

## Parental Perception of Emotional Problems in Children and Adolescents with Mixed Specific Developmental Disorder

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### Abstract

This study examined the emotional and behavioral problems of children with Mixed Specific Developmental Disorders (MSDD) as reported by their parents (main caregiver). Forty-four children with MSDD (43% males and 57% females, mean age 10.55 yrs, SD 2.85) attending the Bambino Gesù Children's Hospital health clinics and their parents participated in the study. They were compared with children affected by specific learning disabilities (SLD) (61 children: 56% males and 44% females, mean age 10.92 yrs, SD 2.59). Measurements included the Child Behavior Checklist (CBCL) and detailed cognitive and learning assessment. CBCL T scores indicated that 57% of the children with MSDD and 36% of those with SLD had an internalizing mental health problem ( $p < 0.05$ ), particularly as regard the withdrawn/depressed scale (61% MSDD versus 57% SLD,  $p < 0.05$ ), thought problems (59% versus 55%,  $p < 0.01$ ) and attention problems (64% versus 60%,  $p < 0.05$ ). Thus, MSDD children appeared to have a greater incidence of psychopathological traits than SLD children. In clinical settings, the assessment of learning disabilities in children with MSDD should include both cognitive and learning abilities, as well as psychological/mental health aspects.

**Keywords:** Mixed specific developmental disorder; Dyslexia; Child behaviour checklist; Psychological distress, Internalizing problems

### Abbreviations:

LD – Learning disabilities; MSDD – Mixed specific developmental disorder; SLD – Specific learning disabilities; CBCL - Child behaviour checklist

### Introduction

Learning difficulties are a common problem in children and adolescents and affect 10-20% of the school-age population. A specific category of LD, called Mixed Specific Developmental Disorders is characterized by the co-presence of specific developmental disorders of speech and language, of scholastic skills, and of motor function, without a clear predominance of one disorder over the others. Some degree of cognitive impairment is often, but not always, present. Additionally, MSDD may be associated with other diseases and/or sensory deficits. As a consequence, the heterogeneity of the clinical picture of MSDD may hinder their identification as a single diagnostic category, and psychological difficulties may be undertreated compared to the other problems. [1,2]. MSDD affect 2.5% of the Italian school population [3].

### Currently, psychopathological characteristics in MSDD have not been explored

Developmental studies on the psychopathological characteristics of patients with MSDD may enhance health practitioners' understanding on children's disease-specific symptoms, psychosocial functioning and development (in the context of daily life from the perspectives of both

pediatric patients and their parents). The risks of psychopathological symptoms and low adaptability in children and pre-adolescents with MSDD were assessed by using the standardized Italian version of the Child Behavior Checklist for ages 6-18 (CBCL/6-18) [4] for parents. It is a parent questionnaire with eight syndromic scales (syndrome subscales) (Anxious/Depressed, Withdrawn/Depressed, Somatic Complaints, Social Problems, Thought Problems, Attention Problems, Rule-Breaking Behavior, and Aggressive Behavior) which are useful for screening emotional and behavioral problems across multiple cultures [5,6]. In fact, given the lower cognitive and language skills of young children, the majority of child's psychopathological symptoms instruments have been developed with proxy parent reports used to gain information about children. Although no normative Italian data are available to date on the most recent CBCL, the psychometric properties of the previous CBCL version [7,8] have been investigated recently in a study conducted in Italy, which showed the good validity and reliability of the instrument for use on the Italian population. We compared patients with MSDD to patients with Specific Learning Disabilities as:

- They have major differential diagnosis from the patients with MSDD
- Their emotional and psychopathological aspects was carefully studied

The aim of this study is to investigate the emotional problems of children and adolescents with mixed specific developmental disorder (MSDD), from their parental point of view.

## Methods

### Participants

One hundred and five children were recruited in the study between January 2010 and March 2011: forty-four had a diagnosis of mixed specific developmental disorders (MSDD), while sixty-one were affected by specific learning disabilities (SLD). MSDD and SLD were classified according to the Classification of mental and behavioural disorders [9]. Exclusion criteria were neurological and/or sensory impairment; presence of primary psychopathological disorder (autism or psychosis); severe cognitive impairment (IQ less than 85 for SLD, and less than 71 for MSDD). Parents provided written informed consent and the study was approved by the Hospital Ethic Committee.

