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ORIGINAL CONTRIBUTION

Attachment and reflective functioning in children with somatic symptom disorders and disruptive behavior disorders

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Abstract

Our goal in conducting this study was to examine whether children with somatic symptom disorders (SSD) and disruptive behavior disorders (DBD) have higher rates of insecure or disorganized attachment and difficulties in mentalizing (operationalized as reflective functioning) as compared to a control group. Participants were 131 children (8–15 years) spanning two groups—a clinical group ($n=85$), comprised of children fitting the criteria of our target diagnostic classifications (SSD: $N=45$; DBD: $N=40$), as well as a comparison group of healthy control children ($n=46$). Children completed the Child Attachment Interview, which was later coded by reliable raters for attachment security and reflective functioning (RF). Consistent with our predictions, children in the clinical group had significantly lower RF and were significantly more likely to have insecure (over 80%) and disorganized attachment (over 40%) than children in the comparison group. In addition, RF was significantly lower in children with DBD than children with SSD. Furthermore, in the SSD group, children's RF regarding self was significantly lower than RF regarding others. Finally, consistent with prior studies, RF and attachment were associated. The findings indicate that school-aged children with SSD and DBD have higher rates of insecure and disorganized attachment. Consistent with theory, RF and attachment were loosely coupled, but RF alone differentiated among the diagnostic subgroups. Implications for treatment and prevention are discussed.

Keywords Attachment · Mentalization · Reflective functioning · Child psychopathology · Somatic symptom disorders · Disruptive behavior disorders

Introduction

Insecure attachment [1] and mentalization difficulties [2] have received increasing attention as general risk factors for the development of child and adolescent psychopathology. Emerging evidence suggests that both of these factors confer transdiagnostic risk for psychopathology across developmental stages, underscoring the importance of understanding how they operate in the context of different forms of pathology. However, research on these important constructs is sorely lacking in middle childhood and early adolescence [3, 4] despite the relevance of this developmental stage for psychological and interpersonal maturation.

Somatic symptom disorders (SSD) and disruptive behaviour disorders (DBD) are among the most common internalizing and externalizing difficulties seen in primary care clinical settings, making them important to understand. Despite their prevalence within medical settings, surprisingly little is known regarding attachment and mentalizing within these diagnostic groups [5]. The aim of this study is to increase our understanding of attachment and mentalizing difficulties in children diagnosed with these two disorders (SSD and DBD), as well as to examine whether children belonging to these two clinical groups exhibit similar or unique patterns with respect to attachment and mentalizing.

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SSD and DBD

SSDs are characterized by multiple physical complaints without identifiable physiological causes, as well as psychogenic headaches and generalized pain [6, 7], and are accompanied by thoughts, feelings, and unusual behaviors related to the physical symptom presentation. This clinical condition affects 5–7% of children, resulting in a high level of distress among parents (typically related to concerns regarding children's health), and leading to significantly greater medical service use [8]. Some studies identify general risk factors for the disorder including female gender, higher educational levels and higher socioeconomic status, exposure to frightening experiences (e.g., physical threat and sexual abuse) [5]. Other investigations cite higher levels of anxiety and post-traumatic symptoms as correlates and risk factors for the disorder [9]. Finally, evidence suggests that children with SSD have difficulties understanding, identifying, and verbalizing their emotions, also referred to as alexithymia [10].

DBDs, including oppositional-defiant disorder and conduct disorder, are associated with a range of problematic oppositional, aggressive, destructive and antisocial behaviors, and have been linked to negative long-term sequelae including peer rejection, poor academic performance, and risk for school dropout [7]. Persisting DBDs are associated with an increased risk for depression, substance use and legal problems, with high costs incurred for the community as the result of the symptoms [11]. Difficulties in emotion and behavior regulation associated with DBDs [12] are associated with low parental supportiveness and warmth [13].

Attachment in middle childhood and early adolescence

It is widely considered that attachment has implications for children's mental health, potentially because emotional and behavioral regulatory patterns developed within the parent–child relationship influence the way children regulate their emotions and behaviors [14]. In middle childhood and early adolescence, the goal of the attachment system is no longer assuring proximity to the attachment figure in case of threat (as in infancy). Children of this age have developed and rely on their internal working models to regulate distress [15]. However, children and adolescents still need and solicit help from attachment figures when faced with distressing, challenging or traumatic situations, such as when they are unable to regulate emotions on their own and require comfort and help with thinking and talking about their experiences [16].

Insecure attachment[1] can manifest in various different attachment strategies. Dismissing child attachment, thought to result from a consistent pattern of having one's attachment bids rejected or ignored, is characterized by avoidance of negative emotions and dismissal of dependency and the importance of attachment relationships. In contrast, preoccupied attachment, linked to an inconsistent pattern of parental responding to attachment bids, is associated with the hyper-activation of attachment-related needs, emotions, and attentional focus [17, 18]. Neither of these strategies are considered optimal for regulation of distress and meeting attachment needs over the long term [19], but both are considered adaptive within the context of primary attachment relationships in that they are the most effective strategy for ensuring attachment figures' psychological availability during an emergency. Further, both of these patterns of attachment provide the child with an organized or predictable strategy to deal with attachment-related stressors (the so-called conditional strategies [20]) that can be reliably deployed in times of need.

