < 0.001$), and statement of dyslexia ($\beta = 0.26$, $p < 0.001$) constitute students' individual characteristics. Gender and school year were excluded from this variable due to negligible loadings. The results indicated that there is a direct positive path between students' individual characteristics TEI ($\beta = 0.92$, $p < 0.001$) and RSC ($\beta = 0.31$, $p < 0.001$) and a direct negative path between individual characteristics and anxiety ($\beta = 0.45$, $p < 0.001$) both state and trait. Moreover, TEI predicts directly and positively RSC ($\beta = 0.47$, $p < 0.001$), and by contrast, TEI ($\beta = -0.87$, $p < 0.001$) and RSC ($\beta = -0.43$, $p < 0.001$) predict directly and negatively anxiety (Figure 1). The direct path between students' individual characteristics (grades on language and math and dyslexia assessment) and TEI had the highest loading as compared to RSC. Finally, TEI as compared to RSC had the highest negative loading on anxiety.

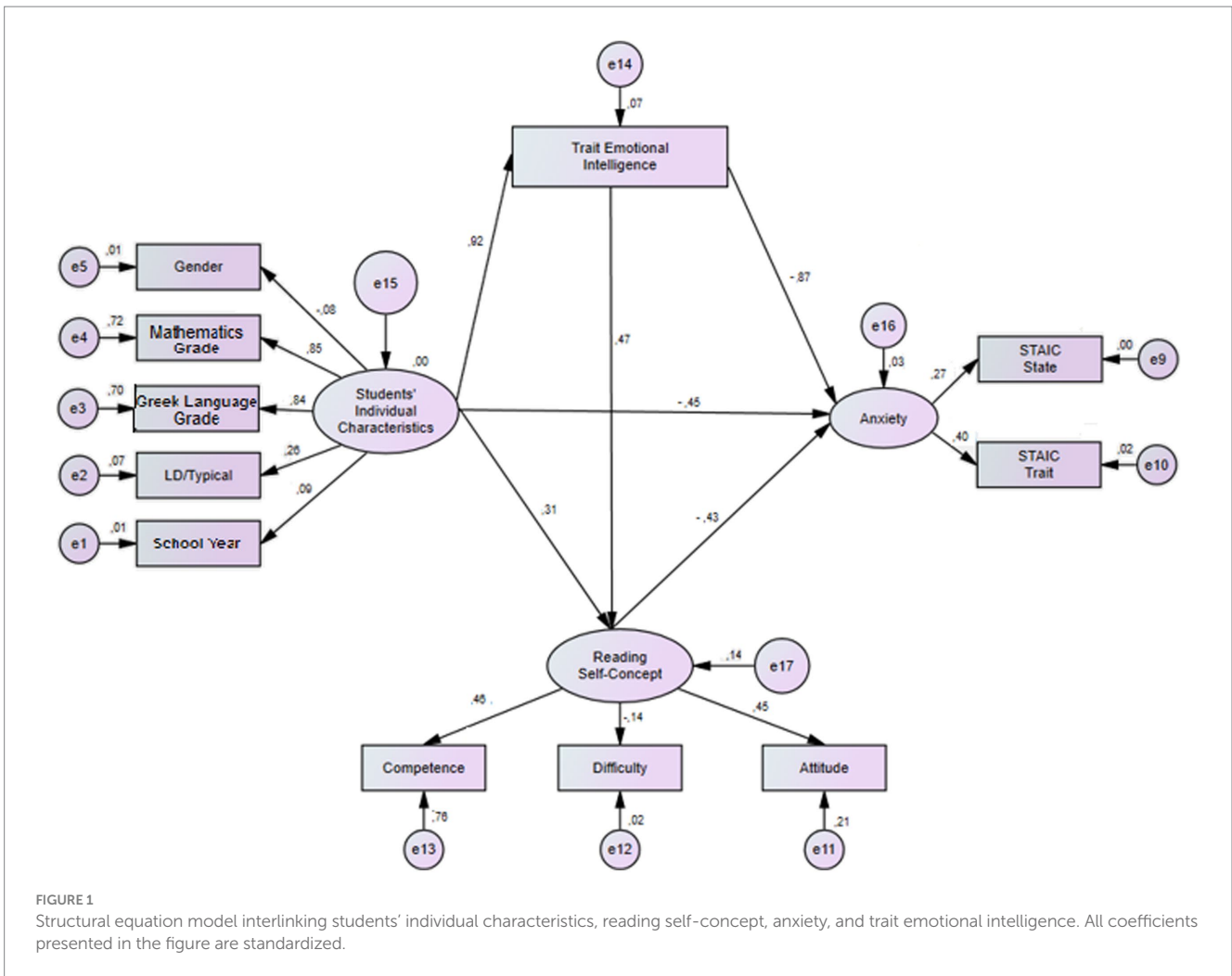
The evaluation of measurement invariance resulted in "a good fit" for the suggested model across participants (dyslexia and non-dyslexia). Both metric-to-configural model and scalar-to-metric model comparisons yielded Δ CFIs and Δ RMSEAs below the cutoffs of non-invariance. The comparison of the strict to scalar model was not supported by Δ CFI and Δ RMSEA cutoff.

