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Psychological Adjustment, Social Responsiveness and Parental Distress in an Italian Sample of Siblings of Children with High-Functioning Autism Spectrum Disorder

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Abstract The psychosocial adjustment of siblings of children with autism spectrum disorder (ASD) is a relatively recent field of study, but results in literature are often inconsistent, and studies specifically focused on samples of siblings of children with high-functioning ASD are very few. This paper analyzes the level of social impairment (index of broader autism phenotype), the risk of internalizing and externalizing problems (index of psychological adjustment) and the parenting distress in an Italian sample of siblings of children with high-functioning ASD (n = 26). The presence of risk factors (birth order, sex and number of siblings in the family) and the role of the siblings' age are also explored. The data were collected through self-report instruments administered to parents. The results do not show higher average risk levels for psychosocial adjustment problems, even though a minority of the cases is at risk for social impairments (7.7 %), internalizing (23.1 %), externalizing (3.8 %) and total difficulties (11.5 %) and for distress in the parent–child system (15 %). Distress in the parent-sibling system seems to be modulated by the sibling's features and to be higher when the sibling is older than the child with ASD. Additionally, a link between difficulties in psychological adjustment and broader autism phenotype is suggested.

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Introduction

The role of the family in interventions with children with autism spectrum disorder (ASD; APA 2013) has grown over the years. Family has acquired the value of a basic resource for children with ASD, and it is generally accepted in the clinical field that this type of resource should be empowered. A recent field of studies has focused on the adjustment of typically developing siblings of children with ASD (ASD-siblings). After an initial phase in which studies about family mainly focused on a higher level of maladjustment, disintegration and distress due to the presence of a child with ASD, researchers have begun to focus on the broader autism phenotype (BAP), which can appear in family members of individuals with ASD. BAP comprises a spectrum of cognitive, neuropsychological, neurolinguistic, social, communicative and behavioral difficulties similar to those observed in individuals with ASD but less severe (Bauminger and Yirmiya 2001).

Various researchers have attempted to verify the higher risk of adjustment and well-being in ASD-siblings compared with siblings of normally developing children or children with other developmental disorders (intellectual disability, language disorder, etc.), and most researchers have assessed depression and anxiety levels in ASD-siblings (Ferrari 1984; Gold 1993; Mates 1990; Rodrigue et al. 1993). Nevertheless, the results are inconsistent, probably because of differences in sample size, participants and control groups. Gold (1993) found higher depressive levels in ASD-siblings compared with siblings of children without disorders; similarly, Rodrigue et al. (1993) found a

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higher risk for internalizing and externalizing problems in siblings of children with autism compared with two control groups: siblings of typically developing children and siblings of children with Down syndrome. Conversely, other researchers found that ASD-siblings showed an adequate level of psychosocial adjustment and a positive self-concept (Ferrari 1984; Mates 1990).

More recently, several studies have shown that ASD-siblings are not more vulnerable to develop adjustment problems than different control groups (Kaminsky and Dewey 2002; Macks and Reeve 2007; Tomeny et al. 2012; Dempsey et al. 2012). In particular, Tomeny et al. (2012) suggested the presence of a correlation between the maladjustment of a child and the maladjustment of his/her sibling not only when one of the siblings has ASD but also when both siblings show typical development. These results also showed a positive correlation in the whole sample between the number of internalizing and externalizing problems in the target child (children with ASD and matched subjects in the control group) and parental distress levels.

Nevertheless, some researchers found specific variables characterizing ASD-siblings that may be considered as risk or protective factors: Kaminsky and Dewey (2002) showed that the psychosocial adjustment of participants in the experimental group increased as the number of siblings in the family increased; Macks and Reeve (2007) found that various variables such as being female, having only one sibling, being the elder sibling and having a low socio-economic status may be significant predictors of a worse psychosocial adjustment for the ASD-sibling group but not for the control group of siblings of typically developing children. In a sample of 1755 participants ranging in age from 3 to 18 years, Shivers et al. (2013) observed that only ASD-siblings between 6 and 11 years of age were more at risk for the development of subclinical anxiety difficulties.