In contrast to these organized patterns of attachment, children with disorganized attachment lack an organized model for responding to distress, thereby increasing risk of emotional and behavioral dysregulation in the face of negative experiences [21]. Indeed, disorganized attachment is characterized as a breakdown, disintegration or absence of an attachment strategy, and is thought to be instantiated by the exposure to highly frightening experiences within the attachment relationship. Unsurprisingly, incidence of disorganized attachment is greater among children who have experienced child maltreatment [22], as well as among those whose attachment figures exhibit frightening or frightened caregiving behavior [23], or youth whose attachment figures are extremely disengaged or insensitive in their caregiving [24]. Importantly, rates of disorganized attachment are also elevated among youth residing in high-risk contexts (e.g., poverty), which in turn may compromise the quality of caregiving behavior' [22]. Child factors have also been shown to confer risk for disorganized attachment, including displaying high levels of irritability, inconsolability, or hypervigilance [25]. In particular, Padron and colleagues [26] indicate

[1] Note that in this paper, we use the attachment terms employed in the assessment of attachment in middle childhood on the Child Attachment Interview [17]—secure, dismissing, preoccupied, and disorganized. Note that in infancy, attachment classifications obtained from the Strange Situation Procedure are categorized in the following way: secure, avoidant, ambivalent/resistant, disorganized. And in adulthood they are categorized as autonomous, dismissing, preoccupied, and unresolved on the Adult Attachment Interview. For the sake of promoting clear communication, here we are consistent in our use of the former terms, but readers should note that the category names and the methods of coding behavior differ as a function of measurement tool and developmental stage.

that some features of the child (i.e., emotion regulation), may play a role in the development of a specific subgroup of children with disorganized attachment (although such features do not in and of themselves justify a disorganized classification) characterized by the absence of fear-driven behaviors in the Strange Situation Procedure [27]. Therefore, as Granqvist and colleagues [28] contend, disorganized attachment is caused by multiple child, parent, and dyadic factors, necessitating a multifactorial understanding of the attachment classification [29].

Considering the steep rise in the incidence of psychiatric disorders in middle childhood and early adolescence [30], it is particularly relevant to assess disorganized attachment in this age [31]. However, disorganized attachment has rarely been investigated in this age group because it is difficult to assess reliably with self-report, but this has changed with the introduction of interview measures such as the Child Attachment Interview [17], wherein disorganized attachment can be assessed via discourse and behavior of children as they respond to questions regarding themselves and their attachment relationships. In this way, the CAI bridges the gap between behavioral measures of attachment, used in earlier childhood (e.g., Strange Situation Procedure [27]) and narrative measures of attachment states of mind (Adult Attachment Interview [32]), used in adulthood.

Insecure attachment in general, and disorganized attachment specifically, is associated with increased risk of both externalizing [33–36] and internalizing difficulties in middle childhood [14, 31, 37–40]. In addition, lower capacities for mentalization have also been shown to be linked with more internalizing or externalizing problems in children and adolescents [41, 42], as well as with lower levels of agreement in parent and adolescent report of adolescents' internalizing symptoms [43], all of which are associated with long-term psychosocial risk. There is also some evidence suggesting that different subtypes of insecure attachment may be associated with internalizing as compared to externalizing problems [1]. While internalizing difficulties appear to be more strongly associated with dismissing and preoccupied attachment [14, 31, 44], externalizing difficulties are associated with disorganized attachment [1, 45–47].

To date, the majority of the research examining links between these constructs (attachment, mentalization) and clinical symptoms has been conducted within community samples using a developmental psychopathology theoretical framework, or within clinical samples of youth with heterogenous pathology [42, 43] and among children exposed to trauma [4]. While revealing valuable insights regarding the interrelations of these constructs in typically developing children, to complement our understanding of the links between these factors and psychopathology, what is now needed is the exploration of these links within more tightly controlled clinical samples of youth. Further research examining the associations between insecure and disorganized attachment and SSD and DBD may help to elucidate questions regarding whether particular types of attachment are more relevant for understanding different types of child psychiatric problems.

