

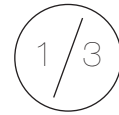
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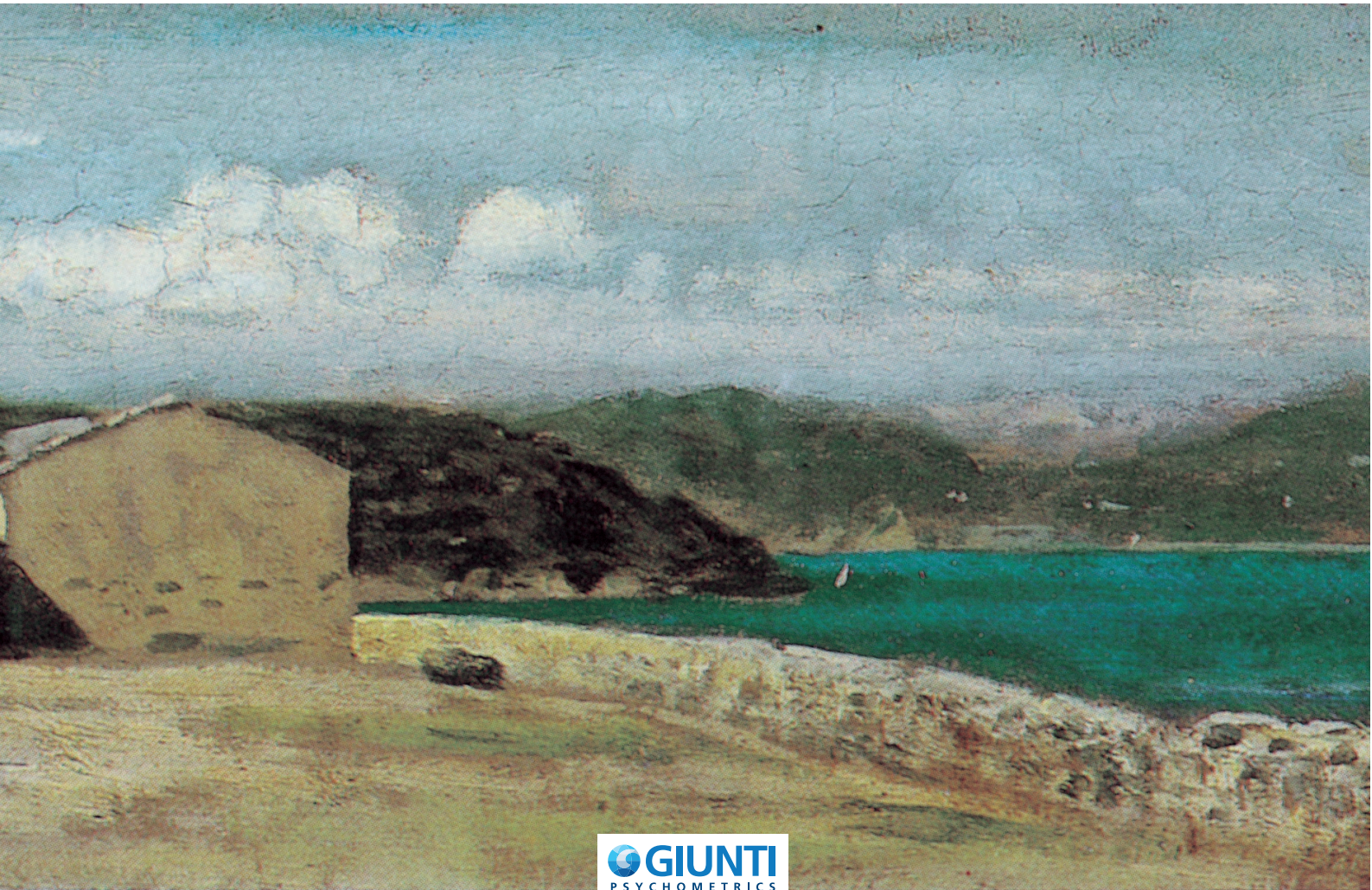
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Psychopathological symptoms in Italian children and adolescents with Specific Learning Disorder: What do mothers and fathers report about?

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• **ABSTRACT.** Bambini con Disturbo Specifico dell'Apprendimento (DSA) mostrano più frequentemente di bambini a sviluppo tipico (ST) sintomi psicopatologici, quali ansia e depressione. La maggior parte degli studi ha rivolto l'attenzione a bambini alle prese con ortografie opache, quali l'inglese, o trasparenti ma complesse, quali il norvegese. Questi studi sono poco generalizzabili al contesto italiano in cui apprendere a leggere e scrivere appare più facile e in cui gli interventi forniti a bambini con DSA appaiono differenti. Primo obiettivo è quello di confrontare le risposte fornite nelle sottoscale della *Child Behavioral Checklist (CBCL)* dalle madri di 22 bambini con DSA (età media = 12.31, *DS* = 2.88) con quelle di madri di 29 bambini a ST (età media = 10.96, *DS* = 2.74). Secondo obiettivo è quello di confrontare le risposte delle madri dei due gruppi con quelle fornite dai padri. Dai test Mann-Whitney emerge nei bambini con DSA un livello significativamente più alto di sintomi internalizzanti ed esternalizzanti totali. Si sottolinea l'importanza di individuare precocemente bambini con DSA per contrastare altrettanto precocemente l'insorgere di problemi psicopatologici e la necessità di approfondire l'accordo madre-padre in prove come la CBCL.

