

Discrepancies between parent- and child-report internalizing problems in specific learning disabilities

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ABSTRACT

Internalizing problems in children with Specific Learning Disabilities (SpLD) are barely assessed in scientific literature. In the current study, we used the multiple informant technique to detect differences between the evaluation of mothers, fathers and self (the child). The study sample, consisting of 97 families (children, mothers and fathers), with 47 children previously diagnosed for a Specific Learning Disability (SpLD), completed standardized measures for internalizing problems. Children with SpLD resulted to be more depressed and anxious than typically developing (TD) peers. Moreover, mothers of TD children perceived children as more anxious as children themselves or their fathers perceive them, while no significant differences between Informants were found for children with SpLD. Finally, parents' reports were positively related to each other for children with TD but not for children with SpLD. These results can be used as a starting point for psychological empowering interventions for students with SpLD and their families.

Educational relevance statement: The current study found that children who have a specific learning disability tend to suffer more from internalizing problems (i.e., anxiety, depression) than typically developed peers. Moreover, mothers perceive more anxiety in their children than the one reported by children themselves. These results underline the need for a psychological empowerment in children with SpLD.

1. Introduction

Children with Specific Learning Disabilities (SpLD) tend to suffer from internalizing problems (Diakakis et al., 2008; Halonen et al., 2006). Internalizing problems include different disorders such as anxiety and depression (The Diagnostic and Statistical Manual, DSM-5; American Psychiatric Association, 2013). As reported by Nelson and Harwood (2011a), about 70 % of students with SpLD show higher rates of anxiety than students without SpLD. Moreover, these students are also more likely to feel discomfort and higher rates of unpleasant emotional reactions to learning tasks, perceive tests as threatening to their self-image, and use maladaptive avoidance strategies (Haft et al., 2019; Riglin et al., 2013). For example, Panicker and Chelliah (2016) discovered severe stress levels in about 16 % of students with SpLD, severe anxiety in about 24 %, severe depression in about 14 %, and low resilience in about 75 %.

Previous research has shown limitations in using single-informant

reports when determining the impact of internalizing and externalizing symptoms on a child, estimating prevalence, and making clinical decisions (Genachowski et al., 2022; De Los Reyes et al., 2015). Only one informant might not wholly and accurately describe symptomatology, with a risk of misdiagnosis or underestimation (Goolsby et al., 2018). Therefore, when collecting data about symptoms of psychological disorders in childhood, using multiple informants is considered a good practice (Hunsley & Mash, 2008). Specifically, it generates a more comprehensive understanding of child symptomatology since informants might report different perspectives (De Los Reyes & Kazdin, 2004). These perspectives are not interchangeable, but each one can provide valuable data for the assessment (De Los Reyes & Kazdin, 2005). According to Klein et al. (2005), data collection from multiple informants includes two crucial rules: the first is the "or" rule, according to which the targeted aspect in the assessment is present if at least one informant reports it, while the second is the "and" rule, according to which two or more informants confirm the presence of the

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characteristic.

In developmental clinical psychology multi-informant ratings can be considered as the best practice in evidence-based assessment because reveal different perspectives able to deliver valuable information about child functioning across settings and useful data to guide the intervention plan (De Los Reyes & Kazdin, 2004).

As underlined by Achenbach (2006), multiple informant reports in children, adolescents, and adults' assessment is becoming a consolidated practice since each of them reports different perspectives and situational variation that are clinically valuable and equally meaningful. For example, parents, both for their role and for the more sophisticated emotional and cognitive processing system, can produce reports on the symptoms of their children who are more emotionally influenced by states of anguish, while children can report lower symptom severity than their parents. Additionally, child's behavior can be represented in different ways by the parents, reflecting variations in intra-family relationships or different educational styles. This could be potentially important information to direct an intervention plan on family variables in addition to the management of the individual behavior.

As noted by Genachowski et al. (2022), multiple informant reports on internalizing symptoms are expected to show lower agreement since anxiety and symptoms are more difficult to be observed accurately (De Los Reyes et al., 2015; McDonald et al., 2016). Discrepant reports may affect the development of child psychopathology because the divergence about symptoms severity and their appearance can result in family and clinical risks. First, they risk triggering conflicts in intra-family relationships to manage the symptoms themselves; secondly, they risk to alter treatment priorities with consequences on the outcomes of the clinical intervention (De Los Reyes & Kazdin, 2005; Genachowski et al., 2022). In typically developed populations, it was reported low agreement on problem behaviors between informants from different settings and moderate or high agreement between informants from similar settings, such as between mothers and fathers (Grietens et al., 2004).

Several studies on multiple informants reported lower agreement for internalizing problems than for externalizing problems in school age (Achenbach et al., 1987; Dahle et al., 2011; Stanger & Lewis, 1993; Youngstorm et al., 2000; von der Embse et al., 2023). A meta-analysis conducted by Duhig et al. (2000) showed moderate correspondence between mothers and fathers in ratings of internalizing behavior and large correspondence in ratings of externalizing behavior (Laporta-Herrero & Latorre, 2020). Moreover, Nelson and Harwood (2011a) analyzed cross-informant agreements among parents, and students' self-reports, finding that parents of children and adolescents with SpLD were generally equivalent in their reports about children's anxiety, while they reported greater depressive symptomatology for students with SpLD than students' self-reports. Conversely, Scorza et al. (2018) found that parents of children with and without SpLD reported the same kind and strength of emotional and behavioral problems in their children. Specifically, data revealed that fathers of children with SpLD and fathers of Typically Learning (TL) peers did not differ in their ratings and that there was moderate or high interrater agreement between mothers and fathers. Finally, the Authors highlighted the need to further investigate the mother-father agreement concerning psychopathological problems.