Mentalizing

Mentalizing, or holding the mind in mind [48], refers to the mental processes through which we interpret our own or others' actions as having meaning based on intentional mental states (e.g., desires, feelings, needs, beliefs and goals) [49]. Mentalizing develops within the context of secure attachment relationships [50]. Indeed, attachment and mentalization are considered to be loosely coupled [51], potentially because the parent's mentalizing and understanding of what the infant's behavior communicates about his/her needs facilitates sensitive responding and the development of secure attachment in the infant. It is in the context of secure attachment relationships that children learn about their minds and those of others. In secure early attachment relationships, the parent is orientated to the child's psychological experience, interprets his/her behavior as communication about emotional experience and intentions, and treats him/her as a being with a mind. Experiences such as these enable the child to discover his/her own mind and learn to think about him/herself and others as intentional agents [52]. During the first years of life, marked affect mirroring, a type of non-verbal communication in which the parent mirrors the infant's affects through marked facial displays, promotes young children's self-awareness and recognition of emotional states [53, 54]. By facilitating the development of second-order representations of children's internal states (i.e., the elevation of internal states to recognizable, and therefore, adjustable mental states), these interactions lay the roots of mentalizing regarding the self [50]. Further, although there is not likely a direct causal association between attachment and mentalization [55], in secure attachment relationships, children feel safe expressing their difficulties and experiencing their parents' benign interest in their minds. Experiences such as these are thought to facilitate mental exploration, which in turn enables the development of self- and other-understanding. Consistent with this model, parental mentalizing has been linked with child and adolescent mentalizing [55–57], stressing the importance of caregiving quality. Indeed, it may be the experience of being perceived as a mental agent that fosters the development of mentalization.

However, many children do not have sufficient opportunities to learn to mentalize about themselves and others due to parental unavailability or unwillingness to engage in the type of interactions through which these capacities develop.

In contrast, these parents may have engaged in a parenting style that is overly focused on behavior while neglecting the child's psychological experience. Although only a handful of studies have explored mentalization during middle childhood and early adolescence, extant research repeatedly links mentalizing difficulties [58] with borderline personality disorder [59, 60], externalizing difficulties [2, 61] and conduct problems [42, 62, 63] among community and justice-involved adolescents [64–66]. Less is known regarding mentalization and SSD, but deficits in theory of mind, a construct closely related to mentalization, have been associated with somatization in children [67] and adults [68].

The present study

The aim of the present study was to address gaps in knowledge regarding the association between attachment, mentalizing, and child psychiatric disorders such as SSD and DBD during middle childhood and early adolescence. We investigated our research questions among a clinical sample (comprised of children diagnosed with SSD or DBD) and a comparison group. The first objective was to compare the clinical (composed of SSD and DBD) and comparison groups in terms of attachment distributions and child reflective functioning (CRF). Based on prior research findings regarding SSD [38, 69–71] and DBD [45, 72–75], here we anticipated that children in both diagnostic subcategories would be more likely to have insecure and disorganized attachments representations than the comparison group, and that CRF would be significantly lower in the clinical group [41, 62] than in the comparison group.

To clarify whether SSD and DBD were associated with distinct or similar vulnerabilities of insecure and disorganized attachment and mentalizing difficulties (as discussed above), our second objective in conducting this study was to compare the SSD and DBD groups in terms of attachment and CRF. Based on prior work, we hypothesized that disorganized attachment would be more prevalent among children with DBD [14], and as a result, that mentalizing would be lower in the DBD group [63]. Here, we also examined levels of mentalizing in the SSD and DBD groups separately with respect to the comparison group, predicting that children with SSD would be more impaired in terms of self-focused [76], but potentially not other-focused RF, as compared to controls. This hypothesis was exploratory due to the paucity of prior work on this topic, but was grounded in theorizing that children with internalizing disorders may not have impaired mentalizing capacities with respect to others' minds but that their mentalizing deficits (if any) may primarily reside with respect to their understanding of their own mental states.

The third objective was to examine the relationship between child attachment and CRF, assuming, in line with the literature [50], that attachment relationships are the natural context for the development of mentalization abilities. Consistent with this final hypothesis that attachment and mentalization are loosely coupled, we expected insecure and disorganized attachment to be associated with lower mentalization in the sample as a whole.

Method

Participants

In total, 131 children participated in the study, including a clinical group ($N = 85$) composed of 45 patients with Somatic Symptoms Disorders (SSD group) and 40 patients with disruptive behavior disorders (DBD group), as well as a comparison group composed of 46 children without psychiatric difficulties recruited from the general population. Inclusion criteria were fluency in Italian and a previous diagnosis of SSD or DBD (representative of an internalizing and an externalizing disorder) for the clinical group, and an absence of psychopathological symptoms for the comparison group (assessed using the Child Behavior Checklist 6–18 Version [77]). The overall exclusion criteria were the diagnosis of psychotic disorders or the presence of cognitive impairment, and concurrent pharmaceutical treatment.

The clinical group (SSD and DBD groups) was recruited from the Gaslini Hospital (Genoa, Italy), after the diagnostic assessment. The parents of all patients provided informed consent to participate in this study. We recruited participants for the comparison group by posting study information leaflets at schools. The comparison group was comprised of randomly selected children from different schools in the Ligurian area (Italy). Children were selected to attempt to match the clinical group participants on demographic factors. No boys and girls recruited for the comparison group declined to participate.

