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Mothers' alexithymia in the context of parental Substance Use Disorder: Which implications for parenting behaviors?

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ABSTRACT

Background: Maternal substance use disorder (SUD) represents a severe risk for caregiving, affecting diverse domains of parenting behaviors, such as sensitivity, structuring, intrusiveness, and hostility. Various studies highlighted that difficulties in parenting behaviors in the context of SUD are exacerbated by the co-occurrence of psychopathological symptoms. A large body of research points out the presence of high rates of alexithymia in individuals with SUD, and some studies provide evidence of an association between this psychopathological aspect and parenting. Nevertheless, no prior research has explored how alexithymic traits could affect quality of parenting behaviors in mothers with SUD.

Objective: To investigate the impact of maternal alexithymia on parenting behaviors in mothers with SUD.

Methods: Sixty women in residential treatment for SUD and their children participated in the study. The participants were assessed with respect to alexithymia, quality of parenting behaviors, and depressive symptoms.

Results: Forty-three percent of the mothers reported the presence of alexithymia. These mothers presented with significantly low scores on sensitivity (β = -.25, $p < .05$) and structuring (β = -.32, $p < .05$). After controlling for depressive symptomatology, the effect of alexithymia on parenting behaviors remained only for structuring (β=.35, $p < .05$).

Conclusions: In the context of SUD, maternal alexithymia significantly impacts the quality of parenting behaviors, specifically structuring, indicating that difficulties in becoming aware of one's own feelings jeopardize the ability to scaffold interactions and set age-appropriate limits in an emotionally attuned way. Clinical implications of the findings are discussed.

1. Introduction

Maternal substance use disorder (SUD) represents a major public health concern constituting a severe risk for parenting and quality of parent-child relationships, subsequently affecting children's well-being (Hans & Jeremy, 2001; Johnson, Glassman, Fiks, & Rosen, 1990; Parolin & Simonelli, 2016). Prolonged substance use during pregnancy is associated with medical sequelae for women and complications in fetuses, such as malnutrition, altered placental functioning, and congenital and neurological abnormalities, leading to an increased risk for premature births, reduced growth measures, and neonatal abstinence symptoms at delivery (Behnke & Smith,

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2013; Kelly, 2002; Patrick et al., 2012). Once discharged from the hospital, women with SUD can rarely rely on stable and supportive households and social environments, which could support parental practices and recovery from drug addiction (Chance & Scannapieco, 2002; Connell-Carrick, 2003). In the long run, intoxication and withdrawal from substances might compromise parents' ability to provide a stable, safe, and nurturing caregiving environment for their offspring (Cleaver, Donald, Tarr, & Cleaver, 2007). Specifically, once babies are born, mothers with SUD are more inclined to engage in dysfunctional parenting practices, exposing their offspring to higher risk for neglect and maltreatment, as well as higher involvement with child protective services (Boden, Fergusson, & Horwood, 2013; Minnes, Singer, Humphrey-Wall, & Satayathum, 2008; O'Donnell et al., 2009; Olsen, 2015; Prindle, Hammond, & Putnam-Hornstein, 2018). Indeed, parental substance use doubles the risk of child abuse and is implicated in up to 40% of cases of child maltreatment and up to 80% of cases of foster care in the US (Fernandez & Lee, 2013; Jones, 2004; Prindle et al., 2018; Testa & Smith, 2009).

The consequences to children of drug exposure in utero are widespread, ranging from physical to mental health difficulties. In particular, newborns and infants exposed to substances are at higher risk to develop attentional, emotional, and behavioral difficulties, as well as developmental delays, which can already be detectable in the postpartum period and can show up later on during infancy, toddlerhood, preschool and school age (Griffith, Azuma, & Chasnoff, 1994; Hagan et al., 2016). Short-term effects of prenatal drug exposure mainly involve fetal growth, congenital anomalies, and neurobehavioral difficulties, such as poor alertness and orientation, impaired autonomic regulation, and abnormalities of muscle tone (Eyler & Behnke, 1999; Hulse, Milne, English, & Holman, 1997). In the long run, drug assumption during pregnancy has an impact on offspring's growth, cognitive and linguistic development, emotional and behavioral regulation, and academic achievement (Bandstra, 2002; Davies & Bledsoe, 2005; Fried, James, & Watkinson, 2001; Goldschmidt, Richardson, Cornelius, & Day, 2004). These difficulties could further compromise parenting attitudes, additionally undermining children's socioemotional well-being and adjustment (Beeghly & Tronick, 1994).