4 Discussion

The aim of the present study was to investigate levels of reading self-concept, trait emotional intelligence, and anxiety in a sample of primary school students with dyslexia and compare them to students with no previous assessment. Moreover, we tested the hypothesis that reading self-concept and trait emotional intelligence are negative predictors of state and trait anxiety taking into account students' individual characteristics such as gender, school year, and school performance. If this relationship exists, it may imply that these two affective variables can act as protective factors for anxiety. The results of the present study confirmed our relevant research hypotheses supporting existing evidence that children with dyslexia are more vulnerable in terms of their self-perceptions of reading and trait emotional intelligence as compared to typical peers. By contrast, the study found no differences between the two groups with regard to children's self-reported anxiety, neither state nor trait.

The results of the present study indicated that students with dyslexia reported lower perceived competence in reading, and feelings of difficulty with reading while they held more negative attitudes to the reading process as compared to the typical sample. This finding confirmed our research hypothesis and is consistent with previous empirical studies and meta-analyses documenting the inextricable negative link between academic self-concept and dyslexia (Polychroni et al., 2013; Katzir et al., 2018; Boyes et al., 2019; McArthur et al., 2021). The domain-specific self-concept appears to be particularly affected in children with reading difficulties. This is noteworthy despite the fact that the majority of the children in the present study were participating in intervention programs so one would expect that, as a consequence, their self-perceptions of competence would have improved. Nevertheless, no data are available regarding earlier levels of children's self-perceptions, so this finding cannot easily be attributed to the interventions. Further research is warranted measuring variables such as classroom climate, teacher–student interactions as well as the content of psychoeducational intervention programs, and their role on the self-concept of students with educational needs.

In terms of individual characteristics, girls reported higher reading self-concept (Total) and more positive attitudes for reading, a



finding aligned with previous studies, especially for girls who are poor readers (Katzir et al., 2018; McArthur et al., 2021). The positive self-concept may be mediated by girls' higher academic performance and higher motivation, but again, these variables were not assessed in the present study beforehand. As expected and in agreement with extant literature, perceived competence in reading was positively associated with grades in language and mathematics. Wu et al. (2021) demonstrated the reciprocal relationship between academic achievement and self-concept. Notwithstanding the cross-sectional methodology, the findings supported the hypothesis confirmed in longitudinal studies that social and emotional difficulties are manifested after the beginning of school as a result of learning disabilities and low school performance in core subjects (Jordan and Dyer, 2017; McArthur et al., 2021).