Within the clinical group, 61% of children were male, the mean age was 11.19 (SD = 1.98), and 28% did not exceed 15,000 euros as the yearly net family income. More specifically, in the SSD group, there were 47% male, the mean age was 11.50 (SD = 1.83) and 27% came from families with a below average socio-economic status (SES). The DBD group was 77% male, the mean age was 10.84 (SD = 2.12), and 29% came from families with a below average SES. The comparison group was 63% male, the mean age was 10.86 (SD = 1.69), and 12% did not exceed 15,000 euros as the yearly net family income. All the participants were born in Italy.

The clinical and comparison groups were matched for age ($t_{(129)=} - 0.963$; $p = 0.315$), gender ($\chi^2_{(1)} = 0.044$; $p = 0.834$)

and SES ($\chi^2_{(1)}=0.11$; $p=0.918$). There were no significant differences between children in the SSD and DBD groups in terms of age ($t_{(83)}=-1.533$; $p=0.129$) or SES ($\chi^2_{(1)}=2.997$; $p=0.083$), but there were significant gender differences ($\chi^2_{(1)}=8,476$; $p=0.004$), with the DBD group including significantly more males.

Diagnostic process

The clinical group was assessed at the Gaslini Hospital by clinicians working within the Department of Child and Adolescent Psychiatry over a 2 year period. Diagnostic assessments happened previously by two experts of mental health (through several clinical interviews with parents and child regarding the child's developmental history and functioning) and by other specialists to exclude causes of organic origin in suspected SSD (through laboratory test, computed tomography, body magnetic resonance imaging). Based on this diagnostic process, children were placed into the SSD group, the DBD group, or another clinical group not examined here. At the end of the diagnostic process, both parents completed the Child Behavior Checklist 6–18 Version. The children whose scores exceeded the clinical cut-off in CBCL only for Somatic Problems or Oppositional Defiant/Conduct Problems (t score ≥ 65) were selected as clinical group and divided into the two clinical subgroups (SSD or DBD group) [7]. To create empirically derived clinical groups, for the purpose of this investigation, we relied upon children's CBCL scores to determine group membership, using clinician-rated diagnoses as information to validate this empirical approach. Youth with comorbid symptomatology for the SSD and DBD groups were excluded from the study; thus all youth in the two diagnostic subgroups only reported subthreshold values on all other CBCL scales.

Procedure

The study was approved by the Gaslini Ethics Committee for the clinical group and the Ethics Committee of the Department of Educational Science of Genoa, Italy for the comparison group. Within the clinical group, during the child's hospitalization, the doctors responsible for the child's treatment informed the family first and then the child about the study, handed out an information sheet and asked them to consider participation in the study. If they agreed, a visit with the researcher (first author) was scheduled. Within the comparison group, first both parents were contacted with information regarding the study; parents and youth then provided informed written consent/assent and were advised about their option to withdraw from research participation at any time should they so wish.

Assessments were conducted at the Gaslini Hospital for the clinical group and at schools for the comparison group by a psychologist/researcher who had previously been trained in the administration of the Child Attachment Interview [17]. During the assessment (around 45 min), children completed the CAI; in a separate room, parents were asked to complete a socio-demographic questionnaire. Subsequently, two researchers who were blind to the children's diagnostic status coded Child Reflective Functioning Scale [78] on CAI.

Measures

The Child Attachment Interview (CAI) [17] is a semi-structured interview designed to assess the children's self-representations and representations with respect to each primary attachment relationship in children's lives. Whilst the interview protocol is informed by the Adult Attachment Interview (AAI) [32, 80], in contrast to the AAI, the CAI focuses on recent attachment-related events and assesses current attachment relationships. The CAI was originally intended for use with 8–12 years old, but more recently it has been used with adolescents up to the age of 17 [79]. The interview contains 19 questions (CAI revised edition VIII), concerning times of hurt, upset, loss and death. The interview lasts approximately 45 min. The CAI is videotaped and transcribed verbatim before being subjected to a careful discourse analysis. CAI coding and classification system comprises several scales, all designed to assess the child's overall current state of mind with respect to attachment, as reflected in the narrative. In addition, non-verbal behavior informs the coding. The CAI gives an evaluation of attachment both in terms of classifications (secure, dismissing, preoccupied, disorganized attachment) and dimensions (e.g., Emotional Openness). A score between 1 and 9 is assigned for each of the scales, based on a careful analysis of the narrative. Based on children's scale scores, raters assign a best-fitting attachment classification with respect to each caregiver, yielding a 'four-way' classification (secure, dismissing, preoccupied, disorganized), which is the variable used in the current study.