Only a few researchers have specifically focused on high functioning ASD-siblings, who generally show normal functioning (Verté et al. 2003; Rao and Beidel 2009), with some exceptions. For instance, Verté et al. (2003) found that, among their participants, only the subsample of ASD-siblings between 6 and 11 years of age showed a higher number of behavioral problems compared with the control group. Conversely, the female ASD-siblings considered themselves more socially capable, and those between 12 and 16 years of age also had a more positive self-concept compared with the control group. Rao and Beidel (2009) observed quite a high level of internalizing problems in the ASD-siblings group and significantly higher distress scores in the parent/child-with-ASD system compared with the control group. The difference in distress levels seemed to be mainly associated to the behavioral factors of the child with ASD.

According to previous research studies (Gold 1993; Rodrigue et al. 1993), the risk of developing depressive and behavioral symptoms appears to be higher for ASD-siblings during adolescence and pre-adolescence than during childhood. Considering this evidence, Orsmond and Seltzer (2009) focused on adolescent ASD-siblings. Their results showed that anxious and depressive symptom levels of ASD-siblings were not higher than those of the general adolescent population. Nevertheless, sisters exhibited significantly higher anxiety symptoms than brothers, who reported lower levels of depressive symptoms than the general masculine adolescent population. These results have partially confirmed the diathesis-stress model (Ingram and Luxton 2005; Rende and Plomin 1992; Zuckerman 1999): the participants with the highest number of broader autism phenotype features and stressing life events showed high depressive and anxious symptoms.

The most studied autistic endophenotype areas are, generally, communicative, social interactive and narrow interest areas. Constantino et al. (2006) analyzed the possibility of a social development impairment in a sample of ASD-siblings using the Social Responsiveness Scale (SRS; Constantino et al. 2000): ASD siblings from multiple-incidence families showed the highest SRS scores (index of higher social impairment), followed by siblings of probands with ASD, whereas siblings of probands with psychopathology unrelated to autism exhibited the lowest scores. Di Pasquale et al. (2011) observed similar results using the SRS: the differences in the social responsiveness score between ASD-siblings and siblings of normally developing children were significant, whereas there were no significant differences between these two groups and the third group, which consisted of siblings of children with ADHD and learning disorders.

Based on the literature in this field, it appears clear that various study lines have noted partially inconsistent data, particularly concerning the existence of an increased risk for affective and behavioral impairments. More information about emotional, adaptive and social features is needed not only to focus attention on the difficulties and needs of ASD-siblings but also to promptly assess all of those cases of developing risk, which are often ignored. Considering this, we designed a pilot study with the following objectives: assessment of the level of social impairment (index of the social autism endophenotype) and the potential presence of an increased risk for internalizing (anxious, depressive etc.) or externalizing (aggressive, oppositional etc.) problems in a group of normally developing siblings (ASD-siblings) of children with high functioning ASD; analysis of the potential relationships between the levels of social impairment and internalizing problems and the role that these variables may have in influencing the parents' distress levels regarding ASD-siblings; identification of

socio-demographic risk factors such as birth order, sex and number of siblings in the family and evaluation of possible effects due to the age of the ASD-siblings.

Method

Participants

The sample included siblings of high functioning children with ASD attending public child psychiatry centers. The inclusion criteria for the ASD-siblings were the following: age ranging from 4 to 12 years and 11 months, absence of developmental disorder diagnoses and having a sibling with high functioning ASD (IQ $\geq$ 70).

Participants with a previous diagnosis of developmental disorder or with low functioning siblings were excluded to reduce the presence of confusing variables as much as possible. The psychiatrist of each center contacted families with the specified criteria, explained features of the study and asked them if they wished to take part in the research. Only one of the contacted families refused to be enrolled in the study for personal reasons. All of the parents signed the informed consent.

The final sample consisted of 26 ASD-siblings, ranging in age from 4 years and 2 months to 12 years and 9 months (M = 8 years and 11 months; SD = 2 years and 10 months). There were 14 boys and 12 girls. Twelve were older and 14 were younger siblings. Twenty-five participants were Caucasian, and one participant was biracial. Two participants came from the same family. The mean socio-economic level of the families was calculated with Hollingshead's index (Hollingshead 1975), based on two main variables (parents' education level and occupation). The level was medium–high: 22 families (88 %) had medium or high levels, and only three families (12 %) had a low or medium to low socio-economic level.

Procedure

For each of the ASD-siblings, the participation of one parent was required. Each parent was asked to complete the questionnaires administered by a qualified and trained researcher. The study complied with the ethical guidelines of the Italian Association of Psychology (AIP).