### Measurements

#### Emotional and behavioral problems

The Achenbach empirically based (ASEBA) rating system [7,10-13] was devised in the 1990s to remedy the lack, at that time, of official classification systems dealing with the psychopathology of childhood and adolescence [4,14,15]. The Aseba system includes a number of tools such as the Child Behavior Checklist (CBCL), the Teacher's Report Form (TRF) and the Youth Self-Report form (YSF). They were initially created for the developmental age, and then later extended to adults. They were also translated into fifty-eight languages and used in studies of fifty different cultures [10,11,16-19]. It can therefore be considered a great tool with regard to usability and validation. The aim of this questionnaire is to assess, using various sources of information, emotional-behavioral problems of children and adolescents on the basis of empirically derived syndromic scales. In particular, the questionnaires for school age (6-18 years) used in the present study consist of two parts: one part deals with the assessment of competence and adaptive functioning with "Activities", "Sociality" and "School" steps. The other part concerns the assessment of emotional-behavioral problems according to an empirical perspective.

The description of the problems is covered 118 items, rated on a scale of 0 to 2 (0 = not true, 1 = sometimes true, 2 = very true or often true); syndromic scales consist of items that tend to be co -present; Internalizing and Externalizing Scales consist of the sum of certain scales that reflect the presence, in the first case, of problems mainly related to internal problems (such as social withdrawal, or depression), in the second case, they reflect an open conflict with the outside (e.g aggressiveness and conduct problems). Although these scales are based on conflicting issues, in some individuals it is possible to detect the simultaneous presence of both problems. Finally, the Total Problems Scale represents the sum of all items and provides an overview of problematic emotional, behavioral and social aspects of the patient compared to other children and teenagers of his/her own sex and age. Another level of evaluation is represented by clinical diagnosis with "DSM-oriented" scales, based on the diagnostic criteria of some of the main psychiatric disorders in the DSM-IV, although the diagnosis of these disorders is not exactly equivalent to those given in the manual [20].

**The CBCL was administered to the main caregiver, who completed it while in the ward**

Cut-off points, between "clinical" scores (that indicated psychopathology), borderline scores and normal scores, were identified according to the method described by Achenbach & Rescorla [4]. Briefly, norms were based on the 90th and 95th percentile (T score = 65 and T score = 70 respectively) for syndromic scales and DSM-oriented scales, and on the 82th and 93th percentile (T score = 60 and T score = 65 respectively) for broadband and Total Problems scales. Normalized T scores to raw scores were also assigned according to the method described in Achenbach's Manual [4] and used ADM™ (2001).

### Cognitive and learning assessment

The assessment of cognitive abilities and skills was made according to the parameters defined for Italy from the Consensus Conference on Specific Learning Disorders [21] and the National System Guidelines-National Institute of Health [22].

### Statistical analysis

Absolute and relative frequencies, means and standard deviations were computed as appropriate. Comparison between MSDD and SLD patients were performed using the Chi-squared test for categorical variables, and the Student T-test for not paired data in case of continuous variables. Multiple logistic regression analysis was used to assess the relationship between patients with different diagnosis (MSDD or SLD) and psychological problems (CBCL internalizing, externalizing, and total scales scores), adjusting for cognitive level (QIT WISC III) and demographic variables: child age and gender and parental education. Three separate logistic models were built for internalizing, externalizing and total CBCL scores respectively. The scores were categorized as clinical (T scores  $\geq 60$ ) versus normal (T scores  $< 60$ ). Statistical analysis was performed using STATA (StataCorp 2007. Stata Statistical Software: Release 10. College Station, Tx: StataCorp).