Therefore, the current study aims to provide researchers and clinicians with information on the relationship between mother-, father-, and self-reported internalizing problems in children with and without SpLD. The novelty of the study consists in the methodology used for detecting the discrepancies among informants: first, in terms of differences in average internalizing problems reported by parents and children; then, in terms of evaluators agreement, consistency or discrepancy patterns, in particular in the highest levels of internalizing problems.

The first goal was to examine mean differences in children's levels of reported anxiety and depression associated with SpLD condition and informant (self, mother, and father). In particular, considering the work of Mammarella et al. (2016) and Nelson and Harwood (2011a), finding high levels of anxiety and depression in children with SpLD, the current

study hypothesizes that children with SpLD would report the highest scores of anxiety and depression.

The second goal was to evaluate the interrater agreement between children, mothers, and fathers on children's anxiety and depression, also comparing SpLD and TD conditions. In the meta-analysis of Duhig et al. (2000), parents show moderate agreement in children internalizing problems. Moreover, according to Nelson and Harwood (2011a, 2011b), parental reports about their children's emotional state should be equivalent, while differences could be observed between parents and children, since internalizing behavior can be difficult to identify from the outside. Therefore, the study hypothesizes that there should be a high interrater agreement between parents and low interrater agreement between parents and children.

Similarly to Castagna and Waschbusch (2023), the third goal was to examine the distributions of informant congruency via the proportion of informant dyads (Self-Mother, Self-Father, and Mother-Father) in agreement and disagreement regarding mean levels of depression and anxiety utilizing standardized scores (Shanock et al., 2010) as a function of the SpLD condition.

Finally, the fourth goal was to report the percentage of students with SpLD that met criteria for high or very high levels of anxiety and depression as a function of the raters (i.e., self, mother, or father) and the number of informants (i.e., single informant, two informants, or all three informants). We hypothesized that the largest proportion of children meeting criteria for high or very high levels of internalizing problems would be obtained when informant replacement (e.g., mother-, father-, or self-report) is used compared to without replacement (e.g., mother-, father- and self-report).

2. Method

2.1. Participants

One hundred and one families agreed to participate in the study and signed the informed consent, but four failed to return the questionnaires; therefore, the final sample consisted in 97 families composed by children ($M_{age} = 10.86$ years, $SD_{age} = 1.55$, range 8–14 years), mothers ($M_{age} = 43.15$ years, $SD_{age} = 4.86$, range 27–57 years), and fathers ($M_{age} = 43.81$ years, $SD_{age} = 5.49$, range 33–57 years). Regarding children's education, 44 % of them attended primary school and 56 % middle school.

Forty-seven children had been previously diagnosed by a national public health institute at the age of 7 (8 %), 8 (22 %), 9 (28 %), 10 (22 %) years or later (8 %). So, the average time that has elapsed since the diagnosis to the research and evaluations of internalizing problems was of 2.05 years. Concerning the different types of SpLD, only 3 students had the diagnosis of a single disorder (Specific disorder of arithmetical skills). Eighteen had the diagnosis of mixed disorder of scholastic skills and remaining students had the diagnosis of comorbidity in SpLD such as Specific reading disorder with Specific spelling disorder or Specific disorder of arithmetical skills. Moreover 4 students showed comorbidity with Attention-deficit hyperactivity disorder. All students with SpLD received academic support outside school, that was in 96 % a psychologist or educator expert at SpLD, in 2 % speech therapist.

They had been recruited through schools and not-for-profit associations suitable to deliver support for students with SpLD. The inclusion criteria for children with SpLD were having a normal intelligence quotient, having a certified diagnosis of SpLD, and attending primary or grade secondary school. In accordance with the Italian Law on Learning Disabilities (170/2010), the majority of SpLD students received at school a PDP (Piano Didattico Personalizzato/ Personalized Didactic Plan) that consisted of dispensatory measures (e.g., not reading aloud in the classroom or writing under dictation, not studying mnemonically tables, reduction and adaptation of homework, planning of tests/interrogations) and compensatory instruments (for instance, using the computer for writing, speech synthesis in writing and reading, audio

resources such as digital audio files, audiobooks, use of calculator or concept maps during the tests.

Concerning children without diagnosis of SpLD, we assumed that they did not have certified difficulties as declared by their parents in the sociodemographic part of the questionnaire.

The socio-demographic characteristics for children with TD and children with SpLD are reported in Table 1.

The study was approved by the Bioethics Committee of the XXXXXXX (blinded for review) approved the current study (n. 36/2021 delivered on 28/01/2021) and was conducted respecting the Declaration of Helsinki principles.