Measures

General Family Information

We created a questionnaire to obtain general information about ASD-siblings and their family. The information concerned parents' job and educational level, number of family members, birth order of the children, ASD-sibling's birthday, sex and grade attended.

Siblings' Social Responsiveness

The Social Responsiveness Scale (SRS; Constantino and Gruber 2005) was used as an index of the broader autism phenotype regarding social responsiveness. The SRS is a 65-item questionnaire that measures the level of social impairment through the parents' perceptions about reciprocal social behavior, communication and repetitive and stereotyped behaviors of children and adolescents between the age of 4 and 18. The SRS has shown good psychometric properties also in the Italian context, with high values of internal consistency (Cronbach's $\alpha > .90$). Regarding construct validity, the factor analysis indicates a stable structure and a good model fit.

Siblings' Psychological Adjustment

To evaluate this variable, we used Child Behavior Checklist 1½–5 (CBCL 1½–5; Achenbach and Rescorla 2000), suitable for parents of preschool-age children, and *Child Behavior Checklist 6–18* (CBCL 6–18; Achenbach and Rescorla 2001), suitable for parents of individuals aged between 6 and 18 years. The checklists are part of the Achenbach System of Empirically Based Assessment (ASEBA). In this work, the scores in the three general scales were used (Internalizing Problems, Externalizing Problems and Total Problems) as indexes of higher or lower psychological adjustment risk of ASD-siblings. The two CBCL forms can be administered to parents of children aged between 1.5 and 5 years and between 6 and 18 years. The forms include 99 and 112 items, respectively.

Validation studies of CBCL on the Italian population (Frigerio et al. 2004, 2006) highlighted a satisfactory internal consistency (Cronbach's αs ranged from .83 to .91) and a good applicability of the instrument in the country. ASEBA researchers have created a system of multicultural scoring (Ivanova et al. 2007; Rescorla et al. 2007, 2011) resulting in three scoring groups. Italy belongs to the group which includes the great majority of countries.

Parenting Distress

To assess the levels of parenting distress, the Parenting Stress Index-short form (PSI-SF; Abidin 1995) was administered to the parent participating in the study. The questionnaire is suitable for parents of children aged between 1 month and 12 years. The short form of PSI is a questionnaire that measures distress in the parent–child system and consists of 3 subscales: (1) Parental Distress
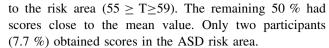
(PD); (2) Parent–Child Dysfunctional interaction (P-CDI); (3) Difficult Child (DC). The Italian adaptation of PSI-SF has exhibited good psychometric properties, with high reliability (Cronbach's α = .93) and excellent internal validity.

Data Analyses

The data were analyzed with SPSS 10.0. For the analysis concerning the social impairment level and the potential increased risk for internalizing and externalizing problems in ASD-siblings, descriptive statistics of ASD-siblings' scores were calculated and compared to the general population norms, available in the manuals of the instruments (Constantino et al. 2000; Achenbach and Rescorla 2000, 2001). To analyze possible correlations among social impairment levels and internalizing, externalizing and total problems, we applied Pearson's correlation coefficients. To evaluate the differences between subsamples (boys-girls; elder-younger siblings; one sibling-more siblings) in the levels of externalizing, internalizing and total problems and in the levels of distress in the parent/ASD-sibling system, we first calculated descriptive statistics. To show the potential existence of statistically significant differences, we then performed a non-parametric Mann–Whitney U test, as it can also be useful with particularly small samples (Ercolani et al. 2008). To verify potential effects due to the presence of various risk factors in a participant, we created a risk scale. The score of this scale ranged from 0 to 3 and was obtained by the sum of the risk factors: one point assigned to each. Spearman correlation coefficients were applied to analyze the correlations between the participants' score in the risk scale and each of the variables considered (externalizing, internalizing and total problems and total parenting distress). We applied the same method used to evaluate the differences between the other subsamples for the subsamples divided in terms of age group. To highlight other effects due to the age factor on the variables assessed through SRS, CBCL and PSI, we analyzed the correlations between the score of each of these questionnaires and checklist and the participants' ages using Pearson correlation coefficients.