## Results

### Characteristics of the subjects

The research sample, aged between 7 and 18 years, was divided into two groups. The first group consisted of forty-four children with mixed specific developmental disorder and the second group consisted of sixty-one children with specific learning disabilities. All subjects attended the Clinic Psychology Unit of the Bambino Gesù Children's Hospital in Rome from January 2010 to March 2011. The first group comprised 43.18% males and 56.82% females, and the second group 55.74% males and 44.26% females. Each group was divided in age clusters and the majority of the sample ranged between 7 and 10 years. In the overall sample (N=105) most of the parents attended secondary school and were white-collar workers. All the other characteristics of the samples are described in Table 1. Furthermore, the children with MSDD had an average IQ=  $86.41 \pm 13.67$  (SD 13.67) and the children with SLD had an average IQ=  $100.08 \pm 11.64$  (SD 11.64). Table 1 were described the sociodemographic characteristics of the study sample, separated for patients with MSDD and with SLD. There were no significant differences in the sex and age distribution according to chi-square tests applied to the contingency tables. The professional level of the parents was assigned according to the ISTAT classification [23].

| Characteristics             | SLD    |       | MSDD  |       | p      |
|-----------------------------|--------|-------|-------|-------|--------|
|                             | N 61   |       | N 44  |       |        |
|                             | N      | %     | N     | %     |        |
| Gender                      |        |       |       |       |        |
| Male                        | 34     | 55.74 | 19    | 43.18 | 0.204  |
| Female                      | 27     | 44.26 | 25    | 56.82 |        |
| Age (in years)              |        |       |       |       |        |
| 7-10                        | 29     | 47.54 | 24    | 54.55 | 0.262  |
| 11-13                       | 24     | 39.34 | 11    | 25    |        |
| 14-18                       | 8      | 13.11 | 9     | 20.45 |        |
| Mothers' Educational Level  |        |       |       |       | 0.363  |
| Primary/Lower secondary     | 16     | 26.23 | 8     | 18.6  |        |
| Upper secondary/University  | 45     | 73.77 | 35    | 81.4  |        |
| Fathers' Educational Level  |        |       |       |       | 0.493  |
| Primary/Lower secondary     | 16     | 26.23 | 9     | 20.45 |        |
| Upper secondary/University  | 45     | 73.77 | 35    | 79.55 |        |
| Mothers' Professional Level |        |       |       |       | 0.296  |
| Blue-collar worker          | 15     | 28.3  | 8     | 19.05 |        |
| White-collar worker         | 38     | 71.7  | 34    | 80.95 |        |
| Fathers' Professional Level |        |       |       |       | 0.971  |
| Blue-collar worker          | 10     | 16.39 | 7     | 16.67 |        |
| White-collar worker         | 51     | 83.61 | 35    | 83.33 |        |
|                             | M      | DS    | M     | DS    |        |
| QIT Wisc III                | 100.08 | 11.64 | 86.41 | 13.67 | <0.001 |

**Table 1:** Socio-demographic characteristics of the study sample (N.105)

For the educational and professional levels, comparisons of the parents' characteristics showed no significant differences in terms of low or high level of education and blue-collar and white-collar worker classification.

### General and syndromic scales of the CBCL

Analysis of the data collected from our clinical sample revealed a greater psychopathological vulnerability of children and teens with MSDD compared to those with SLD. In particular, the patients with MSDD obtained "clinical" scores in general scales as well as in specific syndromic scales that measure emotional and relational problems. The first part of Table 2 were described the percentage of patients from two clinical populations in the three general scales, e. g. internalizing, externalizing and total problems, subdivided into clinical, no clinical

and borderline levels. The second part were described the T mean scores, standard deviations and results of statistical analyses of the syndromic and DSM-oriented scales on the CBCL divided by the number of patients with MSDD and SLD, and in the entire study sample. Significant effects were observed for the internalizing and total problems scales, where the patients with MSDD had significantly higher scores than the patients with SLD. Regarding the eight syndrome scales, the subjects with MSDD had higher scores on three scales, namely withdrawn/depressed scale ( $p < 0.05$ ) in the internalizing scale, and thought problem ( $p < 0.01$ ) and attention problem ( $p < 0.05$ ) scales in the total problem scale, than the subjects with SLD. There were no significant differences when the DSM-oriented scales for the two study populations are compared.