2.2. Procedure

Parents were contacted through flyers announcing the current project and then invited them to meet the researchers to get information about it. Participants who agreed to participate were asked to sign an informed consent form, guaranteeing confidentiality and anonymity, and to fill in questionnaires with an information sheet asking for sociodemographic characteristics of their sons. Moreover, they received the students' questionnaires and were asked to return it to the researchers with a progressive number needed to allow the matching with the parents' questionnaire. Students with SpLD filled in the questionnaires with the help of a research assistant who was a psychologist expert at SpLD.

2.3. Measures

Socio-Demographic Questionnaire. A socio-demographic questionnaire was created for detecting information about parents' education and employment, and children's diagnosis of SpLD (e.g., "Has your child received a diagnosis of SpLD?", "Which kind of diagnosis did your child receive?", "At what age your child was diagnosed for SpLD?") or if children had some difficulties in learning, without certification.

Children's Anxiety. The Multidimensional Anxiety Scale for Children - Second Edition (MASC-2; March 1997) was used. It is a 50-item scale detecting anxiety symptoms in children and adolescents. Children and their parents completed the Italian adaptation (Paloscia et al., 2017) of MASC-2 in its self-report and parent-report versions, respectively. Both

versions contain identical items that differ in terms of the reporter pronouns. Items are evaluated on a 5-point Likert scale, from 0 (never) to 4 (often), with higher scores reflecting higher anxious symptoms. A sample item reads "I feel worried" for children's anxiety perceived by themselves and "My son feels worried" for children's anxiety perceived by parents. The MASC-2 scale returns a Total Score and ten subscales' scores for Separation Anxiety/Phobias, Generalized Anxiety Disorder Index, Social Anxiety (Total, Humiliation/Rejection, and Performance Fears), Obsessions and Compulsions, Physical Symptoms (Total, Panic, and Tense/Restless), and Harm Avoidance (Fraccaro et al., 2015). In the current study, we used the Generalized Anxiety Disorder Index (GAD Index) as it is a complete indicator which was previously used in similar study (Kalvin et al., 2020; Miller et al., 2014). Moreover, the standardization manual (Paloscia et al., 2017) reports high correlation between GAD Index with subscales and with CDI, which is also used in the current study. In order to compare child and parent ratings of children's anxiety grounded on population based aged and gender norms, Generalized Anxiety Disorder Index *T*-scores for both self-report and parent-report were used. Both self-report and parent-report of anxiety had good internal reliability in the total sample: Cronbach's alpha values were 0.93, 0.89 and 0.93, for self-report, mother-report and father-report, respectively.

Children's Depression. The Children's Depression Inventory (CDI-2; Kovacs, 1992) was used. It assesses depressive symptoms in emotional (mood/physical symptoms, self-esteem) and functional areas (ineffectiveness and interpersonal problems) in children aged 7 to 17 years. Children and their parents completed the Italian adaptation (Camuffo & Cerutti, 2018) of the CDI-2 in its self-report and parent-report versions, respectively. The self-report CDI-2 comprises 12 items measured on a 3-point scale ranging from 0 (no symptoms) to 2 (symptomatology). The parent-report CDI-2 comprises 17 items measured on a 4-point scale ranging from 0 (not at all) to 3 (almost always). In order to compare child and parent ratings of children's depression grounded on population based aged and gender norms, Depression *T*-scores for both self-report and parent-report were used. Both self-report and parent-report of depression had good internal reliability in the total sample: Cronbach's alpha values were 0.82, 0.76 and 0.81, for self-report, mother-report and father-report, respectively.

2.4. Plan of data analysis

Preliminarily, we assessed univariate and multivariate normal distribution of study variables in the total sample. All variables were normally distributed with skewness and kurtosis values ranging approximately from -2 to $+2$ (Lei & Lomax, 2005); values of skewness ranged from 0.07 to 0.82, and values of kurtosis ranged from -0.59 to 2.05. Mardia's multivariate kurtosis coefficient was 41 versus the critical value of 48 (see Barbanelli, 2003) and thus multivariate normality was also evidenced.

As a first step, we run a 2 (SpLD condition) $\times$ 3 (Informant) analysis of variance (ANOVA), with repeated measures on the last factor to examine mean differences in children's depression and anxiety associated to SpLD condition and informant. Preliminarily, we examined the assumption of sphericity with Mauchly's test. For anxiety, the test was not significant, $W = 0.99$, $p = .937$, so sphericity assumption was evidenced. For depression, the test was significant, $W = 0.83$, $p < .001$; in this case, the Greenhouse-Geiser correction was applied ($\epsilon = 0.86$). We also examined the assumption of homoscedasticity with Levene's test. For depression, the test was not significant for child-report [$F(1,85) = 1.64$, $p = .20$], mother-report [$F(1,85) = 2.12$, $p = .15$], and father-report [$F(1,85) = 0.28$, $p = .60$]. For anxiety, the test was not significant for child-report [$F(1,77) = 0.50$, $p = .82$] and mother-report [$F(1,77) = 0.26$, $p = .61$], but it was significant for father-report [$F(1,77) = 4.69$, $p = .03$]; notwithstanding, as outlined by Field (2024), homogeneity of variances is not a mandatory requirement for very similar groups sizes, as in the present study.

Table 1

Characteristics of students with Typical Development (TD) and with Specific Learning Disabilities (SpLD).