Disorganization of attachment was coded categorically for presence versus absence of certain markers of disorganization informed by two major sources (see Table 1): behavioral manifestations, including those identified as characteristic of disorganized attachment in the Strange Situation Procedure, but with some additional markers appropriate for the behavior of older children; and disruptions of narrative used in classifying certain Adult Attachment Interview transcripts as Unresolved. In addition, clear contradictions between verbal and non-verbal behavior (e.g., giggling about the death of an attachment figure) were considered, along with other markers such as inappropriately familiar behavior

Table 1 Markers of disorganized attachment in the Child Attachment Interview

The child takes the control of the interviewer[b]
The child seems not to adopt and not to maintain the rules of the role from interviewed[b]
The child reports some contradictory declarations that are impossible to be reconciled[b]
The child reports dissociative episodes, similar to the 'trance'[b]
The child reports confused affirmations on the mental states of the others that cannot be true[b]
The child shows an excessively concrete thought, not reflexive[b]
The child appears terrorized in relationship to memories of attachment[b]
The child shows eccentric and contradictory expressions facial[a]
The child exhibits immature and vulgar behaviors[a]
The child shows inconsistent engagement with the interviewer (from the extremely friendly one to the intrusive one)[a]
The child reports incongruous and senseless examples[b]
The child becomes overpowered by sadness or fear remembering past examples[b]
The child shows changes of emotions in answer to an experience or to a question that frightens him, or related to a loss, or to a trauma[b]
The child oscillates among feelings of excitement and of fear, passing from a feeling to the other[a]
The child offers an eccentric description of a loss[b]
The child test to give an order to the interview, voluntarily checking the rhythm or the substance of the interview[b]
The child looks for the physical contact with the interviewer[a]
The child treats the interviewer with contempt[b]
The interviewer is seduced by the child, and the interview loses her structure (off-topic)[b]

[a]Markers of disorganized attachment related to the Strange Situation Procedure

[b]Markers of disorganized attachment related to the Adult Attachment Interview

toward the interviewer, as suggesting disorganization of the attachment system [17].

This interview has been used with clinical and non-clinical populations [17, 79–81]. High test–retest reliability for both scale scores and attachment classifications was demonstrated for 3 months (α's .74–1.00) and 1 year later (α's 0.72–0.79). Internal consistency of the scale scores (α's ranged from 0.84 to 0.92 for 'two-way') inter-rater reliability (0.92 for 'two-way') and validity of the measure have been determined. CAI classifications correlated with the child's attachment security as measured in the Separation Anxiety Test, maternal AAI classification (association assessed on the 'four-way' classification), and measures of social functioning [17]. CAI classifications are not related to age, gender, socio-economic status, ethnicity, verbal IQ, expressive language ability or whether the child lives with one parent or two [82]. In this study, the interviews were separately coded by two independent coders (Bizzi F. and Castellano R.), blinded to children's diagnostic status, who were trained by Yael Shmueli-Goetz and they obtained reliability certification. Coefficient kappa was calculated as an estimate of the agreement. For 'four-way' classifications, the coders' agreement was 87% ($\kappa = 0.82$) with respect to the mother and 90% ($\kappa = 0.86$) with respect to the father. In this study, *Pearson r* showed high agreement on all CAI scales between the two raters' CAI (*r* ranged from 0.86 to 0.96). In the present sample as in prior studies using the CAI (e.g., [36]), a high concordance of attachment with respect to mother and father was found in both groups on attachment classifications, with percentages from 87 to 97% and Kappa values from 0.79 to 0.90. For this reason, we presented attachment findings only respect to a parent (to mother).

The Child Reflective Functioning Scale (CRFS) [78] was adapted from the Adult Reflective Functioning Scale [83] and was used to rate videotaped and transcribed data gathered using the CAI [17]. For the purpose of the present study, the CAI was translated into Italian and then back-translated to assure equivalence with the original English VIII version [80]. The CRFS manual enables trained raters to make an objective assessment of children's ability to provide mentalizing accounts of themselves and their key attachment relationships. The manual contains descriptions and examples of different levels and types of CRF. Children's narratives are coded on an 11 point scale (− 1 to 9) descriptively anchored at six points in terms of their propensity to consider interpersonal interactions and personal reactions in mental state terms. To obtain a general indicator of children's RF (CRF-G), the mean RF of all the coded responses was used. The scale alpha was 0.94, and item-total correlations ranged from 0.57 to 0.79, confirming that the total score (CRF-G) could be used as a good indicator of overall RF [78]. Because of theoretical considerations and previous findings with adults indicating that self- and other understanding may have distinct implications, self and other items were treated as separate scales: children's RF

Table 2 Attachment classifications in clinical versus comparison groups, and in SSD versus DBD groups

CAI ('four-way')	Clinical group (%)	Comparison group (%)	Statistics	SSD group (%)	DBD group (%)	Statistics
Secure	11.8	50	$\chi^2_{(3)} = 32.367$, $p = 0.000$**	8.9	15.0	$\chi^2_{(3)} = 2.172$, $p = 0.537$
Dismissing	20	28.3		20	20	
Preoccupied	21.2	13		26.7	15	
Disorganized	47.1	8.7		44.4	50	

**$p < 0.001$

regarding themselves (CRF-S), and children's RF regarding other (CRF-O). To obtain an indicator of CRF-S, the mean RF for the four items eliciting self-descriptions and the child's reactions in response to upsetting events was used. Furthermore, an indicator of CRF-O was calculated based on the mean RF on the nine questions regarding the child's relationships with their parents and a description of parents' reactions when upset or when they argue. Inter-rater reliability of the CRFS items has been reported to be good, with intraclass coefficients (ICCs) ranging from 0.60 to 1.00, with a median of 0.93; temporal stability of children's RF was shown to be high over a 3-month period and adequate over 12 months [84]. Coding was carried out by the authors with a 85% agreement; they were supervised by Ensink and blind to the status of the case.