As far as trait emotional intelligence is concerned, the present study showed that students with dyslexia reported lower levels of TEI as compared to their classmates who had no assessment. This confirmed our hypothesis and supported previous findings documenting that children with learning disabilities and dyslexia in particular, score lower than their typical peers on social adjustment (Polychroni et al., 2013; Heiman and Olenik-Shemesh, 2020), emotional regulation, motivation (Sideridis, 2009; Kampylafka et al., 2023), and trait emotional intelligence (Zysberg and Kasler, 2017). These variables permeate the lives of primary school children and are

very significant for their social and emotional adjustment, so it is of essence to implement effective intervention programs toward improving them (Fishstrom et al., 2022). The present study found no differences in emotional intelligence in terms of gender and school year, partly confirming previous literature (Guil et al., 2019). High, positive correlations between trait emotional intelligence, the positive dimensions of reading self-concept (that is except perceptions of difficulty), and school grades are an indication of the protective nature of emotional intelligence for all children, regardless of diagnosis. More discussion on these interrelationships follows next, based on the results of the structural equation model.

The present study found no significant differences in self-reported anxiety, both state and trait, between the two groups of students. As stated in the introduction, the findings for dyslexia and anxiety are inconsistent. There is evidence that, in general, poor readers are at a greater risk for anxiety than typical readers (Alesi et al., 2014; Mammarella et al., 2016; Livingston et al., 2018). However, this is more the case when academic anxiety (not only reading but also math anxiety) is measured. Other researchers found no differences in anxiety during reading between individuals with poor versus good reading ability (Meer et al., 2016). As stated before, the cross-sectional methodology and non-domain-specific anxiety questionnaire do not allow for clear implications of this finding. The support that children with dyslexia received may have played a role, although different types

of support were implemented (pull-out, programs after school, etc.) and no information about the content and the delivery of those programs was collected. Moreover, one cannot assume that children with difficulties are more anxious than others by default. Future studies including domain-specific measurements of anxiety and stress in academic situations could enable a clearer understanding of these findings. In terms of gender, boys reported higher levels of trait anxiety than girls, and this was the case for the whole sample. This is not aligned with evidence arguing that typical developing girls tend to manifest higher anxiety levels and more internalizing problems (Roza et al., 2003; Novita, 2016).

Another important finding of the present study was that students' characteristics, i.e., grades in math and language and assessment of dyslexia positively predicted trait emotional intelligence and reading self-concept. The direct path leading to trait emotional intelligence was stronger. In other words, children with no known learning disabilities and higher grades in reading and math were more likely to report higher trait emotional intelligence and more positive reading self-concept. This finding which is an addition to the rather limited research evidence linking reading difficulties with emotional intelligence (Brooks et al., 2015; Mammarella et al., 2016) supports the link between academic performance and students' trait of emotional intelligence (MacCann et al., 2020). It is noteworthy that direct paths of gender and school year were negligible. Petrides et al. (2016) have not found consistent results regarding the link between gender and TEI. In terms of the school year, a proxy for age, this finding may be likely the result of its limited range, i.e., the last 2 years of primary school, 10 to 12 years of age. Moreover, there was also a direct negative path from individual characteristics to anxiety, stronger for trait anxiety and weaker but significant for state anxiety confirming previous studies.

Furthermore, both affective variables, trait emotional intelligence, and reading self-concept predicted negative anxiety, while the association between the former and trait anxiety was stronger. As trait emotional intelligence includes emotion-related self-perceived abilities and dispositions (Petrides et al., 2018), these positive emotional perceptions and particular individual characteristics may act as a barrier to the experience of anxiety, especially trait anxiety. The link between trait anxiety and anxiety disorders is well documented (Knowles and Olatunji, 2020) while students with high state anxiety are more prone to feelings of anxiety in academic situations such as examinations with a direct impact on academic performance (Fishstrom et al., 2022). There is also evidence from young adults that emotional intelligence may play a protective role in the association between background variables and academic performance (Zysberg and Kasler, 2017; Guil et al., 2019). Students who capitalize on their competencies and can control their emotions report lower trait anxiety. Nevertheless, the present study did not assess domain-specific anxiety such as test anxiety or math anxiety but rather looked into state and trait anxiety as outcome variables.