		Children with TD	Children with SpLD
<i>N</i>		50	47
Child's gender	Boys	30	30
	Girls	20	17
Child's age	Range	8–13 years	8–14 years
	<i>M (SD)</i>	10.68 (1.58)	10.85 (1.35)
Child's school	Primary school	24	19
	Middle school	26	28
Mother's age	Range	27–52 years	35–51 years
	<i>M (SD)</i>	42.36 (5.65)	43.55 (3.63)
Father's age	Range	33–57 years	36–48 years
	<i>M (SD)</i>	44.38 (6.70)	42.86 (4.56)
Mother's education	Middle school degree	17 %	8 %
	High school degree	25 %	29 %
	University degree	9 %	12 %
Father's education	Middle school degree	13 %	26 %
	High school degree	27 %	7 %
	University degree	14 %	13 %
Mother's job	Employee	21 %	23 %
	Self-employed worker	10 %	6 %
	Unemployed	21 %	19 %
Father's job	Employee	27 %	27 %
	Self-employed worker	26 %	20 %

As a second step, Pearson correlation coefficients were computed to examine the bivariate associations between self-report, mother-report and father-report of anxiety and depression in children with TD and children with SpLD. As a third step, the intraclass correlation coefficient (ICC) was computed to measure the level of interrater agreement (that is the degree to which scores are identical between raters) between children, mothers, and fathers on anxiety and depression, separately for children with TD and children with SpLD. The two-way mixed effects, absolute agreement ICC was used. ICCs were computed for the triad Self-Mother-Father, and the dyads Self-Mother, Self-Father, and Mother-Father. ICCs values are interpreted as follows: if the coefficient is lower than 0.40 then the agreement is poor, if the coefficient lies within 0.41 and 0.59 then the agreement is fair, if the coefficient lies within 0.60 and 0.74 then the agreement is good, and if the coefficient is higher than 0.74 then the agreement is excellent (Cicchetti, 1994).

As a fourth step, to examine the distributions of informant congruence we computed the number of agreeing and disagreeing informant dyads concerning the standardized scores for depression and anxiety (Shanock et al., 2010), as a function of the SpLD condition. A descriptive account of the number of Self-Mother, Self-Father, and Mother-Father dyads demonstrating congruence in their report of children's depression and anxiety was provided (Edwards, 1994). Similarly to Shanock et al. (2010), we examined the standardized scores (SSs) highly discrepant (i.e., $-0.50 > SS > 0.50$) and similar (i.e., $-0.50 \leq SS \leq 0.50$) for determining the frequency of congruence/discrepancy between the three parent-self dyads. As a fifth step, a series of 3 (type of congruence) $\times$ 2 (SpLD condition) chi-square tests was run for each informant dyad to test the existence of an association between the type of congruence in reports of anxiety and depression and SpLD condition. We also computed the Cramer's V as a measure of the strength of the association; for the interpretation of this coefficient, we applied Cohen's rule of thumb: (a) if the coefficient lies within 0.10 and 0.29 then there is a weak association, (b) when the coefficient lies within 0.30 and 0.49 then there is a medium association, and (c) lastly if the coefficients is higher than 0.50 then there is a strong association.

Finally, following the procedure suggested by Castagna and Waschbusch (2023), we identified cases with high and very high levels of internalizing problems. We computed the number of children with SpLD that met the criteria for high or very high levels of anxiety and depression as a function of perspective (i.e., self, mother, or father), the number of informants (i.e., single, two, or all three informants), and the reporter combination (e.g., mother or father vs. mother and father). All data analyses were run with IBM SPSS 24.

3. Results

3.1. Differences in mean levels of internalizing problems

In order to examine mean differences in children's depression and anxiety associated to SpLD condition and informant, we computed a 2 (SpLD condition) $\times$ 3 (Informant) analysis of variance (ANOVA), with repeated measures on the last factor. Means and standard deviations are reported in Table 2.

With regard to depression, results showed that only SpLD condition

had a significant effect, $F(1,85) = 65.07, p < .001, \eta^2 = 0.43$, while the Informant and the interaction term had not significant effects. Children with SpLD reported higher levels of depression than peers with TD, regardless of Informant. With regard to anxiety, results showed that all factors had significant effects: for SpLD condition, $F(1,77) = 13.62, p < .001, \eta^2 = 0.15$, for Informant, $F(2,154) = 3.15, p = .046, \eta^2 = 0.04$, and for SpLD condition $\times$ Informant, $F(2,154) = 3.51, p = .032, \eta^2 = 0.04$. In general, children with SpLD reported higher levels of anxiety than peers with TD, and children perceive themselves as less anxious as mothers perceive them. Moreover, there is a significant interaction between SpLD condition and Informant: mothers of children with TD perceive children as more anxious as children themselves or their fathers perceive them, while not significant differences between Informants were found for children with SpLD.

3.2. Correlations between reports of internalizing problems

In order to examine the associations between self-report, mother-report and father-report of anxiety and depression in children with TD and children with SpLD, Pearson correlation coefficients were computed. Results are presented in Table 3.

About depression, mother- and father reports were positively and significantly related to each other for children with TD but not for children with SpLD; children's self-report was not significantly associated with parents' reports in any group. About anxiety, self-, mother-, and father reports were positively and significantly related to each other for children with TD, but not for children with SpLD.