The Child Behavior Checklist 6–18 Version (CBCL 6–18) [77] is a parent-report measure for use with children ages 6–18. The measure contains 112 problem items, each scored on a 3-point scale (0 = not true, 1 = somewhat or sometimes true, 2 = very or often true). The measure yields a number of scales, some empirically derived (the Syndrome Scales) and some theoretically based (the DSM-Oriented Scales). In this study, the Syndrome Scales, including Somatic Problems or Oppositional Defiant/Conduct Problems were used.

Statistical analysis

The data were analyzed using the Statistical Package for the Social Science (SPSS, Version 21.0; IBM Corp., Armonk, NY, USA). Demographic variables were described using descriptive statistics (frequencies and percentages for the categorical variables, and means and standard deviations for the continuous variables). Frequency analyses were used to test nominal and categorical variable distributions; the Chi-square test was used to test nominal and categorical variables; the independent group test and the one-way analysis of variance (ANOVA) were used to compare group means. Results were considered statistically significant when 'p' was ≤ 0.05.

Results

Attachment distribution

To assess differences in children's attachment on the CAI, we first compared the clinical and comparison groups and found statistically significant differences in the attachment distribution in 'four-way' classifications ($p = 0.000$). Comparing these two groups, as shown in Table 2, the majority of children in the clinical group were classified as insecure and almost half of them showed a disorganized attachment. Therefore, our hypothesis—that children in the clinical group would be more likely to be classified as insecure and disorganized—was supported.

Next, to further explore differences between the two clinical groups, we compared children's attachment distributions in the SSD and DBD groups. In contrast to our hypothesis, the findings did not reveal statistically significant differences in DBD and SSD children's attachment classifications.

Mentalizing

To assess child RF, we first compared the clinical and comparison groups with regard to RF. The findings showed that the CRF-G of children in the clinical group ($M = 1.86$, SD = 1.10, Min = −0.54, Max = 5.61) was significantly lower than that of the comparison group ($M = 2.73$, SD = 0.73, Min = 1.08, Max = 4.69; [$t(129) = 4.801$, $p = 0.000$)] and this was indicative of a large effect ($d = 0.80$) [85]. Therefore, our hypothesis that the clinical group would have lower CRF than the comparison group was confirmed.

Next, we examined whether there were significant differences in RF between children with diagnoses of SSD or DBD. As shown in Table 3, the findings revealed that there were significant differences in CRF-G, with DBD children exhibiting significantly lower RF than that of children in the SSD group with a large effect ($d = 0.82$). When we examined separate dimensions of RF regarding self and other, we found that CRF-S was significantly lower in the DBD group than in the SSD group, with a medium effect ($d = 0.47$). The same pattern was observed for CRF-O, which was significantly lower in the DBD group than the SSD group,

Table 3 Reflective functioning across subgroupings

CRFS	SSD group M (SD)	DBD group M (SD)	Statistics	SSD group M (SD)	Comparison group M (SD)	Statistics
CRF-General	2.29 (0.90)	1.38 (1.11)	t(83) = -4.164, $p = 0.000$**	2.29 (0.90)	2.73 (0.73)	$t(89) = 2551, p = 0.012$*
CRF-Other	2.54 (1.07)	1.42 (1.17)	t(83) = -4.616, $p = 0.000$**	2.54 (1.07)	2.88 (0.84)	$t(89) = 1.688$, $p = 0.095$
CRF-Self	1.79 (0.81)	1.24 (1.16)	t(83) = -2.515, $p = 0.014$*	1.79 (0.81)	2.43 (0.78)	$t(89) = 3.860$, $p = 0.000$**

*$p \leq .0.05$

**$p \leq .0.001$

Table 4 Relationship between attachment classifications and reflective functioning in whole group

CRFS	CAI ('four-way')	*M*	SD	*N*	Statistics
CRF-general	Secure	2.78	0.91	33	$F(3) = 17.337$, $p = 0.000$**
	Dismissing	2.04	0.64	30	
	Preoccupied	2.76	0.99	24	
	Disorganized	1.46	1.01	44	
CRF-other	Secure	2.98	1.08	23	$F(3) = 15.127$, $p = 0.000$**
	Dismissing	2.23	0.77	13	
	Preoccupied	2.92	1.05	6	
	Disorganized	1.56	1.14	4	
CRF-self	Secure	2.42	0.76	33	$F(3) = 14.042$, $p = 0.000$**
	Dismissing	1.61	0.66	30	
	Preoccupied	2.41	1.12	24	
	Disorganized	1.27	1.02	44	

**$p < 0.001$

indicative of a large effect ($d = 0.96$). These results confirmed our hypothesis.