As far as it concerns parents, difficulties in multiple dimensions of caregiving behaviors, observable during everyday interactions with the child, represent some of the most powerful and immediate evidence of the detrimental effects of substance use on parenting and on the parent-child relationship. The theoretical and empirical frame of Emotional Availability (Biringen & Robinson, 1991; Biringen, Derscheid, Vliegen, Closson, & Easterbrooks, 2014; Saunders et al., 2017), which conceptualizes parenting in terms of emotional connection with the child, suggests that SUD could impact a wide range of caregiving domains, affecting parental sensitivity, structuring, nonintrusiveness, and nonhostility (Flykt et al., 2012). This seems especially true for mothers, which were the primary caregivers mostly taken into account in studies on parental SUD (e.g. McMahon, Winkel, & Rounsaville, 2008; McMahon & Rounsaville, 2002). Compared to low-risk populations, mothers with SUD are described as less sensitive toward their infants' communicative signals, showing less contingent responsiveness and dyadic reciprocity during emotional exchanges (Eiden, 2001; Flykt et al., 2012; Frigerio, Porreca, Simonelli, & Nazzari, 2019; Porreca, De Palo, Simonelli, & Capra, 2016; Salo et al., 2009, 2010; Swanson, Beckwith, & Howard, 2000). In addition, their parenting behaviors are characterized by less positive emotional expression and higher hostility (Fitzgerald, Kaltenbach, & Finnegan, 1990; Johnson et al., 2002; Pajulo et al., 2001), suggesting severe challenges in the possibility to create a healthy and rewarding emotional connection with their children. Furthermore, substance-using mothers show challenges in structuring, being less inclined to provide adequate scaffolding and guidance during teaching interactions, with hurdles in offering clear suggestions, and limited use of praise and encouragement (Blackwell, Lockman, & Kaiser, 1999). These maternal behaviors seem to directly affect children's later cognitive skills and learning acquisitions (Carr & Pike, 2012; Obradović, Yousafzai, Finch, & Rasheed, 2016). Finally, mothers with SUD are reported as more intrusive, directive, and interfering with children's activities during early infancy, preschool, and school age (Bauman & Dougherty, 1983; Bauman & Levine, 1986; Frigerio et al., 2019; Rodning, Beckwith, & Howard, 1991), characteristics often linked to insecure and disorganized attachments (Swanson et al., 2000).

Even though a few studies were not in line with these results, finding minimal or no differences in quality of parenting behaviors between mothers with SUD and low-risk parents (Black, Schuler, & Nair, 1993; Fraser, Harris-Britt, Thakkallapalli, Kurtz-Costes, & Martin, 2010; Johnson & Rosen, 1990; Neuspiel, Hamel, Hochberg, Greene, & Campbell, 1991), most of the literature on high-risk parenting agrees on the presence of severe difficulties in multiple parental domains in this clinical population. It is suggested that these hurdles are liked to deficits in higher order mentalization abilities, especially reflective functioning, which would prevent a correct understanding of the child's signals in terms of subjective inner mental states, resulting in non-optimal maternal responses (Pajulo et al., 2008; Slade, 2005). Moreover, it has been shown that difficulties in parenting behaviors in this population are exacerbated by distal risk factors (Suchman & Luthar, 2001). Socio-demographic stressors, as being single parents or minority members living in poor conditions and with limited access to education, predicted poor parenting interactions and restrictive parenting styles in mothers in treatment for SUD (Bernstein, Jeremy, Schuckit, & Marcus, 1984; Suchman & Luthar, 2000).