The findings of the structural equation model indicated a direct negative path from reading self-concept to anxiety. Poor readers who experience repeated failure are at risk of forming negative self-perceptions, this may heighten their fear of criticism by others triggering anxiety and avoidance of reading behavior. The consequence is that they feel being left behind in their reading; thus, the maladaptive cycle is reinforced (Boyes et al., 2019; Francis et al., 2019). In general, social and emotional competence and a positive self-concept can help

children cope with adversities in the school context and beyond and foster children's resilience. Self-esteem is vital to psychosocial functioning and psychosocial health and reading self-esteem, assessed in the present study, is vital for primary school. Poor academic self-esteem can lead to decreased motivation and success and is associated with internalizing difficulties such as anxiety.

4.1 Limitations and suggestions for future research

The present study has several limitations that must be acknowledged, so hypothesis testing should be treated with caution. First, the self-report nature in the data collection may be subject to bias such as socially desirable responses. Taking into account that all participants attended mainstream classes, students' self-reports might be defined by social comparisons. Using information from other sources, i.e., teachers and parents would add to the validity of the research. That both outcomes and predictors were based on self-reports means that some of the strength of the relationships observed may be due to shared method variance. Second, being a cross-sectional and correlational study, the data of the present study do not allow for causal relationships. The structural equation model may use statistical conventions such as "direct paths," but future studies using a longitudinal design may determine direction. Third, students with no assessment were the vast majority of the sample, so any comparisons made regarding differences in the psychosocial variables between the groups should be treated with caution. There was an attempt to control for this limitation by including the dyslexia variable in the latent variable named individual characteristics in the structural equation model. Nevertheless, a larger sample size of dyslexia students would be preferable in future studies. Furthermore, full diagnostic information was not available for the sample with dyslexia although an effort was made to include those children only with a dyslexia diagnosis, i.e., difficulties in reading and spelling. Finally, academic performance was measured by teacher ratings of children's performance and not by actual achievement tests.

In conclusion, the findings of the present study highlight the importance of reading self-concept and trait emotional intelligence both for typical children and children with learning disabilities. Incorporating a focus on these skills in intervention programs at the primary and secondary prevention levels could increase their effectiveness in terms of coping with symptoms of anxiety. The role of the school is pivotal in this. Designing schools and classrooms that foster both academic and effective outcomes will help all students, regardless of assessment to cope with anxiety and stress caused by adversities in school and daily life. Future research efforts in the field of reading could further investigate reading self-concept, emotional intelligence, and anxiety as elements of intervention programs.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving humans were approved by Departmental Research Ethics Committee (Department of Philosophy, Pedagogy and Psychology, National and Kapodistrian University of Athens). The studies were conducted in accordance with the local legislation and institutional requirements. Written informed consent for participation in this study was provided by the participants' legal guardians/next of kin.

Author contributions

FP: Conceptualization, Formal analysis, Methodology, Project administration, Supervision, Writing – original draft, Writing – review & editing. A-SA: Conceptualization, Methodology, Supervision, Writing – review & editing. OK: Resources, Writing – review & editing, Project administration. GC: Formal analysis, Methodology, Writing – review & editing.