|                        | SLD   |       | MSDD  |       | TOTAL |       | p <sup>+</sup> |
|------------------------|-------|-------|-------|-------|-------|-------|----------------|
|                        | N 61  |       | N 44  |       | N 105 |       |                |
|                        | N     | %     | N     | %     | N     | %     |                |
| General scales         |       |       |       |       |       |       |                |
| Internalizing problems |       |       |       |       |       |       | <0.05          |
| Normal* <60            | 39    | 63.93 | 19    | 43.18 | 61    | 58.1  |                |
| Clinical ≥60           | 22    | 36.07 | 25    | 56.82 | 44    | 41.9  |                |
| Borderline             | 12    | 19.67 | 8     | 18.18 | 17    | 16.19 |                |
| Pathological           | 10    | 16.39 | 17    | 38.64 | 27    | 25.71 |                |
| Externalizing problems |       |       |       |       |       |       | 0.36           |
| Normal <60             | 49    | 80.33 | 32    | 72.73 | 61    | 58.1  |                |
| Clinical ≥60           | 12    | 19.67 | 12    | 27.27 | 44    | 41.9  |                |
| Borderline             | 6     | 9.84  | 7     | 15.9  | 33    | 31.43 |                |
| Pathological           | 6     | 9.84  | 5     | 11.36 | 11    | 10.48 |                |
| Total problems         |       |       |       |       |       |       | <0.05          |
| Normal <60             | 142   | 68.85 | 19    | 43.18 | 61    | 58.1  |                |
| Clinical ≥60           | 19    | 31.15 | 25    | 56.82 | 44    | 41.9  |                |
| Borderline             | 9     | 14.75 | 11    | 25    | 20    | 19.05 |                |
| Pathological           | 10    | 16.39 | 14    | 31.89 | 24    | 22.86 |                |
| Syndromic scales       | M     | DS    | M     | DS    | M     | DS    |                |
| Anxious/depressed      | 58.84 | 8.26  | 61.64 | 9.31  | 60    | 8.79  | 0.107          |
| Withdrawn/depressed    | 56.87 | 8.41  | 61.43 | 10.75 | 58.78 | 9.68  | <0.05          |
| Somatic complaints     | 57.43 | 6.93  | 59.36 | 7.76  | 58.24 | 7.32  | 0.182          |
| Social problems        | 58.1  | 7.09  | 61.14 | 9.94  | 59.37 | 8.49  | 0.07           |
| Thought problems       | 55.01 | 6.4   | 59.09 | 9.27  | 56.72 | 7.95  | <0.01          |
| Attention problems     | 59.92 | 7.5   | 63.93 | 10.36 | 61.6  | 8.99  | <0.05          |
| Rule-Breaking Behavior | 53.52 | 5.17  | 55.39 | 6.24  | 54.3  | 5.69  | 0.098          |

|   |       |      |       |       |       |      |       |
|---|-------|------|-------|-------|-------|------|-------|
| Aggressive behavior   | 55.61 | 6.44 | 56.93 | 7.63  | 56.16 | 6.96 | 0.338 |
| DSM-oriented scales   |       |      |       |       |       |      |       |
| Affective problems  | 58.82 | 8.24 | 62.27 | 10.33 | 60.27 | 9.28 | 0.059 |
| Anxiety problems  | 60.04 | 8.34 | 61.95 | 8.03  | 60.85 | 8.23 | 0.244 |
| Somatic problems  | 56.34 | 6.29 | 58.2  | 7.68  | 57.12 | 6.93 | 0.176 |
| Attention Deficit /Hyperactivity problem  | 59.33 | 7.36 | 61.11 | 8.21  | 60.08 | 7.74 | 0.245 |
| Oppositional Problem  | 56.07 | 6.41 | 55.18 | 5.35  | 55.69 | 5.98 | 0.457 |
| Conduct problem   | 53.6  | 5.33 | 55.7  | 6.86  | 54.49 | 6.08 | 0.081 |
| ° p values refer to the comparison between SLD and MSDD patients  |       |      |       |       |       |      |       |
| * Normal range (cut-off <60); Clinical range (cut-off ≥60); Borderline range (between 60 and 65); Pathological range (>65). |       |      |       |       |       |      |       |