3.3. Interrater agreement in the assessment of internalizing problems

In order to examine informant discrepancies, the intraclass correlation coefficient (ICC), a reliability index in interrater reliability analyses,

Table 3

Pearson correlation coefficients for self-report, mother-report, and father-report of depression and anxiety for children with Typical Development (TD; under diagonal) and children with Specific Learning Disabilities (SpLD; over diagonal).

	1	2	3	4	5	6
1 Depression Self-report	–	–0.03	0.07	0.57***	0.22	0.06
2 Depression Mother-report	0.18	–	0.15	0.17	0.54***	0.29
3 Depression Father-report	0.30	0.47**	–	0.15	–0.04	0.62***
4 Anxiety Self-report	0.60***	0.16	–0.03	–	0.08	0.02
5 Anxiety Mother-report	0.19	0.29*	–0.01	0.48**	–	0.05
6 Anxiety Father-report	0.49***	0.17	0.40**	0.40*	0.51***	–

* $p \leq .05$.

** $p \leq .01$.

*** $p \leq .001$.

Table 2

Means and standard deviations for self-report, mother-report, and father-report of depression and anxiety for children with Typical Development (TD) and Children with Specific Learning Disabilities (SpLD).

	Children with TD						Children with SpLD					
	Self		Mother		Father		Self		Mother		Father	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Depression	48.93	9.92	50.95	7.62	49.26	7.75	61.60	11.73	58.02	7.03	59.71	7.17
Anxiety	51.25 ^a	10.34	58.20 ^b	10.49	52.44 ^a	8.76	58.84	11.19	59.86	12.46	62.28	12.71

Note. ^{a,b} In rows, means with different superscripts differ at $p < .05$.

was conducted to measure the level of agreement between informants, separately for each group. ICC reliability coefficients are estimated as follows: < 0.40 are poor, 0.41–0.59 fair, 0.60–0.74 are good, and > 0.74 are excellent (Cicchetti, 1994). Results are reported in Table 4. About depression, results showed that the interrater agreement was very poor for children with SpLD, while it was fair for children with TD. Concerning anxiety, results showed that the interrater agreement was very poor for children with SpLD, while it was good for children with TD.

3.4. Informant congruency in the assessment of internalizing problems

For the distributions of informant congruency, we computed the number of agreeing and disagreeing informant dyads concerning the standardized scores for depression and anxiety (Shanock et al., 2010), as a function of the SpLD condition. A descriptive account of the number of Self-Mother, Self-Father, and Mother-Father dyads demonstrating congruency in their report of children's depression and anxiety was provided (Edwards, 1994). Similarly to Shanock et al. (2010), we examined the standardized scores (SSs) highly discrepant (i.e., $-0.50 > SS > 0.50$) and similar (i.e., $-0.50 \leq SS \leq 0.50$) for determining the frequency of congruency/discrepancy between the three parent-self dyads. Results are reported in Fig. 1. In order to test the existence of an association between the type of congruency in reports of anxiety and depression and SpLD condition, a series of 3 (type of congruency) x 2 (SpLD condition) chi-square tests was run for each informant dyad. With regard to depression, no significant associations were found indicating that types of congruencies were equally represented by children with TD and children with SpLD. About anxiety, a significant association was found only for Mother-Father dyad, $\chi^2(2) = 11.52, p = .003$. Compared to the TD group, the SpLD group has a lower proportion of consistent dyads and a higher proportion of cases where the mother scores lower than the father.

3.5. Cases with high and very high levels of internalizing problems

We computed the number of children with SpLD that met the criteria for high or very high levels of anxiety and depression as a function of perspective (i.e., self, mother, or father), the number of informants (i.e., single, two, or all three informants), and the reporter combination (e.g., mother or father vs. mother and father) (Castagna & Waschbusch, 2023). Figs. 2 and 3 depict bar graphs of the percentage of children meeting criteria for high or very high levels of depression and anxiety, respectively. Using an “either-or” approach, the highest number of children met the criteria, followed by single informants only, and finally by requiring multiple informants (i.e., the “and” approach). No cases with an agreement of all the informants were detected concerning depression scores. Approximately less than one-third of the sample met the criteria if mother, father, or self-report was utilized. Out of the three possible dyads, father-self reports led to more children meeting LPE criteria when compared to mother-father or mother-self report.

Table 4
Intraclass correlation coefficients for self-report, mother-report, and father-report of depression and anxiety for children with Typical Development (TD) and children with Specific Learning Disabilities (SpLD).

	Children with TD	Children with SpLD
<i>Depression</i>		
Self-Mother-Father	0.57	0.13
Self-Mother	0.29	0.04
Self-Father	0.45	0.12
Mother-Father	0.57	0.13
<i>Anxiety</i>		
Self-Mother-Father	0.66	0.17
Self-Mother	0.60	0.14
Self-Father	0.57	0.04
Mother-Father	0.60	0.10

4. Discussion

A growing body of research demonstrated how children and adolescents with SpLD are a population at high risk to experience mental health problems because they are more likely to face experiences of school unsuccessfulness. In turn, these events increase their vulnerability to develop internalizing disorders, such as anxiety and depression and lower perception of their academic competence (Authors, 2014; Dahle et al., 2011; Ginieri-Coccosis et al., 2013; Nelson & Harwood, 2011a; Wilson et al., 2009). The current study aimed to explore the relationship between mother-, father-, and self-reported internalizing problems in students with and without SpLD. Specifically, the current study had several goals.