• **SUMMARY.** International literature provides evidence that Specific Learning Disorders (SLD) may be associated with multiple dimensions of psychopathology. In contrast, only a small number of studies have focused on emotional and behavioral problems in Italian children and adolescents with SLD. The *Child Behavioral Checklist (CBCL)* is a measure of psychopathological symptoms widely-used in the clinical contexts in Italy. We therefore conducted a preliminary study examining mothers' and fathers' reports on all of the eight CBCL syndrome subscales. First aim was to examine the mothers' ratings on CBCL in a group of 22 Italian children and adolescents with SLD (mean age = 12.31, *SD* = 2.88) and 29 peers without SLD (mean age = 10.96, *SD* = 2.74). Second, concordances and differences between mothers and fathers of these children on CBCL were investigated. The children and adolescents with SLD obtained significantly higher Internalizing and Externalizing Total Scores, compared to peers without SLD. We discussed the relevance of early identifying Italian children with SLD to early contrast the risk of emotional and behavioral problems in these children. These findings underscore the need for further examination of the mother-father agreement on measures of psychopathological problems.

Keywords: Specific Learning Disorder, Psychopathological symptoms, Mother-father discrepancy

INTRODUCTION

The main goal of the present study was to obtain more in-depth knowledge of emotional and behavioral features in Italian children and adolescents with Specific Learning Disorders (SLD). SLDs are classified by the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* among the neurodevelopmental disorders that involve difficulties in reading, written expression, and/or mathematics and that are not primarily due to more general learning difficulty, such as intellectual disability or global developmental delay, nor to external factors (DSM-5; American Psychiatric Association, 2013).

Despite the specific nature of the SLDs, numerous studies have found that these disorders can co-occur with other neurodevelopmental or mental disorders. For example, the most frequent comorbid disorder in groups with reading disability (RD) is the attention-deficit/hyperactivity disorder (ADHD), and particularly the inattentive and combined subtypes of ADHD that are characterized by significant inattention (e.g., Knivsberg & Andreassen, 2008). Children and adolescents with RD are at higher risk for externalizing disorders, such as oppositional defiant disorder (ODD) and conduct disorder (CD), and show rule-breaking behaviors (e.g., Dahle, Knivsberg & Andreassen, 2011; Knivsberg & Andreassen, 2008; Maughan, Rowe, Loeber, & Stouthamer-Loeber, 2003; Willcutt & Pennington, 2000). Children and adolescents with dyslexia are also at higher risk for an internalizing, anxious and depressive symptomatology (e.g., Dahle et al., 2011; Knivsberg & Andreassen, 2008; Maughan et al., 2003; for a review, see Mugnaini, Lassi, La Malfa & Albertini, 2009) and for psychosocial problems (Biotteau, Albaret, Lelong & Chaix, 2016).

The most of these studies has focused on children with dyslexia. The few studies on children and adolescents with comorbid learning disorders (e.g., dyslexia associated with math disability) demonstrated the vulnerability of this clinical population to higher rates of externalizing behaviors such as aggressive behaviors, delinquency, and risk-taking behaviors (e.g., McNamara, Vervaeke & Willoughby, 2008), as well as higher levels of loneliness, stress, anxiety and depression (e.g., Al-Yagon, 2012; Feurer & Andrews, 2009; Nelson & Harwood, 2011; Wilson, Armstrong, Furrie & Walcot, 2009). Willcutt and colleagues (2013) found that the group with RD and math disability (MD) was more impaired than the groups with RD and MD alone on measures

of internalizing psychopathology. Overall, the existing international literature provides evidence that SLDs may be associated with multiple dimensions of psychopathology.

In contrast, to date only a small number of studies have focused on the psychopathological symptoms in Italian children and adolescents with SLD. It is known that SLDs are pretty much incident and severe in countries characterized by orthographically deep (e.g., English, French) as opposed to shallow (e.g., Italian, German, Norwegian) languages (Brunswick, McDougall & De Mornay Davies, 2010; Zonno, Scorza, Morlini & Stella, 2016). There are also potential differences between countries like Italy and United States in the type of specialist provision for students with SLD at school. In the light of these considerations, it is hard to generalize results of the existing international literature concerning the psychological problems of SLD students to Italian children and adolescents with SLD (Ghisi, Bottesi, Re, Cerea & Mammarella, 2016).

To our knowledge, few studies have investigated anxiety and depressive symptoms in Italian children and adolescents with LD. Margari and colleagues (2013) identified differences between children and adolescents with SLD and with learning disorder not otherwise specified (LD NOS), with a higher comorbidity with ADHD and with mood and anxiety disorder, using the Child Behavioral Checklist (CBCL; Achenbach, 1991; Achenbach & Rescorla, 2001), in the former than in the latter. Mammarella and colleagues (2016), comparing Italian children with nonverbal learning disabilities (NLD), with RD and typically developing children (TD), aged between 8 and 11, found that the NLD children reported more severe anxiety about school and separation than TD, and children with RD had worse depressive symptoms than those with NLD or TD, using the *Self-Administered Psychiatric Scales for Children and Adolescents (SAFA)*; Cianchetti & Fancello, 2001) and the *Children's Depression Inventory (CDI)*; Kovacs, 1982; Italian validation by Camuffo, Cerutti, Lucarelli & Mayer, 1988). Chiappedi and Baschenis (2016) found that children with SLD aged between 8 and 13, compared with TD peers, more often had a clinically significant level of anxiety using SAFA. Bonifacci, Storti, Tobia and Suardi (2016), evaluating the psychological profiles of Italian children with SLD, aged between 9 and 12, found that these children had lower scholastic and interpersonal self-esteem than TD children, using the *Self-Esteem Multidimensional Test (TMA)*; Bracken, 2003); the parents of the SLD group also rated their children as more anxious and depressed, relative to parents of

control group, using the *Test of Anxiety and Depression (TAD;* Newcomer, Barenbaum & Bryant, 1995).