Finally, we compared the individual diagnostic groups with the comparison group. Analysis of the DBD group and as compared to the comparison group on RF (CRF-G, CRF-O, CRF-S) revealed that all indicators of RF in the DBD group were significantly lower than those of the comparison group ($p = 0.000$). In contrast, the findings comparing the SSD and comparison group (Table 3) did not reveal significant differences in CRF-O between SSD and comparison groups. Only CRF-G was significantly lower in SSD group than that of the comparison group, and this was indicative of a medium-sized effect for CRF-G ($d = 0.53$). Similarly, CRF-S was significantly lower in SSD group than that of the comparison group and this was indicative of a large effect for CRF-S ($d = 0.80$). Therefore, these data confirmed our hypothesis.

Attachment and mentalization

We were also interested in examining whether insecure or disorganized attachment were associated with mentalization in the sample as a whole (Table 4). For this reason, we examined 'four-way' attachment classifications and different CRF's scores (CRG-G, CRF-O, CRF-S). Results of analyses of variance showed that there were significant differences in mentalization scores depending on attachment [$F(1131) = 2.308$, $p = 0.016$, $\eta^2 = 0.054$].

Discussion

The central aim of this study was to examine attachment and mentalizing in children and adolescents with clinically significant psychopathology and a comparison group, as well as to further differentiate between two clinical subgroups, youth with SSDs and DBDs. As hypothesized, children in the clinical group were more likely to manifest insecure and disorganized attachment than children in the comparison group. The over-representation of insecure and disorganized attachment found in the present study is consistent with the proposal that insecure attachment may be a risk factor associated with child psychopathology [14, 45]. The percentage of children with SSD and DBD with disorganized

attachment was much higher than that found in prior studies using the CAI within clinical samples [17, 79]. These findings require replication, but suggest that disorganized attachment may be a particularly important risk factor for children with SSD and DBD. However, it is important to consider that disorganized attachment can be caused by multiple factors [28] and does not necessarily indicate the presence of a mistreating parent, a consequent mental pathology or any other psychopathological risks. We offer these findings in the hopes that they inform future efforts to disentangle equifinality with respect to disorganized attachment [29].

We were also interested in exploring whether there were differences in attachment distributions between SSD and DBD subgroups, but no significant differences were identified. This finding diverges from that of previous studies [1, 14, 44, 45] where significant differences were found, and where externalizing problems (e.g., aggression) were found to be more strongly associated with disorganized attachment than internalizing problems (e.g., anxiety and depression). The findings of the present study indicate that for some internalizing disorders like SSD, insecure and disorganized attachment may not be as important as they are for externalizing difficulties. Interestingly, a very high concordance between maternal and paternal attachment classifications were found in both groups. This is consistent with previous findings by Borelli [43], Shmueli-Goetz [17], and Venta [79], perhaps reflecting a move towards the integration of attachment models differentiating relationships into a more general model in middle childhood and early adolescence.

Another central aim was to investigate mentalization, operationalized as RF, and whether it is associated with these psychopathologies. As hypothesized, RF was found to be significantly lower in the clinical group than in the comparison group. This suggests that difficulties in mentalization are associated with an increased risk of distress being physically experienced or expressed, whether through somatization or acting-out. It is consistent with the theoretical model and previous evidence that difficulties in mentalization constitute a transdiagnostic vulnerability factor for child psychopathology [2]. These findings extend previous work showing that mentalizing difficulties are associated with internalizing disorders [2, 67, 68] and externalizing disorders [2, 42, 63, 65, 66]. At a descriptive level, mentalizing was low in the comparison group, but even lower in the clinical group. In both the SSD and DBD groups, children's mentalizing regarding self was below 2. When we consider that a score of 1 is indicative of an absence of mentalizing where the self is described purely in physical and behavioral terms and a 3 is indicative of a basic capacity to identify affects [78], it is evident that children with SSD and DBD have significant difficulties thinking about themselves and their emotions. Furthermore, mentalizing of children with DBD regarding both self and others was significantly lower than that of children with SSD. Compared to children with SSD, children with DBD appear to have even more marked mentalizing difficulties and these difficulties are evident with regard to mentalizing about themselves, as well as mentalizing about others. Such significant difficulties in identifying their own mental states and that of others, and understanding the impact of their behaviors on others are likely to make it difficult to predict interpersonal reactions and have significant implications for self and behavior regulation. While poor mentalizing may not be the only factor contributing to DBD, it is likely to make it difficult to imagine what others feel and understand why they respond the way they do or predict what they will feel or behave in certain circumstances. Thus, in line with Sharp [62] and Ha [42] we provide evidence about the relation between child mentalization and the presence of child behavioral problems.