Results

The mean T score of social responsiveness was outside the risk area for an ASD diagnosis (M = 48.15; DS = 8.83) and in line with the general population. The analysis of the distribution of the scores revealed that 23.1 % of the sample scored at least one standard deviation lower than the mean value (index of better social responsiveness), whereas 19.2 % of the sample had scores outside but close

to the risk area ($55 \geq T \geq 59$). The remaining 50 % had scores close to the mean value. Only two participants (7.7 %) obtained scores in the ASD risk area.

The sample mean T scores in the general scales of the CBCL were outside the risk area (Internalizing Problems: M = 52; Externalizing Problems: M = 47.8; Total Problems: M = 49.4). Nevertheless, some participants were at risk, as shown in Table 1.

As refers to parents' distress, the mean percentile of all of the parents recruited for the study was in line with the general population (the norms are available in the questionnaire manual; Abidin 1995), i.e. outside the risk area in the total distress level (M = 46.2) and in all of the subscales (PD: M = 47.9; P-CDI: M = 46.8; DC: M = 47). Among all of the parents recruited for the study, 15 % (n = 4) obtained scores that suggested that they were at risk ($p \geq 85$).

The obtained Pearson's correlation coefficients revealed a positive and significant correlation between the social responsiveness score and the internalizing problem score (r = .634; p = .001) and between the social responsiveness score and the total problem score (r = .493; p = .011). The correlation between the social responsiveness score and the externalizing problem score was not significant.

We verified the following socio-demographic variables, which are considered risk factors in the literature: being older than the sibling with ASD, being female and having only one sibling. The socio-economic status was not analyzed because it was quite uniform in the sample. Regarding the effects of the presence of multiple risk factors in one participant, no significant correlations emerged between the total score in the risk scale and each of the variables assessed (internalizing, externalizing and total problems in the ASD-sibling and parenting distress).

The older and younger siblings were divided in two subsamples (n(older) = 12; n(younger) = 14). Using the Mann–Whitney U test, no significant differences were found between the score achieved in the general scales of the CBCL by the participants of the two groups (p > .05). Conversely, some differences were found in the scores of the parents in the PSI-SF: their distress referring to the ASD-siblings was significantly higher when the ASD-siblings were older than the child with ASD (U = 41.000; W = 146.000; p = .027 < .05). This significant difference emerged not only in the total distress score but also in the *Parent–Child Dysfunctional Interaction* (P-CDI) (U = 45.500; W = 150.500; p = .047 < .05) and *Difficult Child* (DC) (U = 39.000; W = 144.000; p = .020 < .05) subscales. Conversely, the difference was not significant (p > .05) in *Parental Distress* (PD). However, none of the two subsamples revealed a mean distress score that reached high ($p \geq 85$) or clinically relevant levels ($p \geq 90$).

Table 1 Number and percentages of the participants at risk for internalizing, externalizing and total problems

	Internalizing problems		Externalizing problems		Total problems	
	n	%	n	%	n	%
ASD-siblings with borderline scores	3	11.5	2	7.7	3	11.5
ASD-siblings with clinical scores	6	23.1	1	3.8	3	11.5

ASD-siblings were divided into two subsamples based on their sex (n(boys) = 14; n(girls) = 12). After performing the Mann–Whitney U test, no significant differences emerged between the subsamples' scores in either the PSI-SF total score and subscale scores ($p > .05$) or in the CBCL general scales of total and internalizing problems ($p > .05$). The subsamples only showed significant differences in the CBCL scale of externalizing problems (U = 42.000; W = 120.000; $p = .030 < .05$). None of the subsamples reached mean borderline or clinical scores in the CBCL scale of externalizing problems.

ASD-siblings were divided into two subsamples based on the number of siblings they had (n(only 1 sib) = 18; n(more sibs) = 8). After performing the Mann–Whitney U test, no significant differences emerged between the subsamples' scores in either the PSI-SF total score and subscale scores ($p > .05$) or in the CBCL general scales of total, externalizing and internalizing problems ($p > .05$).

The sample was divided into two subsamples of 13 participants each based on the age group (younger age group: 4.2–8.8 years of age; older age group: 9–12.9 years of age). After performing the Mann–Whitney U test, no significant differences emerged between the subsamples' scores in either the social responsiveness scores measured with the SRS ($p > .05$) or in the CBCL general scales of total, externalizing and internalizing problems ($p > .05$). The significant differences found concerned parental scores in the PSI-SF, which were significantly higher for parents of the ASD-siblings belonging to the older age group (U = 31.000; W = 122.000; $p = .006 < .05$). A significant difference was found also in the P-CDI (U = 29.000; W = 120.000; $p = .004 < .05$) and DC (U = 32.000; W = 123.000; $p = .007 < .05$) subscales. The differences were not significant in the PD subscale ($p > .05$).