The national literature reviewed here reveals some important gaps calling for additional exploration. In effects, none to date has extended the investigation to other dimensions of psychopathology, such as somatic complaints, social and thought problems and rule-breaking and aggressive behaviors, in Italian children and adolescents with SLD. The CBCL is a measure of psychopathological symptoms, as those described above, and it is widely-used in the clinical contexts in Italy. It is therefore surprising that relatively little research has compared Italian SLD and TD groups on all of the CBCL syndrome subscales. To our knowledge, only one study (Ghisi et al., 2016) has used all of the CBCL - Youth Self-Report syndrome subscales (CBCL-YSR, Achenbach & Rescorla, 2001) to investigate differences between a group of Italian university students with dyslexia and control group. The authors found higher levels of somatic complaints, social and attentional problems in university students with dyslexia than controls, using this measure. The question of whether such differences exist even earlier in development in Italian population remains open. Thus, additional research is needed to determine which psychological consequences may affect children and adolescents with SLD in a context like the Italian one.

In addition to exploring more in-depth psychological features of Italian children and adolescents with SLD, it may be important to analyze whether mothers and fathers of these patients are equivalent in their reports. Previous investigations both in TD and clinical populations have evaluated the agreement between parents and teachers or have involved comparisons between adolescents' self-reported behavior ratings versus information provided by parents or teachers on the same behaviors. Cross-informant agreement tended to be lower for internalizing problems than for externalizing problems (Achenbach, McConaughy & Howell, 1987; Dahle et al., 2011; Stanger & Lewis, 1993; Youngstrom, Loeber & Stouthamer-Loeber, 2000), and particularly low for depressive disorders (Cantwell, Lewinsohn, Rohde & Seeley, 1997). Results of a recent meta-analysis by Nelson and Harwood (2011) indicated that parents and teachers of children and adolescents with learning disability (LD) were generally equivalent in their reports, whereas they reported greater depressive symptomatology for students with LD than these students reported for themselves. Studies concerning the agreement between mothers and fathers on child's psychopathological symptoms measures are very rare

both in TD (Achenbach et al., 1987; Duhig, Renk, Epstein & Phares, 2000; Grietens et al., 2004) and clinical populations (Achenbach et al., 1987; Treutler & Epkins, 2003). For example, a meta-analysis conducted by Duhig and colleagues (2000) showed moderate correspondence between mothers and fathers in ratings of internalizing behavior and large correspondence in ratings of externalizing behavior. To our knowledge, none has investigated agreement between mothers and fathers of children and adolescents with SLD on the CBCL. In clinical practice, the CBCL is filled in by the mother or father, according to parent that is present at the child assessment. Thus, the knowledge of this aspect is important from a clinical perspective.

AIMS

We conducted a preliminary study examining mothers' and fathers' reports on all of the eight CBCL syndrome subscales. First aim of the present study was to gain more in-depth knowledge about emotional and behavioral problems in Italian children and adolescents with SLD. In this study, we used the CBCL, a standardized and widely used measure to assess the psychopathology problems (i.e., anxious/depressed, withdrawal/depression, somatic complaints, social problems, thought problems, attention problems, rule-breaking behaviors, and aggressive behaviors) of Italian children and adolescents. We compared the mothers' ratings of the SLD group with those of control group. In line with the literature reviewed above, we expected that the SLD group would exhibit significantly higher scores on the CBCL, both on the internalizing problems and externalizing problems subscales, relative to group without SLD.

Second aim was to examine if mothers and fathers of the children and adolescents with and without SLD reported the same kind and strength of psychological problems. The CBCL is a very useful clinical tool for identifying emotional and behavioral problems in populations with atypical development since it considers parental observation in daily contexts (Achenbach & Rescorla, 2007). Since both mothers and fathers know the child best, we hypothesized large correspondence between mothers and fathers in ratings of their children/adolescents' behaviors; in other words, we expected that the fathers could be likewise reliable in describing problem behaviors in their children/adolescents with and without SLD.

METHODS

Participants

This study involved a total of 51 monolingual Italian children and adolescents: 22 children and adolescents with SLD and 29 children and adolescents without SLD.

Children and adolescents with SLD were recruited at the Center for the diagnosis and rehabilitation of learning disorders (SOS Dyslexia Center) at Modena, Italy; children and adolescents without SLD were recruited by families of the Northern and Southern Italy that voluntarily participated in the study.

The mean age of the SLD group was 12.31 ($SD = 2.88$) and the group included 12 males and 10 females. The mean age of the comparison group was 10.96 ($SD = 2.74$) and included 14 males and 15 females. The two groups did not differ significantly on age [$t(49) = 1.705$; $p = .094$] and gender [$\chi^2(1, N = 51) = .20$, $p = .657$]. All children had no history of major cerebral damage, congenital malformations, or visual or hearing impairments.

With regard to children/adolescents with SLD, their diagnosis met the requirements of the DSM-4 (American Psychiatric Association, 2000) complied with the guidelines typically adopted by Italian clinical services (Panel, D.A.E.R.D. Consensus Conference, 2007), namely: they had an adequate IQ level (IQ above 85), but scored substantially lower on standardized tests (in reading, writing, and /or mathematics) than expected for their age, schooling, and level of intelligence. Each participant had a moderate SLD and the diagnoses were distributed as follows: 1 (5%) dyslexia, 3 (13%) dysorthography, 1 (5%) dyscalculia and 17 (77%) mixed disorders.