The first goal was to examine mean differences in children's anxiety and depression associated with SpLD condition. As expected, children with SpLD reported higher levels of depression than peers with TD. This finding is in line with previous research showing that students with SpLD are more likely to show higher levels of depression compared to TD peers (Authors, 2014; Mammarella et al., 2016). For example, Panicker and Chelliah (2016) measured the levels of stress in a sample of eighty-two children and adolescents with SpLD and rated a percentage of severe depression in about the 14 % of students. Indeed, academic difficulties and repeated experiences of failure might have a detrimental effect on students' emotions, who tend to perceive themselves as incompetent and to believe that their situation would never improve (Nelson & Harwood, 2011b; Panicker & Chelliah, 2016).

As concerns anxiety, in our sample, children with SpLD reported higher levels of anxiety than peers with TD. Moreover, there was a significant interaction between SpLD condition and Informant: mothers of children with TD perceived them as more anxious as children themselves or as their father perceived them, while no significant differences between Informants were found for children with SpLD. Higher levels of anxiety in SpLD condition are well documented and first stem from classroom experiences, where children are implicitly asked to compare their performance with classmates, perceive school tasks as threatening to self-worth and become aware of their learning skill deficits. Then, this state of distress occurring in response to school tasks can generalize to other every day and social situations (Authors, 2014; Haft et al., 2019; Nelson & Harwood, 2011a, 2011b).

Parents of children with SpLD rated their children as more anxious than parents of children with TD. This result aligns with Bonifacci et al.' (2016) and Rotsika et al. (2011) findings showing that parents rated children with Learning Disorders as more anxious than parents of control group. According to Rotsika et al. (2011), this difference may be connected to the tendency of parents of children with SpLD to be more anxious themselves and to overemphasize child's school difficulties, whereas the children tend to give less importance to their problems.

The second goal was to evaluate the relationship between anxiety and depression rating of children, mothers, and fathers, for both SpLD and TD, and their interrater agreement. Concerning depression, mother- and father-reports were positively and significantly related with each other for children with TD, but not for children with SpLD. Children self-report was not significantly related with parents' reports in any group. Moreover, the interrater agreement was very poor for children with SpLD, while it was good for children with TD. Similar results were reported by Rotsika et al. (2011) who found discrepancies in emotional well-being between parents and children. According to the Authors, this difference might be connected to the different process that parents and children follow to make judgments: while adults consider a variety of health indicators, children base their judgments on recent experiences (Davis et al., 2007).

Relating anxiety, in our study, self-, mother-, and father-reports were positively and significantly related with each other for children with TD, but not for children with SpLD. Furthermore, the interrater agreement was very poor for children with SpLD, while it was good for children with TD.