**Table 2:** Percentages, means and standard deviations of CBCL scales' scores in clinical sample

### Educational level of parents

In the second phase, the data were used to examine individual and family characteristics as potential correlates of psychopathologic vulnerability. Variables significantly associated with CBCL general scales (internalizing, externalizing and total problems) in multivariable logistic analyses were: type of disorder, gender, age in years, Intelligence Quotient according to the Wechsler Intelligence Scale for Children Third edition (WISC-III) [24], and the educational level of parents (Table 3). We tested these associations using logistic regression

models. In these models, the presence of patients with MSDD remained significantly associated with the CBCL internalizing problem (OR 2.81; 95% CI 1.06-7.42) and total problem (OR 4.46; 95% CI 1.06-12.42) scales. We also investigated whether gender and age of the patient and educational level of parents could have an important effect on the results of our sample. The tendency of girls to score higher than boys on the internalizing scales, as described in many studies [25,26] was not present in this sample.

|                               |                             | CBCL general scales |              |       |               |              |       |       |               |       |
|-------------------------------|-----------------------------|---------------------|--------------|-------|---------------|--------------|-------|-------|---------------|-------|
|                               |                             | Internalizing       |              |       | Externalizing |              |       | Total |               |       |
|                               |                             | OR                  | (95%CI)      | P     | OR            | (95%CI)      | P     | OR    | (95%CI)       | P     |
| Type of disorder              | SLD                         | 1                   |              |       | 1             |              |       | 1     |               |       |
|                               | MSDD                        | 2.81                | (1.06-7.42)  | <0.05 | 1.5           | (0.50-4.55)  | 0.471 | 4.46  | (1.61-12.41 ) | <0.01 |
| Gender                        | Female                      | 1                   |              |       | 1             |              |       | 1     |               |       |
|                               | Male                        | 1.46                | (0.62-3.44)  | 0.387 | 0.96          | (0.35-2.65)  | 0.941 | 0.92  | (0.38-2.22 )  | 0.86  |
| Age in groups (yrs)           | 7-10 (years)                | 1                   |              |       | 1             |              |       | 1     |               |       |
|                               | 11-13 (years)               | 1.38                | (0.55-3.48)  | 0.493 | 0.41          | (0.13-1.34)  | 0.14  | 1.42  | (0.54-3.69)   | 0.48  |
|                               | 14-18 (years)               | 1.1                 | (0.34-3.52)  | 0.878 | 0.5           | (0.12-2.15)  | 0.353 | 1.03  | (0.31-3.39)   | 0.97  |
| QIT Wisc III                  |                             | 1                   | (0.97-1.04)  | 0.708 | 1             | (0.97-1.05)  | 0.815 | 1.02  | (0.99-1.06)   | 0.21  |
| Educational levels of parents |                             |                     |              |       |               |              |       |       |               |       |
| Mother                        | Upper secondary / Univesity | 1                   |              |       | 1             |              |       | 1     |               |       |
|                               | Primary /Lower secondary    | 2.98                | (0.86-10.38) | 0.09  | 3.87          | (1.00-14.89) | <0.05 | 3.88  | (1.09-13.79)  | <0.05 |

|        |                              |      |             |      |      |             |       |      |             |      |
|--------|------------------------------|------|-------------|------|------|-------------|-------|------|-------------|------|
| Father | Upper secondary / University | 1    |             |      | 1    |             |       | 1    |             |      |
|        | Primary / Lower secondary    | 0.37 | (0.11-1.23) | 0.11 | 0.38 | (0.09-1.64) | 0.194 | 0.51 | (0.15-1.73) | 0.28 |

\*T score clinical range (cut-off  $\geq 60$ ) vs normal range (cut-off  $< 60$ )

**Tables 3:** Association between presence of problems in CBCL general scales\* and socio-demographic. Characteristics: results of multivariable logistic analyses

Several studies reported age effects in specific scales [27,28] in general, younger children scored higher on the aggressive behavior and externalizing scales, whereas older children and adolescents scored higher on the withdrawn scale [29]. In our study, the entire sample was divided into three different age groups in relation to the level of schooling they were following (7-10 years or primary school, 11-13 years or secondary or middle school, and 14-18 years or high school). In our population there were no age effects in CBCL broad and specific scales.

Finally, the educational level of mothers seemed to influence the psychological development of the children. In particular, when the mother's educational level was lower, the risk of the child developing a psychopathological vulnerability was higher. This observation has been reported in other studies [30].