The study met ethical guidelines for human subject protections, including adherence to the legal requirements of the study country. Parents gave informed written consent for participation in the study, data analysis, and data publication.

Procedure

The CBCL was completed by all mothers of the children and adolescents with SLD and without SLD. In the SLD group, 11 fathers completed the CBCL; in the control group, the fathers that completed the CBCL were 18.

To all of the children and adolescents with SLD were administered tests for assessing cognitive level, reading,

writing and math abilities. All of them were assessed in a quiet room of the SOS Dyslexia Center by a trained psychologist. Prior to the assessment, the child/adolescent was introduced to the room with his/her mother such he/she became familiar with the environment and the psychologist. During the child/adolescent's assessment, the mother and father was told to fill in the CBCL outside the room.

The cognitive level of the children and adolescents with SLD was measured with the *Raven's Coloured Progressive Matrices (CPM)* (Raven, 1958) for the children 7 to 11.50 years old, and with the *Wechsler's Intelligence Scale for Children - Fourth Edition (WISC-IV)* (Wechsler, 2003a, 2003b) for the adolescent 11.58 to 16.92 years old.

The reading, writing and math abilities of the children and adolescents with SLD were measured using standardized diagnostic tests, typically used in Italy to assess children with SLD, namely: words and non-words reading tests from the *Battery for the Evaluation of Developmental Dyslexia and Dysorthography (DDE-2)* (Sartori, Job & Tressoldi, 1995, 2007); the *MT reading text* (Cornoldi & Colpo, 1998, 2012); the *Battery for the Assessment of Writing Skills (BVSCO-2)* (Tressoldi, Cornoldi & Re, 2013); the *Battery for the Developmental Dyscalculia (BDE-2)* (Biancardi, Bachmann & Nicoletti, 2016).

Materials

- *Child Behavior Checklist (CBCL)* (Achenbach, 1991; Achenbach & Rescorla, 2001). The CBCL is a well-validated standardized measure of emotional, social and behavioral problems in children and adolescents between the ages of 6 and 18. Parents is asked to rate 113 items describing whether the child/adolescent is currently exhibiting, or had exhibited within the past 6 months, specific emotional and behavioral problems. Items are rated on a scale of 0 (not true), 1 (somewhat true), or 2 (very true). The CBCL includes eight "syndrome subscales": Anxious/Depressed; Withdrawal/Depression; Somatic Complaint; Social Problem; Thought Problem; Attention Problem; Rule-Breaking Behavior; Aggressive Behavior. In the present study, all of the syndrome subscales were used. The CBCL also provides an internalizing total score and externalizing total score. The CBCL demonstrates good psychometric properties (Achenbach & Rescorla, 2001). Italian translation/adaptation and standardization was by Frigerio and colleagues (2004).

- *Battery for the evaluation of developmental dyslexia and dysorthography (DDE-2; Sartori et al., 1995, 2007)*. This tool is a widely used diagnostic test in Italy. It consists of five subtests for the evaluation of oral reading (single grapheme identification, lexical decision task, words reading, nonwords reading, and identification of homophones) and three subtests for the evaluation of writing (words dictation, nonwords dictation, and sentences with homophone words dictation). The subtests selected for the present study were words reading and nonwords reading. In the first one, the child is asked to read a list of words and in the second subtest a list of nonwords. Each child is asked to read aloud as quickly and accurately as possible. The procedure requires the examiner to time the performance and make note of the mistakes without interrupting the child. For each subtest, the time (in seconds) and the number of incorrect pronunciations (errors) in reading the list of stimuli are scored.
- *MT reading text (Cornoldi & Colpo, 1998, 2012)*. The MT test is a psychometrically valid Italian instrument that measures oral reading speed and accuracy and consists of a series of texts for all of the school grades. The child is asked to read aloud as quickly and accurately as possible the text chosen according to his or her school grade. The examiner is not allowed to intervene when the child made a mistake, but only if he or she skips a line. During the test, the examiner times the reading and makes note of the mistakes. Number of syllables per second (speed) and number of word misread (errors) in reading the text are scored.
- *Text dictation - Battery for the Assessment of Writing Skills (BVSCO-2; Tressoldi et al., 2013)*. This test is a standardized and widely used Italian test that consists of writing a text read aloud by the examiner. The test includes a series of texts for all of the school grades. Number and quality of errors are considered.
- *Battery for the Developmental Dyscalculia (BDE-2; Biancardi et al., 2016)*. BDE-2 is a standardized battery that explores several aspects of math with several different timed tasks in which accuracy is recorded. The tasks include: counting, Arabic numbers reading, Arabic numbers writing, multiplication tables, mental addition and subtraction operations, written operations, triplets (the child/adolescent chooses the largest number among a set of three Arabic numbers), insertions (the child/adolescent places a number in one of four possible positions among three other numbers), and approximate

calculation. Three partial quotients (Number Quotient-NQ, Count Quotient-CQ, Number Sense Quotient-NSQ) and a global quotient (TQ) are calculated.

Statistical analyses

All statistical analyses were carried out using SPSS 21.0 for Windows with an alpha level of .05. Prior to conducting analyses, data were checked for violation of assumptions using the Kolmogorov-Smirnov test. Because distributions for some of the dependent variables were not normal, Mann-Whitney tests were conducted to assess potential differences in the eight CBCL syndrome subscales and in the internalizing/externalizing total scores between the mothers' reports of the SLD group and control group. Effect sizes (r) for Mann-Whitney U tests were calculated using the formula $r = \frac{Z}{\sqrt{N}}$ where N is the total number of participants in the whole sample; the standard values of r for small, medium, and large effect sizes are .1, .3, and .5 respectively (Field, 2009, p. 550).