Finally, whereas children with DBD appeared to have significantly more difficulties in mentalizing in general, children with SSD appeared to have difficulties specifically regarding the self, while their mentalizing regarding others was not different from that of children from the comparison group. This extends previous findings of an association between SSD and alexithymia, involving difficulties in describing, identifying and differentiating feelings and bodily senses in states of emotional arousal [10]. The evidence regarding the association between SSD and mentalizing difficulties regarding the self also extends earlier and different conceptualizations of mentalizing processes in the context of somatic disorders elaborated by Marty [86] from a French psychoanalytic perspective.

The final aim of the study was to investigate the relation between attachment and mentalization during middle childhood and early adolescence, which would be consistent with prior theoretical and empirical work [2, 50, 83]. Indeed, there were statistically significant differences between mentalization scores (general, others, self) as a function of children's attachment, with the highest scores associated with secure attachment, then preoccupied, dismissing and disorganized, respectively. These findings are in line with Fonagy and Bateman's [51] proposition that mentalizing and attachment are loosely coupled, so that sufficiently good attachment is generally linked with good mental access to minds of others as well as one's own, while insecure attachment (above all dismissing attachment) is generally linked with poor mental access to minds of others as well as one's own. Furthermore, disorganized attachment is generally coupled with either fear of mentalizing or distorted hyper-mentalizing.

Overall, our findings are consistent with a developmental psychopathology framework wherein attachment and mentalization are key psychological processes with implications for child mental health [1, 2]. The high percentage of children with insecure and disorganized attachment and the

low levels of mentalizing found in the clinical group during middle childhood and early adolescence suggest that these factors can be placed in the context of other known risk factors for SSD [5, 9] and DBD [11–13]. However, given the cross-sectional nature of this study, we urge caution in the overextension of these findings.

Limitations

Although the current study has several strengths, such as the inclusion of children with SSD, a clinical condition rarely investigated in childhood/adolescence [5], as well as the use of observer-based assessments of both attachment and mentalization, we also recognize its limitations. First, although the sample size is considered adequate and even large as compared to existing studies of attachment and mentalizing, a bigger sample size would have made it possible to be more confident about subgroup comparisons. It is possible that some of the group differences examined in the study did not emerge as statistically significant because the design was underpowered to reveal differences. Second, our study was cross-sectional and thus does not shed light on the direction of causality. Third, although child psychiatric diagnoses were made by two mental health clinicians, we relied on recently obtained CBCL-reported data to create diagnostic groups in this study. Therefore, it is possible that the presence of other comorbid symptoms not captured by the CBCL may have impacted our findings. To better understand processes associated with attachment insecurity and low levels of child mentalizing, further research is needed to examine links with other potential factors such as neglectful environments, cumulative socioeconomic risks, as well as specific characteristics of the dyad and the child itself. Finally, that we assessed attachment and RF from the same behavioral sample (children's CAI narratives) reduces the independence of these measures; ideally, researchers can replicate these effects by assessing attachment and RF from different behavioral samples or from samples collected on different occasions.

Clinical implications

If these findings are replicated and extended using longitudinal designs, the effects may imply that interventions for these psychiatric conditions should target parent–child relationships. If children's representations of attachment relationships accurately reflect the quality of these relationships, then interventions should focus on reducing negative or coercive interactions on the one hand, or on increasing warmth, reassurance and understanding on the other. Alternatively, in cases in which children's representations represent distorted views of parent–child relationships (e.g., child perceives parent as rejecting but the parent is actually supportive), helping children modify their mental representations of these relationships could be an important step in improving children's mental health. In addition, helping parents develop the capacity to imagine the psychological experience of the child and understand the importance of assuming a mentalizing parenting stance, rather than one focused primarily on controlling behavior, could be considered the key to improving child mental health. A variety of interventions aimed at enhancing RF in at-risk samples of parents and children have obtained positive results in a number of randomized efficacy trials [87, 88]; adapting these existing interventions for use with this population of parent–child dyads holds promise.

Furthermore, for children, developing mentalizing capacities regarding themselves and others, as well as the impact of their behavior on others could be considered an important element of interventions for children with externalizing difficulties. For children with disorganized attachment and low mentalizing, slowing down, naming and developing awareness of self states that rapidly escalate, become overwhelming and are then impulsively acted out, might help them gradually to gain an understanding of what happens to them and cognitive control of their behavior. For children with SSD, interventions that can help them identify self mental states and understand how this is linked to—but also differentiated from somatic experiences—might be central to improving health. In addition, for children with SSD, it might be particularly important that this type of mentalizing develops in the context of an attachment relationship or therapeutic relationship, where feeling understood by someone else becomes alternative to the experience of feeling of being trapped and alone with intolerable pain that is then expressed as a physical health emergency.

Recommendations for future research

Promising results emerging from this preliminary investigation link two clinical conditions, SSDs and DBDs, with heightened risk of insecure, and particularly disorganized attachment, as well as with lower levels of RF. The promise of these findings can be fully realized if they are used as the starting point for future longitudinal studies poised to identify mechanisms underlying these associations.

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Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical standards All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Human or animal studies This article does not contain any studies with animals performed by any of the authors.

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