To comprehend and explain the difficulties in caregiving practices, several studies indicate that complications in parenting are linked to different areas of neurophysiological, cognitive, and psychopathological functioning in the context of SUD, further supporting the need to understand the latent mechanisms underlying manifest behaviors (e.g. Håkansson, Söderström, Watten, Skårderud, & Øie, 2018; Kim et al., 2017). At the neural level, brain areas affected by SUD overlap with the reward networks involved in caregiving, undermining parental perceptions and responses to infants' signals and decreasing the salience of caregiving-related stimuli, finally compromising the ability to organize and modulate adequate parenting behaviors (Kim et al., 2017; Landi et al., 2011; Lowell et al., 2020; Rutherford & Mayes, 2017; Rutherford, Williams, Moy, Mayes, & Johns, 2011). As a consequence, the perception of infant signals can be less rewarding for parents, becoming a source of stress rather than part of a mutually fulfilling system and increasing the risk to perpetrate hostile behaviors (De Carli et al., 2019; Kim et al., 2017). At the cognitive level, substance-related neuropsychological impairments additionally affect parental responses, undermining the capability to organize and perform behaviors attuned to and coherent with the stimuli perceived, and increasing the tendency to enact intrusive and abrupt behaviors (Håkansson et al., 2018;

Porreca et al., 2018). Finally, in regard to psychopathology, findings highlight that the well-known presence of comorbidities in individuals with SUD (Bays, 1990; Brooks, Zuckerman, Bamforth, Cole, & Kaplan-Sanoff, 1994; Hans, 1999; Zuckerman & Brown, 1993) represents an additional risk factor for caregiving practices, further exacerbating difficulties in parenting behaviors experienced during parent-child interactions(De Palo, Capra, Simonelli, Salcuni, & Di Riso, 2014; Porreca et al., 2018).

Despite this preliminary evidence, still little research has focused on the psychological functioning of these individuals, which could help to understand the mechanisms accounting for dysfunctional parenting practices. Specifically, several studies on non-parents with SUD identified alexithymia as an important psychological construct associated with substance use and co-occurring clinical conditions, such as depression and anxiety (Haviland, Shaw, MacMurray, & Cummings, 1988; Parolin et al., 2018). Specifically, alexithymia is defined as a disorder of affect regulation characterized by difficulties in identifying and communicating feelings, including both their emotional and cognitive components (Sifneos, 1973). Individuals with alexithymia fail in distinguishing feelings from bodily sensations originating from emotional activation, lack of imagination, and limited imaginative processes, and are characterized by an externally oriented cognitive style (Luminet, Vermeulen, Demaret, Taylor, & Bagby, 2006; Nemiah, Freyberger, & Sifneos, 1976; Taylor & Bagby, 2000). Alexithymia is considered a vulnerability factor for medical and psychiatric illnesses (Taylor & Bagby, 2004), because various studies found significant associations with depression and anxiety, considering both clinical and nonclinical contexts (Deno, Miyashita, Fujisawa, Nakajima, & Ito, 2011; Honkalampi et al., 2010). Moreover, there is a significant amount of evidence suggesting an association between alexithymia and substance abuse (Thorberg, Young, Sullivan, & Lyvers, 2009), with several studies reporting significant rates of alexithymic traits among both drug-dependent and alcohol-dependent individuals (Cleland, Magura, Foote, Rosenblum, & Kosanke, 2005; Farges et al., 2004; Ghalehban & Besharat, 2011; Lindsay & Ciarrochi, 2009; Oyefeso, Brown, Chiang, & Clancy, 2008; Speranza et al., 2004). While rates of alexithymia in the general adult population are estimated to range between 6 and 17% (Franz et al., 2008; Hintikka, Honkalampi, Lehtonen, & Viinamäki, 2001), a recent review reported prevalence rates ranging between 30 and 49% in individuals with SUD (Cruise & Becerra, 2018).