We also conducted a series of Mann-Whitney tests to evaluate potential differences in the eight CBCL syndrome subscales and in the internalizing/externalizing total scores between the fathers' reports of the SLD group and control group.

A series of preliminary paired-samples t -tests were performed to compare mothers and fathers of children/adolescents with and without SLD and thus evaluated whether there were or not differences between the mothers' and fathers' ratings on the CBCL syndrome subscales.

RESULTS

Descriptive data on all of the eight CBCL syndrome subscales, according to the mothers' reports, and results of statistical comparisons using Mann-Whitney tests are presented in Table 1.

Relative to control group, the children and adolescents with SLD obtained significantly higher internalizing total scores and externalizing total scores. Analyses of the syndrome subscales revealed that the scores on the Anxious/Depressed, Withdrawal/Depression, Social Problem and Attention Problem subscales were significantly higher for SLD group compared to non-SLD group. However, no significant differences were found between the two groups

Table 1 – Behaviors reported from the mothers of children and adolescents with SLD and without SLD

| CBCL syndrome subscales | SLD group (<i>n</i> = 22) | | | Control group (<i>n</i> = 29) | | | Mann-Whitney test | | |
|---------------------------|-------------------------------|------|-------|-----------------------------------|------|-------|-------------------|-----------------|----------|
| | M | SD | range | M | SD | range | <i>U</i> | <i>p</i> | <i>r</i> |
| Anxious/Depressed | 6.18 | 3.66 | 0-14 | 3.86 | 2.68 | 0-10 | 198 | .021 | .32 |
| Withdrawal/Depression | 9.36 | 4.26 | 1-17 | 5.45 | 3.46 | 0-14 | 150.5 | .001 | .45 |
| Somatic Complaint | 2.73 | 2.60 | 0-9 | 1.76 | 1.38 | 0-5 | 272 | .359 | .13 |
| Social Problem | 3.64 | 2.48 | 0-11 | 2.31 | 1.75 | 0-6 | 212 | .039 | .29 |
| Thought Problem | 3.36 | 2.70 | 0-11 | 2.52 | 1.96 | 0-8 | 264.5 | .295 | .15 |
| Attention Problem | 7.00 | 3.57 | 0-14 | 2.66 | 2.61 | 0-9 | 109.5 | <.001 | .56 |
| Rule-Breaking Behavior | 2.59 | 2.38 | 0-7 | 1.41 | 1.32 | 0-4 | 237 | .111 | .22 |
| Aggressive Behavior | 4.45 | 2.70 | 0-10 | 3.14 | 2.22 | 0-9 | 226.5 | .075 | .25 |
| Internalizing Total Score | 18.27 | 9.13 | 1-36 | 11.07 | 6.47 | 1-26 | 164 | .003 | .41 |
| Externalizing Total Score | 7.05 | 4.49 | 0-16 | 4.55 | 3.15 | 0-13 | 211.5 | .040 | .29 |

Note. Mean, standard deviation (*SD*), range, and differences (Mann-Whitney test) between the two groups expressed as *p*-values and effect sizes are reported.

Significant results are in bold.

on the Somatic Complaint, Thought Problem, Rule-Breaking Behavior and Aggressive Behavior subscales.

Examination of the number of children/adolescents who fell within clinical range (defined as score below the 5th percentile) on CBCL total internalizing behaviors, total externalizing behaviors, and eight syndrome subscales is presented in Table 2. A higher number of children/adolescent with SLD fell within clinical range on almost all the CBCL subscales (i.e., Anxious/Depressed, Withdrawal/Depression, Somatic Complaint, Social Problem, Thought Problem, Attention Problem) and for total internalizing and externalizing behaviors.

Descriptive data on all of the eight CBCL syndrome subscales, according to the fathers' reports, and results of statistical comparisons using Mann-Whitney tests are presented in Table 3.

No significant differences were found on CBCL between the two groups of fathers.

Paired-samples *t*-tests indicated that the mothers (*N* = 29) reported significantly more anxious/depressed (*M* = 4.97,

SD = 2.91), withdrawal/depression (*M* = 7.48, *SD* = 4.17) and somatic complaint (*M* = 2.14, *SD* = 1.94) problems, relative to the fathers (anxious/depressed, *M* = 3.69, *SD* = 3.36; withdrawal/depression, *M* = 5.21, *SD* = 4.73; somatic complaint, *M* = 1.31, *SD* = 1.42) [anxious/depressed, *t*(28) = 2.093, *p* = .046, *r* = .38; withdrawal/depression, *t*(28) = 2.648, *p* = .013, *r* = .48; somatic complaint, *t*(28) = 2.333, *p* = .027, *r* = .42]. The mothers also reported more total internalizing behaviors (*M* = 14.59, *SD* = 7.48) than the fathers (*M* = 10.21, *SD* = 8.72) [*t*(28) = 2.710, *p* = .011, *r* = .49].