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References

- Alesi, M., Rappo, G., and Pepi, A. (2014). Depression, anxiety at school and self-esteem in children with learning disabilities. *J. Psychol. Abnorm. Child.* 3, 1–8. doi: 10.4172/2329-9525.1000125
- Arnold, E. M., Goldston, D. B., Walsh, A. K., Reboussin, B. A., Daniel, S. S., Hickman, E., et al. (2005). Severity of emotional and behavioral problems among poor and typical readers. *J. Abnorm. Child Psychol.* 33, 205–217. doi: 10.1007/s10802-005-1828-9
- Boyes, M. E., Leitão, S., Claessen, M., Badcock, N. A., and Nayton, M. (2019). Correlates of externalising and internalising problems in children with dyslexia: an analysis of data from clinical casefiles. *Aust. Psychol.* 55, 62–72. doi: 10.1111/ap.12409
- Brooks, B. A., Floyd, F., Robins, D. L., and Chan, W. Y. (2015). Extracurricular activities and the development of social skills in children with intellectual and specific learning disabilities. *J. Intellect. Disabil. Res.* 59, 678–687. doi: 10.1111/jir.12171
- Bryan, T., Burstein, K., and Ergul, C. (2004). The social-emotional side of learning disabilities: a science-based presentation of the state of the art. *Learn. Disabil. Q.* 27, 45–51. doi: 10.2307/1593631
- Carroll, J. M., Maughan, B., Goodman, R., and Meltzer, H. (2005). Literacy difficulties and psychiatric disorders: evidence for comorbidity. *J. Child Psychol. Psychiatry Allied Discip.* 46, 524–532. doi: 10.1111/j.1469-7610.2004.00366.x
- Chapman, J. W., and Tunmer, W. E. (1995). Development of young children's reading self-concepts: an examination of emerging subcomponents and their relationship with reading achievement. *J. Educ. Psychol.* 87, 154–167. doi: 10.1037/0022-0663.87.1.154
- Chapman, J. W., and Tunmer, W. E. (1997). A longitudinal study of beginning reading achievement and reading self-concept. *Br. J. Educ. Psychol.* 67, 279–291. doi: 10.1111/j.2044-8279.1997.tb01244.x
- Chapman, J. W., Tunmer, W. E., and Prochnow, J. E. (2000). Early reading-related skills and performance, reading self-concept, and the development of academic self-concept: a longitudinal study. *J. Educ. Psychol.* 92, 703–708. doi: 10.1037/0022-0663.92.4.703
- Elksnin, L. K., and Elksnin, N. (2004). The social-emotional side of learning disabilities. *Learn. Disabil. Q.* 27, 3–8. doi: 10.2307/1593627
- Fiorilli, C., Farina, E., Buonomo, I., Costa, S., Romano, L., Larcari, R., et al. (2020). Trait emotional intelligence and school burnout: the mediating role of resilience and academic anxiety in high school. *Int. J. Environ. Res. Public Health* 17:3058. doi: 10.3390/ijerph17093058
- Fishstrom, S., Wang, H. H., Bhat, B. H., Daniel, J., Dille, J., Capin, P., et al. (2022). A meta-analysis of the effects of academic interventions on academic achievement and academic anxiety outcomes in elementary school children. *J. Sch. Psychol.* 92, 265–284. doi: 10.1016/j.jsp.2022.03.011
- Francis, D. A., Caruana, N., Hudson, J. L., and McArthur, G. M. (2019). The association between poor reading and internalising problems: a systematic review and meta-analysis. *Clin. Psychol. Rev.* 67, 45–60. doi: 10.1016/j.cpr.2018.09.002
- Frederickson, N., Petrides, K. V., and Simmonds, E. (2012). Trait emotional intelligence as a predictor of socioemotional outcomes in early adolescence. *Personal. Individ. Differ.* 52, 323–328. doi: 10.1016/j.paid.2011.10.034
- Guay, F., Marsh, H. W., and Boivin, M. (2003). Academic self-concept and academic achievement: developmental perspectives on their causal ordering. *J. Educ. Psychol.* 95, 124–136. doi: 10.1037/0022-0663.95.1.124
- Guil, R., Gómez-Molinero, R., Merchan-Clavellino, A., Gil-Olarte, P., and Zayas, A. (2019). Facing anxiety, growing up. Trait emotional intelligence as a mediator of the relationship between self-esteem and university anxiety. *Front. Psychol.* 10:567. doi: 10.3389/fpsyg.2019.00567
- Heiman, T., and Olenik-Shemesh, D. (2020). Social-emotional profile of children with and without learning disabilities: the relationships with perceived loneliness, self-efficacy and well-being. *Int. J. Environ. Res. Public Health* 17:7358. doi: 10.3390/ijerph17207358
- Hossain, B., Chen, Y., Bent, S., Parenteau, C., Widjaja, F., Haft, S. L., et al. (2021). The role of grit and resilience in children with reading disorder: a longitudinal cohort study. *Ann. Dyslexia* 72, 1–27. doi: 10.1007/s11881-021-00238-w
- Humphrey, N., and Mullins, P. M. (2004). Self-concept and self-esteem in developmental dyslexia. *J. Res. Spec. Educ. Needs* 2. doi: 10.1111/j.1471-3802.2002.00163.x
- Jones, R. S. P., and Heskin, K. J. (2010). Self-concept and learning disability: an experimental analysis. *Insights Learn. Disabil.* 7, 49–55.
- Jordan, J. A., and Dyer, K. (2017). Psychological well-being trajectories of individuals with dyslexia aged 3–11 years. *Dyslexia* 23, 161–180. doi: 10.1002/dys.1555
- Kampylafka, C., Polychroni, F., and Antoniou, A. S. (2023). Primary school students with reading comprehension difficulties and students with learning disabilities: exploring their goal orientations, classroom goal structures, and self-regulated learning strategies. *Behav. Sci.* 13:78. doi: 10.3390/bs13020078
- Katzir, T., Kim, Y. S. G., and Dotan, S. (2018). Reading self-concept and reading anxiety in second grade children: the roles of word reading, emergent literacy skills, working memory and gender. *Front. Psychol.* 9:1180. doi: 10.3389/fpsyg.2018.01180
- Knowles, K. A., and Olatunji, B. O. (2020). Specificity of trait anxiety in anxiety and depression: Meta-analysis of the state-trait anxiety inventory. *Clin. Psychol. Rev.* 82:101928. doi: 10.1016/j.cpr.2020.101928