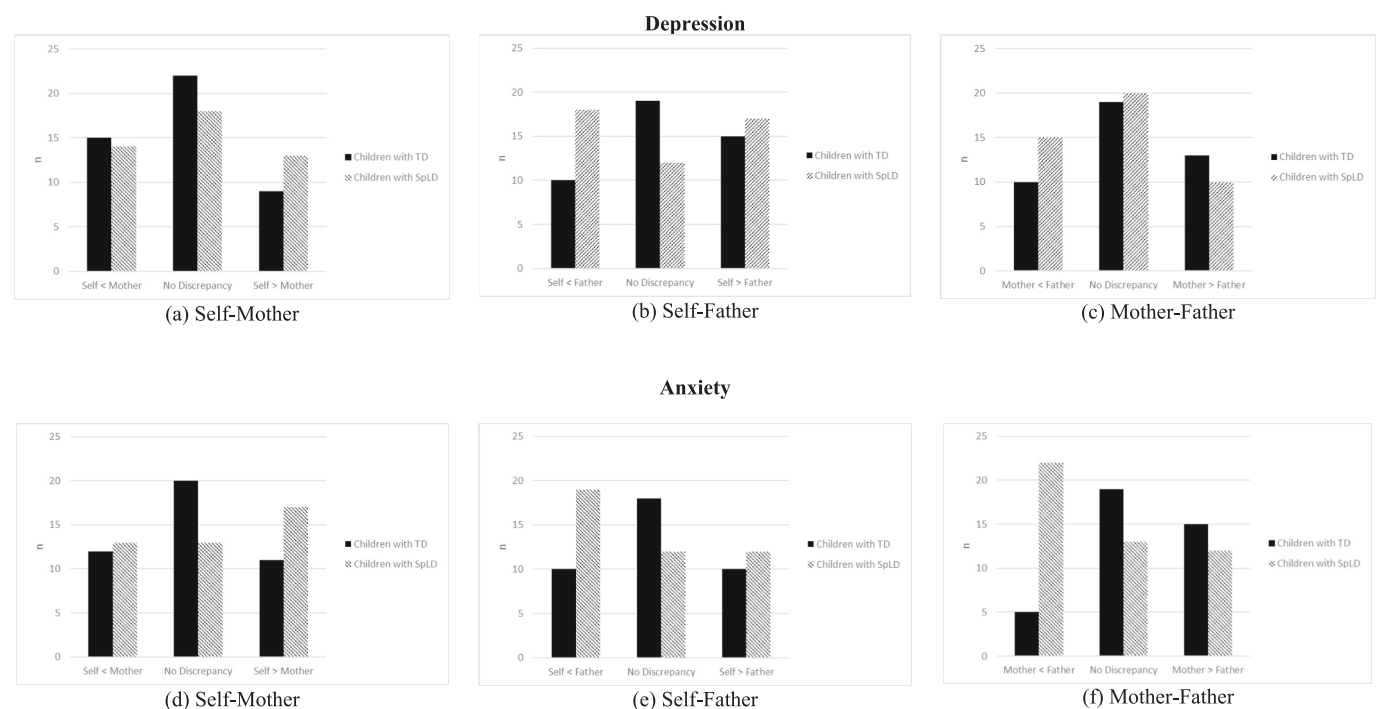


Fig. 1. Number of cases for the three types of congruence in reports of children's depression and anxiety for self-mother, self-father, and mother-father dyads, computed separately for children with TD and children with SpLD.

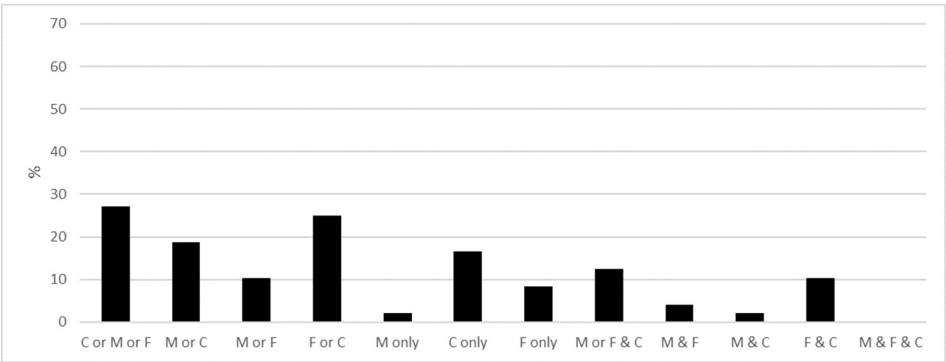


Fig. 2. Percentage of children with SpLD with high or very high levels of depression as a function of type and number of informants utilized.

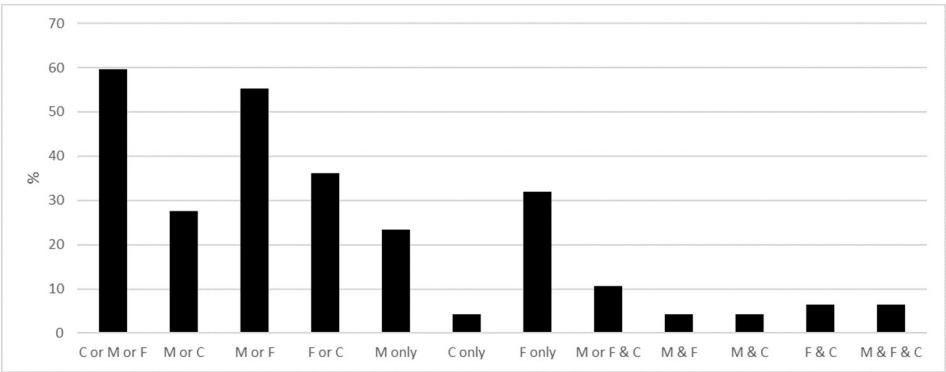


Fig. 3. Percentage of children with SpLD with high or very high levels of anxiety as a function of type and number of informants utilized.

These results contrast with a previous study about TD children, where the interrater agreement parents reported the same kind and strength of emotional and behavioral problems in their children (Duhig

et al., 2000). In their meta-analysis, the authors found less maternal and paternal correspondence for ratings of internalizing problems compared to correspondences for externalizing problems. This phenomenon could

increase in SpLD because mothers could overestimate children's internalizing problems compared to fathers. As highlighted by Nelson and Harwood (2011a, 2011b), the cross-informant agreement of anxious symptoms is poorer in the SpLD population. According to the Authors, it is difficult to establish if either parents overestimate anxiety symptoms or students underreport their anxiety.

The third goal was to examine the distributions of informant congruency via the proportion of informant dyads (Self-Mother, Self-Father, and Mother-Father) in agreement and disagreement regarding mean levels of depression and anxiety, as a function of the SpLD condition. In general, congruent dyads tended to be more frequent than the incongruent ones. The only significant difference between groups was the mother-father dyad related to anxiety perception. In this case, the dyad where the mother underestimated anxiety compared to the father is more frequent in SpLD group, while the congruent dyad was more frequent in TD children. This incongruency in the comparison between SpLD and TD groups can be explained considering the role of mothers in children's education. As above-mentioned, students with SpLD were recruited both in schools and associations where they received an additional after school program. In the Italian society, mothers are usually more involved than fathers in managing children's schoolwork and the relationships with teachers and professionals (Bombi et al., 2011; Granata et al., 2016). These relationships might increase the perceived support, both on learning and emotional sides, directly limiting the children's emotional distress, and indirectly acting on mothers who may perceive adequate support for their children (Katz et al., 2022). Moreover, reports on internalizing symptoms typically show lower agreement since anxiety is more difficult to be observed accurately (De Los Reyes et al., 2015; McDonald et al., 2016). This typical incongruency can be exacerbated in SpLD conditions, which face challenges on increased duty of care, social stereotypes, frequent imbalance between parenting demands and personal resources. Therefore, the specialized added support, such as the one experienced by SpLD group, could have led mothers to manage their children's school education in a more sensitive way, to use more effective coping strategies, with the decreasing risk of exacerbating their children's difficulties.