There were no significant differences between mothers' and fathers' ratings regarding the child's social (mothers, *M* = 2.97, *SD* = 1.82; fathers, *M* = 2.83, *SD* = 2.47), thought (mothers, *M* = 2.97, *SD* = 1.99; fathers, *M* = 2.66, *SD* = 2.22), attention problems (mothers, *M* = 4.21, *SD* = 3.74; fathers, *M* = 4.21, *SD* = 3.49), rule-breaking (mothers, *M* = 1.72, *SD* = 1.79; fathers, *M* = 1.34, *SD* = 1.72), aggressive (mothers, *M* = 3.41, *SD* = 2.11; fathers, *M* = 3.24, *SD* = 2.46) and externalizing behaviors (mothers, *M* = 5.14, *SD* = 3.45; fathers, *M* = 4.59, *SD* = 3.64).

Table 2 – Number and percentage of children/adolescents with scores on the CBCL syndrome subscales below the 5th percentile (CBCL clinical range) as reported from mothers in the SLD and control groups

| CBCL syndrome subscales | SLD group (n = 22) | Control group (n = 29) |
|---------------------------|-----------------------|---------------------------|
| | N (%) | N (%) |
| Anxious/Depressed | 3 (14) | - |
| Withdrawal/Depression | 15 (68) | 10 (35) |
| Somatic Complaint | 3 (13) | - |
| Social Problem | 1 (5) | - |
| Thought Problem | 2 (9) | 1 (3) |
| Attention Problem | 1 (5) | - |
| Rule-Breaking Behavior | - | - |
| Aggressive Behavior | - | - |
| Internalizing Total Score | 15 (68) | 9 (31) |
| Externalizing Total Score | 1 (5) | - |

Table 3 – Behaviors reported from the fathers of children and adolescents with SLD and without SLD

| CBCL syndrome subscales | SLD group (n = 11) | | | Control group (n = 18) | | | Mann-Whitney test | | |
|---------------------------|-----------------------|-------|-------|---------------------------|------|-------|-------------------|------|-----|
| | M | SD | range | M | SD | range | U | p | r |
| Anxious/Depressed | 4.73 | 4.08 | 0-12 | 3.06 | 2.78 | 0-10 | 76.5 | .317 | .14 |
| Withdrawal/Depression | 6.64 | 5.66 | 0-19 | 4.33 | 3.99 | 0-15 | 75.5 | .296 | .15 |
| Somatic Complaint | 1.91 | 1.76 | 0-6 | .94 | 1.06 | 0-3 | 65.5 | .134 | .22 |
| Social Problem | 3.64 | 2.29 | 1-7 | 2.33 | 2.50 | 0-10 | 65.5 | .134 | .21 |
| Thought Problem | 3.36 | 2.16 | 1-7 | 2.22 | 2.21 | 0-8 | 68 | .173 | .20 |
| Attention Problem | 5.45 | 3.47 | 0-11 | 3.44 | 3.36 | 0-10 | 69.5 | .188 | .19 |
| Rule-Breaking Behavior | 1.45 | 1.75 | 0-6 | 1.28 | 1.74 | 0-5 | 84.5 | .521 | .10 |
| Aggressive Behavior | 3.45 | 2.21 | 0-7 | 3.11 | 2.65 | 0-9 | 87 | .611 | .08 |
| Internalizing Total Score | 13.27 | 10.53 | 1-37 | 8.33 | 7.08 | 0-25 | 72.5 | .238 | .17 |
| Externalizing Total Score | 4.91 | 2.98 | 1-11 | 4.39 | 4.06 | 0-14 | 81 | .438 | .11 |

Note. Mean, standard deviation (SD), range, and differences (Mann-Whitney test) between the two groups expressed as *p*-values and effect sizes are reported.

DISCUSSION

Although psychological consequences affecting children and adolescents with SLD were well documented in countries with opaque orthography (Biotteau et al., 2016; Maughan et al., 2003; McNamara et al., 2008; Nelson & Harwood, 2011; Willcutt et al., 2013; Wilson et al., 2009) and in countries with transparent but complex orthography, such as Norway (Dahle et al., 2011; Knivsberg & Andreassen, 2008), we thought it was hard to generalize the results of this international literature to Italian children and adolescents with SLD. The acquisition of academic skills varies considerably in languages with opaque orthography, such as English and French, and in languages with more transparent orthography, such as Italian (Morlini, Stella & Scorza, 2014). For example, it is known that learning to read in English is characterized by a slower increase in accuracy, relative to learning of transparent orthographies; many errors in reading and writing words can still be expected even after several years of schooling (e.g., Coltheart & Leahy, 1996). Instead, the regular orthographic system of the Italian language makes it relatively easy to learn to read and write. By the end of the first year of primary school 90% of the Italian children are able to read (Cossu, 1999; Goswami, Gombert & De Barrera, 1998) and reading/writing skills are consolidated at the end of primary education (Scorza et al., 2015; Zoccolotti, De Luca, Di Filippo, Judica & Martelli, 2009). Thus, Italian children with SLD have soon to face the gap between them and their peers and this environmental condition may soon impact on the psychological development of these children. Nevertheless, to date, psychopathological symptoms in Italian children and adolescents with SLD were inadequately investigated.

The few studies that have examined the emotional and behavioral features of Italian children and adolescents with SLD have mainly focused on anxiety and mood disorders (Bonifacci et al., 2016; Chiappedi & Baschenis, 2016; Mammarella et al., 2016; Margari et al., 2013). We therefore had a specific focus on all of the eight CBCL syndrome subscales to evaluate not only anxious and depressive symptoms, but also somatic complaints, social, thought and attention problems, rule-breaking and aggressive behaviors. Despite the CBCL is a widely used tool in Italian clinical practice, at our knowledge only Ghisi and colleagues (2016) examined multiple psychopathological symptoms in Italian university students with dyslexia on CBCL-YSR. They found higher levels of somatic complaints, social and attentional

problems in the group with dyslexia, relative to controls. Less is known about the presence of these emotional problems at earlier ages in Italian individuals with SLD. Thus, the main goal of the current study was to analyze whether mothers of children and adolescents with SLD reported more psychopathological problems in their sons/daughters on CBCL, relative to mothers of TD children and adolescents.