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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- Livingston, E. M., Siegel, L. S., and Ribary, U. (2018). Developmental dyslexia: emotional impact and consequences. *Aust. J. Learn. Difficult.* 23, 107–135. doi: 10.1080/19404158.2018.1479975
- MacCann, C., Jiang, Y., Brown, L. E., Double, K. S., Bucich, M., and Minbashian, A. (2020). Emotional intelligence predicts academic performance: a meta-analysis. *Psychol. Bull.* 146, 150–186. doi: 10.1037/bul0000219
- Mammarella, I. C., Ghisi, M., Bomba, M., Bottesi, C., Caviola, S., Broggi, F., et al. (2016). Anxiety and depression in children with nonverbal learning disabilities, reading disabilities, or typical development. *J. Learn. Disabil.* 49, 130–139. doi: 10.1177/0022219414529336
- Mavroveli, S., and Sánchez-Ruiz, M. J. (2011). Trait emotional intelligence influences on academic achievement and school behaviour. *Br. J. Educ. Psychol.* 81, 112–134. doi: 10.1348/2044-8279.002009
- McArthur, G., Badcock, N., Castles, A., and Robidoux, S. (2021). Tracking the relations between children's reading and emotional health across time: evidence from four large longitudinal studies. *Read. Res. Q.* 57, 555–585. doi: 10.1002/rrq.426
- Meer, Y., Breznitz, Z., and Katzir, T. (2016). Calibration of self-reports of anxiety and physiological measures of anxiety while reading in adults with and without reading disability. *Dyslexia* 22, 267–284. doi: 10.1002/dys.1532
- Nachshon, O., and Horowitz-Kraus, T. (2019). Cognitive and emotional challenges in children with reading difficulties. *Acta Paediatr.* 108, 1110–1114. doi: 10.1111/apa.14672
- Nelson, J. M., and Harwood, H. (2011). Learning disabilities and anxiety: a meta-analysis. *J. Learn. Disabil.* 44, 3–17. doi: 10.1177/0022219409359939
- Novita, S. (2016). Secondary symptoms of dyslexia: a comparison of self-esteem and anxiety profiles of children with and without dyslexia. *Eur. J. Spec. Needs Educ.* 31, 279–288. doi: 10.1080/08856257.2015.1125694
- Núñez, J. C., González-Pienda, J. A., González-Pumariaga, S., Roces, C., Alvarez, L., González, P., et al. (2005). Subgroups of attributional profiles in students with learning difficulties and their relation to self-concept and academic goals. *Learn. Disabil. Res. Pract.* 20, 86–97. doi: 10.1111/j.1540-5826.2005.00124.x
- Petrides, K. V., and Furnham, A. (2001). Trait emotional intelligence: psychometric investigation with reference to established trait taxonomies. *Eur. J. Personal.* 15, 425–448. doi: 10.1002/per.416
- Petrides, K. V., and Furnham, A. (2006). The role of trait emotional intelligence in a gender-specific model of organizational variables 1. *J. Appl. Soc. Psychol.* 36, 552–569. doi: 10.1111/j.0021-9029.2006.00019.x
- Petrides, K. V., Mikolajczak, M., Mavroveli, S., Sanchez-Ruiz, M. J., Furnham, A., and Pérez-González, J. C. J. C. (2016). Developments in trait emotional intelligence research. *Emot. Rev.* 8, 335–341. doi: 10.1177/1754073916