Nevertheless, most ASD-siblings in the older age group were older than their sibling with ASD (69.2 %; n = 9), whereas most ASD-siblings in the younger age group were younger than their sibling with ASD (76.9 %; n = 10). Mann–Whitney U test confirmed the existence of a statistically significant age difference between the subsamples divided according to birth order (U = 39.000; W = 144.000; $p = .021 < .05$).

Moreover, in the whole sample, significant and moderately positive correlations emerged between age and internalizing problems ($r = .422$; $p = .032 < .05$), age and externalizing problems ($r = .431$; $p = .032 < .05$), age

and total problems ($r = .494$; $p = .010 < .05$), age and total parenting stress ($r = .489$; $= .032 < .05$). In addition, the correlations between age and the following PSI-SF subscales were statistically significant: P-CDI ($r = .506$; $p = .008 < .01$) and DC ($r = .458$; $p = .019 < .05$). The correlation between age and social responsiveness was not statistically significant.

Discussion

We designed this pilot study to explore the features of a sample of 26 normally developing siblings of high-functioning children with ASD. We examined several variables concerning psychosocial adjustment and the associations among them within the group. Additionally, we analyzed differences between subsamples characterized by specific factors of interest identified as risk factors in previous studies (Macks and Reeve 2007; Orsmond and Seltzer 2009), but not in others (Shivers et al. 2013).

With rare exceptions (Rao and Beidel 2009; Verté et al. 2003), most researchers studying siblings of children with ASD included participants whose siblings were high or low functioning, without distinctions. Some researchers had the objective of evaluating potential increased risk levels for psychosocial adjustment in siblings of children with ASD, but they obtained inconsistent results (Dempsey et al. 2012; Gold 1993; Kaminsky and Dewey 2002; Macks and Reeve 2007; Rodrigue et al. 1993).

Results of this work confirmed findings of previous studies (Dempsey et al. 2012; Kaminsky and Dewey 2002; Shivers et al. 2013), which indicate that ASD-siblings are not exposed to a higher risk for the development of psychosocial maladjustment. Nevertheless, specific cases needing special clinical attention or risk monitoring over time should not be neglected.

Results of different analyses performed in this study will now be considered in detail. The first objective focused on the assessment of social impairments, evaluated with the SRS. The participants' mean score was slightly lower than the normative average score, indicating better social responsiveness. Therefore results found by Di Pasquale et al. (2011) were not confirmed: these researchers found a higher risk for social responsiveness impairments in a group of siblings of children with ASD, compared with a group of siblings of normally developing children. This

discrepancy may be due to differences in the method used in this work and the study conducted by Di Pasquale et al. (2011): in the present study we did not use a comparison group and only a source of information was available (a parent) to evaluate social responsiveness, whereas Di Pasquale et al. (2011) used comparison groups and two sources of information (parent and teacher). Nevertheless, we found that two participants from this research study were at risk for an ASD diagnosis, and five ASD-siblings obtained scores close to the risk area, without entering it. Therefore, even if the mean levels were in the normal range, in some cases it would be important to also monitor the presence of social responsiveness problems in ASD-siblings.

The first objective also concerned an evaluation of psychological adjustment. These data show the absence of an increased risk for affective and behavioral adjustment in ASD-siblings: the mean scores that the ASD-siblings obtained in the three general CBCL scales (Internalizing, Externalizing and Total Problem Scales) were in line with those of the general population and outside the risk area. This confirms findings from previous studies (Dempsey et al. 2012; Ferrari 1984; Kaminsky and Dewey 2002; Mates 1990; Tomeny et al. 2012; Verté et al. 2003). Conversely, less recent studies showed contradictory results (Gold 1993; Rodrigue et al. 1993).