Overall, our results appear consistent with the international literature thus substantially confirming our hypothesis. Our preliminary findings indicated significant differences between the SLD group and control group, with more psychopathological symptoms in the SLD group.

The mothers of children and adolescents with SLD involved in the present study reported significantly higher levels of attention problems than controls. Specifically, the mothers of the SLD group mentioned more often than the control group that their sons/daughters had difficulty concentrating and sustaining their attention, and suffered from mental confusion or daydreaming. The examination of the number of children/adolescents that fell within the clinical range, revealed that only one children with SLD showed an attention deficit. Thus, our findings corroborate other authors' reports of children and adolescents with SLD having attention problems, even when no attention disorders or ADHD have been diagnosed (Heiervang, Stevenson, Lund & Hugdahl, 2001).

The mothers of the children and adolescents with SLD involved in the present study also reported significantly higher levels of anxiety and withdrawal/depression in their sons/daughters than controls. The CBCL internalizing total score was significantly higher in the SLD group than control group. As reviewed above, anxious and depressive symptoms were found to be more common in children and adolescents with dyslexia and with comorbid learning disorders. These young students may encounter several difficulties when their academic work demands good reading and writing skills; in addition, school-level variables (e.g., the negative teacher-child relationship) might reduce the confidence and diligence with which they approach their school work (Hornstra, Denessen, Bakker, Bergh & Voeten, 2010) and enhance their loneliness (Majorano, Brondino, Morelli & Maes, 2017). This condition may thus generate negative cascading effects on the child emotional development, such as low self-esteem and self-confidence, that may later result in a genuine anxious/depressive disorder. In our study, the percentage of children and adolescents with SLD that scored below the 5th percentile

was very high for the Withdrawal/Depression subscale and total internalizing problems (about 68% for both) and almost twice as high for anxious/depressed + withdrawal/depression symptoms and for total internalizing symptoms than that of TD children and adolescents. These results extend previous findings showing that the SLD might be a risk factor that concurring in determining internalizing disorders in Italian children and adolescents.

An interesting finding from this study has to do with the social problems that we found to be more frequently reported by the mothers of children/adolescents with SLD than in the control group. The social problems reported by the mothers of SLD group mainly included difficult relationships with peers and dependence on adults. To date, few studies highlighted social problems in this specific population of children and adolescents. For instance, some authors (Forness & Kavale, 1996; Nabuzoka & Smith, 1993) found that children with LD were often ejected and few popular among their peers, they were seen to be shyer, more help-seeking and liable to bullying than TD children. Dahle and colleagues (2011) found that parents of Norwegian adolescents reported participants with severe dyslexia to display significantly more social problems than controls on CBCL. The Italian study conducted by Bonifacci and colleagues (2016) highlighted in children with SLD a higher degree of social maladjustment than controls, reported by the parents on TAD questionnaire. Our results seem to bring new evidence in favor of high risk of social problems in Italian children and adolescents with SLD.

No significant differences emerged between our two groups in terms of somatic complaints and thought problems. These data are in line with the study conducted by Biotteau and colleagues (2016) but in contrast with other studies that showed higher scores on the CBCL somatic complaint and thought problem subscales in children and adolescents with dyslexia, relative to TD peers (Dahle et al., 2011; Willcutt & Pennington, 2000). These conflicting findings may be due to differences in sample size and simple criteria selection. For example, Dahle and colleague (2011) specifically focused on children with severe dyslexia, while our SLD group is more heterogeneous. However, examination of the number of children/adolescents showing deficits on CBCL revealed that among children/adolescents with SLD three fell within clinical range on the Somatic Complaint subscale and two on the Thought Problem subscale, while among the children/adolescents without SLD only one children scored below the 5th percentile on the Thought Problem subscale. Further

research may clarify whether Italian children and adolescents with SLD are at risk for somatic and thought disorders.

With regard to externalizing behaviors, the CBCL externalizing total score was significantly higher in the SLD group than control group, though the two groups did not significantly differ on the Rule-Breaking and Aggressive Behavior subscales alone. These findings are consistent with previous reports by other authors on children with dyslexia (Heiervang et al., 2001; Knivsberg & Andreassen, 2008; Willcutt & Pennington, 2000; Willcutt et al., 2013) and RD associated with MD (Willcutt et al., 2013) and suggest that having SLD might represent a specific risk factor for externalizing psychopathology.

Second aim of the present study was to examine if mothers and fathers of children and adolescents with and without SLD reported the same kind and strength of emotional and behavioral problems on their sons/daughters. Considering the fathers' evaluation on the CBCL, data revealed that fathers of children and adolescents with SLD and fathers of TD peers did not differ in their ratings. This was an unexpected result, since we hypothesized to find differences similar to those found in the comparison between the mothers of the two groups. In TD populations, studies reported that there was low agreement on standardized measures of problem behaviors between informants from different settings (e.g., between parents and teachers, between parents and children; for instance, see Grietens et al., 2004) and moderate or high agreement between informants from similar settings, such as between mothers and fathers (e.g., Grietens et al., 2004; Seiffge-Krenke & Kollmar, 1998). The meta-analysis by Duhig and colleagues (2000) showed moderate correspondence between mothers and fathers in ratings of internalizing behavior and large correspondence in ratings of externalizing behavior. With regard to children or adolescents with SLD, most of the studies has evaluated the agreement between parents and teachers on standardized measures of emotional and behavioral problems. Some authors found that parents and teachers were generally equivalent in their reports (e.g., Nelson & Harwood, 2011). By contrast, other authors found that teachers reported fewer psychological problems than parents on the CBCL, especially internalizing problems (e.g., Knivsberg & Andreassen, 2008). In these studies mothers and fathers were part of the same group, even if correspondences and/or disagreements between mothers and fathers on the CBCL in this clinical population have never been investigated in detail. The present study is a first step in this direction. Comparing mothers' and fathers'