## Discussion

The aim of this study was to explore psychopathological characteristics in children with MSDD, as well as to determine what kind of link exists between psychopathological vulnerability and MSDD. Although the CBCL does not diagnose, but suggests risk of psychopathology, the clinical CBCL scores suggested a connection between the syndrome scales of depressive withdrawal and problems of thought. The items of thought syndrome scale regard especially sleep disorders. This condition is often present in depressive disorders [1]. As regards the attention problems, it is important to emphasize that patients with MSDD have attention difficulties and not a primary neuropsychological attention disease. In fact, while the CBCL syndromic scale of attention problems in these patients revealed clinical aspects, the scores obtained by the same patients for the CBCL DSM-oriented scales of Attention Disorder and Hyperactive Disorder are in the normal range. The patients with MSDD have greater emotional and relational problems compared to those with SLD. In addition, the experience of illness connected with sensory deficits or medical conditions such as epilepsy or hypothyroidism often created in the patient an image of him/herself as being vulnerable which prevented the development of a healthy self-esteem.

Another important difference between patients with MSDD and those with SLD concerned the cognitive resources. Patients with SLD had greater cognitive resources than those with MSDD and can thus better develop cognitive processes such as mentalization, imagination, thinking, and symbolization, as well as greater resources for coping with stressful events. Then, patients with MSDD appeared to be at higher risk for psychopathologic vulnerability than patients with SLD. In clinical practice, the relationship between psychopathology and MSDD is very controversial: often, one element is treated but not the others, because clinical specialists did not used to carry out assessments that included physical, learning and emotional aspects,

which were often co-present in children with MSDD. The absence of adequate diagnosis and treatment could be due to the complexity in identifying a new diagnostic category and in the formulation of criteria acceptable to the scientific community. Consequently there was a lack of suitable assessment guidelines.

Italian Educational Legislation with Law N.170 [31] provided directives for school and university teachers only for the treatment of SLD with didactic or educational instruments and supports, and psychological projects. These forms of educational treatment have stimulated public awareness of SLD and have reduced scholar drop-out, especially in secondary schools. Therefore, the treatment of SLD involves both mental health services and schools. Both these institutions are called upon to provide adequate responses to the needs of people with SLD. From December 2012, the Italian Educational Legislation provides new strategies of educational intervention for children and adolescents with Special Educational Needs (SEN), including those with MSDD, according to the diagnostic model of the International Classification of Functioning [32]. Due to the lack of information about the rising level of psychopathological risk, there was no adequate clinical treatment and educational intervention available before 2012 and this was thus the case for our sample. So in the diagnostic phase, even for children affected by MSDD, it is essential to design an integrated intervention, including both a cognitive and a neuropsychological assessment of learning disabilities as well as an emotional evaluation of the child and his parents. It is important to consider the parents and to work on their ability to accept their child's diagnosis. This could mitigate the impact of the difficulties involved and improve the prognosis with a better acceptance of the diagnosis and better efficacy of the treatment.

## Conclusions and Limitations

Our sample was recruited at the Clinic Psychology Unit of the Bambino Gesù Children's Hospital, a tertiary referral paediatric hospital in Rome, Italy. Consequently, the results may not be representative of the entire patients' population. Therefore, as the CBCL 6-18 must be complete by child's caregivers, may be therefore subject to distortions of their conscious judgment. In our sample, parents often had difficulties accepting their child's discomfort and their answers to the CBCL items could be influenced by a mechanism of denial or normalization. MSDD children appeared to have a greater incidence of psychopathological symptoms than SLD children. However, SLD also is recognized as a condition that can involve emotional and behavioural dysfunctions, when mental problems such as internalizing problems are not evident and are thus not treated. In the light of these deliberations and clinical experiences, it is essential to consider the emotional aspects such as protective or vulnerability factors in the evolution of learning disabilities, both MSDD and LSD. In clinical settings, the assessment of learning disabilities in children

with MSDD should include both cognitive and learning abilities, as well as psychological/mental health aspects. For future research it could be interesting to provide CBCL reports of children and teachers and might highlight different point of view.

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