Regarding the second objective, the analysis of the relationships among social responsiveness impairment levels and levels of internalizing and externalizing problems only showed a positive correlation between internalizing problems and social responsiveness levels. This evidence confirms the association between psychological difficulties, mainly depressive and anxious symptoms, and some aspects of the broader autism phenotype, as claimed in previous studies (Orsmond and Seltzer 2009). The second objective also concerned the analysis of distress levels and factors that influence them. The mean parental score in the PSI-SF total distress scale and in the subscales was not within the risk area. Nevertheless, 15 % of the parents showed high levels of distress. Rao and Beidel (2009) and Tomeny et al. (2012) showed how the distress level in the parent–child with ASD system can be influenced by affective-behavioral problems of the child with ASD. This study emphasizes the importance of monitoring not only parents' distress related to their child with ASD but also their distress concerning the parent/ASD-sibling system which is in the normal range in this sample but appears to be modulated by the features of the ASD-sibling, especially age.

The influence of socio-demographic risk factors identified in previous studies (Gold 1993; Kaminsky and Dewey 2002; Macks and Reeve 2007; Rodrigue et al. 1993) was the third objective. We assessed these factors

to emphasize potential differences in the vulnerability among subsamples.

This study was able to partially confirm a higher exposure to distress levels in the parent–child system in the group of ASD-siblings older than the child with ASD. This result concerned not only the total parenting distress scale but also the P-CDI and DC subscales. The P-CDI subscale concerns the dysfunctional interaction between parent and child, whereas the DC subscale addresses how difficult the parent perceives his/her child to be, based on the child's temperamental or behavioral features. There was no difference between older and younger siblings in the PD subscale, which deals with the distress of being a parent regardless of the child's features.

Nevertheless, this difference was not specific to the birth order and was also observed in the comparison between the two subsamples divided according to the age variable: a higher distress level in the parent-ASD-sibling system (total distress, P-CDI and DC subscales) was found in the participants of the older age group compared with those of the younger age group. Considering the statistically significant age difference between the ASD-siblings in the two subsamples created according to their birth order (siblings older than the child with ASD had a higher mean age than siblings younger than the child with ASD), it was impossible to discern effects due to birth order from those depending on the age group. This result confirms the tendency towards an increase in psychological maladjustment (internalizing and externalizing problems in the participants and distress in the parent–child system) with an increase in age (Gold 1993; Rodrigue et al. 1993).

Moreover, positive correlations were found between age and the following variables: internalizing, externalizing and total problems. Once again, the increase in maladjustment obtained with an increase in age is emphasized. The increase in external demands concerning academic performance, personal responsibilities and social pressure may influence the manifestation of anxiety, mood and behavior problems, which were either latent or better controlled previously.

The analyses of the other risk factors we considered (sex difference, number of siblings in the family) did not confirm findings from previous research (Kaminsky and Dewey 2002; Macks and Reeve 2007). The only significant difference obtained was between boys and girls in the externalizing problem scale: boys showed higher levels of externalizing problems. This result reflects sex differences in the general population (Rescorla et al. 2007).

The strengths of this study mainly consist in the original issues it deals with: previous researchers had focused on the levels of distress in the parent/child with ASD system (Rao & Beidel 2009; Tomeny et al. 2012), while this is one of the first studies to analyze the distress levels in the

parent/ASD-sibling system and their interaction with other variables, such as the sibling's social impairment levels, internalizing and externalizing symptoms. Additionally, this sample includes only siblings of children with high-functioning ASD.

The small sample size is, obviously, a limitation, affecting the significance we obtained in some of the analyses and a low power is related to the sample size. In order to find more clinically significant effects, in future works we will expand the sample and verify these results using different sources of information (inside and outside the family) and control groups of siblings, not only of normally developing children but also of children with different disorders or chronic illnesses. With a larger sample we may be able to confirm the tendencies we found in this study. Another limitation concerns the wide age range of this sample (4–12 years). It could be useful to analyze variables we considered in specific age groups, such as only preschool age children, school age children or adolescents. In the future, longitudinal works could be more useful than a cross-sectional study to underline relevant modifications which occur during development from preschool age to adolescence.

In conclusion, this pilot study is one of the few studies that analyze psychosocial adjustment in an Italian sample of normally developing siblings of high-functioning children with ASD. The results do not show higher average risk levels for psychosocial adjustment problems, even though a minority of the cases is at risk for social impairments, internalizing, externalizing and total difficulties and distress in the parent–child system. Distress in the parent-sibling system appears to be modulated by the sibling's age and to be higher when the sibling is older than the child with ASD. Additionally, the risk for psychosocial maladjustment seems to increase as the child grows older. Finally, a link between difficulties in psychological adjustment and broader autism phenotype is suggested.

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