- Petrides, K. V., Sanchez-Ruiz, M. J., Siegling, A. B., Saklofske, D. H., and Mavroveli, S. (2018). "Emotional intelligence as personality: measurement and role of trait emotional intelligence in educational contexts" in *Emotional intelligence in education*. eds. K. V. Keefer, J. D. A. Parker and D. H. Saklofske (Cham: Springer), 49–81.
- Polychroni, F., Antoniou, A. S., and Kotroni, C. (2013). "Social, emotional and motivational aspects of learning disabilities: challenges and responses" in *Education, family and child & adolescent health*. eds. A. S. Antoniou and B. D. Kirkcaldy (Athens: Diadrassi Publications), 93–119.
- Polychroni, F., Koukoura, K., and Anagnostou, I. (2006). Academic self-concept, reading attitudes and approaches to learning of children with dyslexia: do they differ from their peers? *Eur. J. Spec. Needs Educ.* 21, 415–430. doi: 10.1080/08856250600956311
- Psychountaki, M., Zervas, Y., Karteroliotis, K., and Spielberger, C. (2003). Reliability and validity of the Greek version of the STAIC. *Eur. J. Psychol. Assess.* 19, 124–130. doi: 10.1027//1015-5759.19.2.124
- Ramirez, G., Fries, L., Gunderson, E., Schaeffer, M. W., Maloney, E. A., Beilock, S. L., et al. (2018). Reading anxiety: an early affective impediment to children's success in reading. *J. Cogn. Dev.* 20, 15–34. doi: 10.1080/15248372.2018.1526175
- Retelsdorf, J., Schwartz, K., and Asbrock, F. (2015). "Michael can't read!" teachers' gender stereotypes and boys' reading self-concept. *J. Educ. Psychol.* 107, 186–194. doi: 10.1037/a0037107
- Roza, S. J., Hofstra, M. B., van der Ende, J., and Verhulst, F. C. (2003). Stable prediction of mood and anxiety disorders based on behavioral and emotional problems in childhood: a 14-year follow-up during childhood, adolescence, and young adulthood. *Am. J. Psychiatry* 160, 2116–2121. doi: 10.1176/appi.ajp.160.12.2116
- Sideridis, G. D. (2007). Why are students with LD depressed? *J. Learn. Disabil.* 40, 526–539. doi: 10.1177/00222194070400060401
- Sideridis, G. D. (2009). "Motivation and learning disabilities: past, present, and future" in *Handbook of motivation at school*. eds. K. R. Wentzel and A. Wigfield (New York, NY: Routledge), 619–640.
- Spielberger, C. D. (1989). *State-trait anxiety inventory: a comprehensive bibliography*. Consulting Psychologists Press.
- Willcutt, E. G., and Pennington, B. F. (2000). Psychiatric comorbidity in children and adolescents with reading disability. *J. Child Psychol. Psychiatry* 41, 1039–1048. doi: 10.1111/1469-7610.00691
- Wu, H., Guo, Y., Yang, Y., Zhao, L., and Guo, C. (2021). A meta-analysis of the longitudinal relationship between academic self-concept and academic achievement. *Educ. Psychol. Rev.* 33, 1749–1778. doi: 10.1007/s10648-021-09600-1
- Zelege, S. (2004). Self-concepts of students with learning disabilities and their normally achieving peers: a review. *Eur. J. Spec. Needs Educ.* 19, 145–170. doi: 10.1080/08856250410001678469
- Zysberg, L., and Kasler, J. (2017). Learning disabilities and emotional intelligence. *J. Psychol.* 151, 464–476. doi: 10.1080/00223980.2017.1314929