Finally, the fourth goal was to examine the percentage of students with high or very high levels of anxiety and depression, in terms of perspective (i.e., self, mother, or father), number of informants (i.e., single informant, two informants, or all three informants), and SpLD condition. In general, the most frequent case was the one where one of the evaluators reported high or very high ratings than the case of two evaluators in agreement. Concerning depression, no cases were observed with all the evaluations in agreement. Previous research showed the lowest multi-informant congruency for the depression condition and explained this result as a function of the psychological construct and the use of negative descriptors to encode experiences of low mood (De Los Reyes et al., 2015; Laird & De Los Reyes, 2013). Indeed, the more the constructs are internal (e.g. mood state), the more the difficulty of introspection and the ability to interpret and codify these states increase with the consequent risk of increasing perceptual and interpretative bias.

5. Conclusions

The study has the advantage to explore in detail the anxiety and depressive symptoms in children with and without SpLD and through different informants (self, mother, father), which results in a more complex picture about children's feelings and emotional states. The strength of this study lies in the multi-informant assessment approach about internalizing problems incorporating different contextual viewpoints, such as student, mother, and father perspectives, without any assumption on gold standard in the best predictive value of one over the other. Each informant provides meaningful information that can be useful in the subsequent diagnostic decision-making process and each report is assumed to be equally informative in conceptualizing the

child's functioning. Even in case multiple informants provide inconsistent reports, it would be important to understand if informant discrepancies could arise from measurement error or meaningful differences, for best integrating informant reports that are inconsistent but equally meaningful (Genachowski et al., 2022). Informant discrepancies, particularly between parent and child, have been often considered as predictive of poorer treatment outcomes (Goolsby et al., 2018). However, these informant discrepancies are an important source of data to advance knowledge and drive decision-making processes aimed at revealing symptomatology and encouraging early intervention. This is particularly true for the emotional distress and internalizing problems before their generalization and chronicity with at long term additional detrimental learning consequences.

Findings of this study come out with some limitations: first, this study was cross-sectional and the at a single time point measurement does not allow any causal interpretation. Future studies are needed to consider investigating longitudinally datasets to permit the evaluation of the emotional functioning change in patterns of dis/agreement over time. Second, all variables were measured by reports; if this is commonplace in educational research, it is recommendable that future studies include more objective data (e.g., observations) to better evaluate the pattern of behaviors. Third, our study used data from children and parents but did not include the school setting. Teachers' reports are key data because they are suitable to provide a more objective and accurate perception of the student's external behaviors reflecting their internalizing concerns compared to children and parents' reports. Nevertheless, the evidence from this study reinforces the need to consider a multi-informant assessment approach for internalizing problems that also includes informant discrepancies and their reasons in the clinical decision-making process. Finally, since primary school is a crucial period for SpLD diagnosis, we asked parents of children without SpLD to declare if their children had difficulties at school, but we did not assess with objective measures if children without SpLD were typical learners or were not diagnosed for SpLD yet.

Future research should address the need to focus on the research and clinical potential deriving from multi-informant approaches to assessment and diagnosis in child clinical research, especially in the field of mental health. The approach based on multiple informants aims to maximize the cost-effectiveness of assessments. The inconsistent reports should not be considered a measurement error, but as a meaningful divergence portraying a multidimensional view of child functioning. Indeed, each informant observes the child in different context and with different emotional filters, which increases the precision and accuracy of the information provided to clinicians. In this way, inconsistencies between reports may uncover dynamics that might not be discovered through a single report, enriching the decision-making process and maximizing the personalization of treatment interventions in mental health services. For this reason, clinical researchers and practitioners must be encouraged to include expectations of informant discrepancies and to investigate the reasons of these discrepancies in decision-making of data interpretation, diagnosis and intervention planning.

The results of this study can be used as an initial point for planning psychological empowering interventions directed to students with SpLD and their families, and, in turn, for providing them with a tailored, supportive and resourceful environment. Moreover, through our results, we suggest the need for early identify SpLD condition in order to prevent additional risk factors that may increase the probability of psychopathological problems.

CRedit authorship contribution statement

Ambra Gentile: Writing – original draft, Validation, Methodology, Data curation, Conceptualization. **Giulia Giordano:** Writing – original draft, Methodology, Conceptualization. **Cristiano Inguglia:** Writing – review & editing, Software, Methodology, Investigation, Data curation. **Sonia Ingoglia:** Writing – original draft, Software, Methodology,

Formal analysis, Conceptualization. **Marianna Alesi:** Writing – review & editing, Software, Project administration, Methodology, Conceptualization.

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