ratings, our preliminary analyses showed that mothers and fathers reported significantly different ratings on the CBCL Anxious/Depressed, Withdrawal/Depression, Somatic Complaint subscales and on the internalizing total score, with higher scores reported by the mothers. No differences were found between mothers and fathers on social, thought, and attention problems, and rule-breaking and aggressive behaviors. In general, our preliminary analysis suggests that the agreement between mothers and fathers tend to be low for the main internalizing problems and higher for externalizing behaviors.

These results partially contrast with the studies on TD populations reviewed above, but they are in line with the study conducted by Seiffge-Krenke and Kollmar (1998) and with the meta-analysis conducted by Achenbach and colleagues (1987) including clinical and non-clinical samples. These authors found that the agreement tended to be higher for externalizing than for internalizing problems, with mothers reporting more internalizing problems in their children than fathers. Phares (1997) suggested that the mothers appeared to be more accurate in reporting internalizing problems as compared to other informants, such as fathers. Having more contact with a child can increase the parent's awareness of problems (van der Ende, 1999). Because mothers use to have more contact with the child than fathers, they may become more aware of the child's problems. As suggested by Treutler and Epkins (2003), this might explain why the mothers involved in the present study reported more internalizing problems than fathers. A second possible reason for this discrepancy between the two parents is the differential psychological profile of mothers and fathers of children with SLD. Compared to mothers, fathers of children with LD have been found to show higher avoidant attachment, lower attachment anxiety, and lower use of active coping strategies (Al-Yagon, 2014). However, Bonifacci and colleagues (2014) did not find differences between mothers and fathers of children with dyslexia in terms of parental distress or anxiety and depression symptoms.

These results do not support our hypothesis that mothers and fathers of children/adolescents with SLD agree in the description of their children's emotional and behavioral problems on CBCL. The differences that we highlighted between mothers and fathers on CBCL call into question the reliability of the fathers in describing internalizing problems in their children and adolescents. However, since few fathers accepted to participate in the study, our findings should be considered as preliminary results.

Limitations and future research

Limitations of this work should be noted. First, the sample size utilized in the present study was small, the number of fathers in particular. Thus, the generalizability of our findings should be carefully considered. The limited sample size may have impacted the ability to detect differences on some CBCL subscales between SLD group and control group. It is also possible that differences or concordances between mothers and fathers for some variables were not detected due to the limited sample size. Replication of the present findings with larger samples is clearly needed in the future. More research in clinical and nonclinical samples of children and adolescents is also needed to test the hypotheses on the low mother-father agreement with regard to internalizing problems.

Second, our SLD group was heterogeneous in terms of the characteristics of the disorder and age. The association with MD seems to be an additional risk factor for lower global self-esteem, experience or perception of a lower social support (by the classroom, parents and friends), higher attention deficit, higher emotional and depression symptoms, and higher school maladjustment (Willcutt et al., 2013). Future research should replicate the current study considering type and severity of the SLD to examine if development for participants with both reading/writing difficulties and MD is more hampered by internalizing and externalizing problems than what is the case of participants with reading/writing difficulties only. Moreover, it would be interesting to specifically focus on psychopathological symptoms of Italian adolescents with SLD. A sharp increase has been well documented during adolescence in the vulnerability associated with various emotional, social, and behavioral problems (e.g., Dahl, 2004; Lee & Hankin, 2009); in contrast, less research has investigated the pervasiveness of such difficulties among adolescents with SLD.

Third, although this study has contributed to our understanding of the psychopathological problems in Italian children and adolescents with SLD, it does not clarify whether these problems co-occur with the SLD or they are consequence of these learning difficulties. There is a need for longitudinal studies aimed to understanding the extent to which SLDs contribute to the prediction of emotional and behavioral outcomes and provide useful information regarding their value as indices of risk for future psychopathological disorders.

CONCLUSION

The current study extends previous research by examining what mothers and fathers report about internalizing and externalizing behaviors in their children and adolescents with SLD. Overall, our preliminary results seem to show that the mothers of children and adolescents with SLD report more anxious, depressive, social and attentional problems in their sons/daughters, relative to mothers of TD peers. Thus, this specific clinical population might be at greater risk the development both internalizing and externalizing disorders. Our findings confirm the clinical need to early identify Italian children with SLD (Morlini, Stella & Scorza, 2015) to early contrast additional risk factors that may increase

the probability of psychopathological problems in these children.

Our results call attention to the importance of separately considering mothers' and fathers' ratings on clinical measures of problem behaviors. CBCL filled in by mothers might be more reliable in describing emotional and behavioral problems of the child/adolescent with SLD, than questionnaires filled in by fathers. It is now widely accepted by researchers and clinicians that reports by multiple informants are needed to provide information on children's problems (van der Ende, 1999; Nelson & Harwood, 2011). However, our findings seem to suggest that mother reports are to be preferred to father reports. Further research on larger samples is needed to shed light on these rating differences.

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