Given that caregiving practices, especially in early infancy, are largely based on emotional and affective processes (Trevarthen, 2017; Tronick, 1989; Vanheule, Desmet, Meganck, & Bogaerts, 2007), it is suggested that alexithymia could have a significant impact in terms of parenting behaviors. Due to their difficulties in describing and identifying emotions, parents with alexithymia are more likely to experience difficulties in providing healthy emotional support to their children and in responding to them in an emotionally contingent way (Cuzzocrea, Barberis, Costa, & Larcan, 2015). Most of the studies of parental alexithymia, especially in early infancy, focused on mothers (e.g. Schechter et al., 2015; Yürümez, Akça, Uğur, Uslu, & Kılıç, 2014), and only to a less extent involved fathers (Cuzzocrea et al., 2015). Preliminary studies in non-substance-using parents highlight that mothers with higher levels of alexithymia show less sensitivity during interactions with their toddlers (Schechter et al., 2015), discouraging the expression of negative emotions and using an authoritarian communication style (Thompson, 2012). An externally oriented cognitive style might result in excessively strict adherence to social norms and moral rigidity, lacking in adequate responsiveness (Cuzzocrea et al., 2015; Thompson, 2012). Moreover, positive associations were found between parental alexithymia and dependency-oriented control, suggesting that in the face of their difficulty in understanding their children's emotions, parents with alexithymia cannot respond based on emotional contingencies and compensate by adopting authoritarian parenting styles and imposing prohibitions or, on the opposite side, with a lack of limit-setting (Cuzzocrea et al., 2015; Thompson, 2012). This would lead to less emotional connection with their children. Furthermore, the emotional difficulties typically associated with alexithymia might result in an avoidance of the child's inner experience, task-focused interactions, and achievement-oriented psychological control (Soenens & Vansteenkiste, 2010; Thompson, 2012). This suggests that parental difficulties with interpersonal relatedness and closeness may lead to the use of specific controlling strategies (Cuzzocrea et al., 2015). Preliminary studies highlight that the effect of alexithymia on quality of parent-child relationships is observable also beyond infancy (Cuzzocrea et al., 2015; Kliewer et al., 2016) and remains even when controlling for parental psychopathology, for example depressive symptoms (Yürümez et al., 2014).

In summary, ample research on parenting has highlighted that alexithymia and SUD are associated with disruptions in parenting behaviors during infancy and later on during childhood. Moreover, research in adults has pointed out that SUD is associated with a higher incidence of alexithymia. Despite this evidence, up to our knowledge, no prior research has explored how alexithymic traits could affect quality of caregiving practices in mothers with SUD. The objective of the present study was to investigate the impact of maternal alexithymia on parenting behaviors in mothers with SUD. Specifically, we refer to the theoretical and empirical domain of Emotional Availability, which focuses on parenting considering the capacity of the parent-child dyad to create a healthy emotional connection and to share a wide range of affective expressions (Biringen & Easterbrooks, 2012; Biringen & Robinson, 1991; Biringen et al., 2014; Porreca, De Palo, & Simonelli, 2015; Saunders, Kraus, Barone, & Biringen, 2015). Given the specific focus on the emotional qualities of parenting, this approach could be particularly helpful in capturing the possible impact of maternal alexithymia on different dimensions of parenting (i.e., sensitivity, structuring, nonintrusiveness, and nonhostility). The focus on mothers is linked both to empirical and health policy reasons. Most of the literature on parenting behaviors in the context of SUDs and alexithymia specifically focuses on mothers and, given that this study represents the first attempt to bridge together these two fields, maintaining the focus on this primary caregiving figure could allow to develop and test more specific hypotheses, also in accordance to previous studies. On the other hand, health policies in Italy often foresee residential programs which take in charge mother-child dyads. In this sense, the attention on maternal parenting behaviors represents a specifically salient focus of investigation in order to better understand caregiving experiences to which children are exposed, especially in the perspective to implement and assess the efficacy of interventions.

In line with prior research on adults with SUD, we hypothesized that we would find high rates of alexithymia in our group of participants. Based on previous studies that focused on alexithymia and parenting, we hypothesized that alexithymia in mothers with SUD would affect 1) the possibility to create an emotional connection and to correctly perceive and appropriately respond to the child's signals (i.e., sensitivity); 2) the capacity to scaffold activities and to set firm limits (i.e., structuring); and 3) the tendency to control

interactions and to interfere with ongoing activities (i.e., nonintrusiveness). Moreover, given previous studies highlighting associations between alexithymia and depressive symptoms in both normative and SUD samples (Haviland et al., 1988; Honkalampi, Hintikka, Tanskanen, Lehtonen, & Viinamäki, 2000), we controlled for the effect of the latter when considering the impact of alexithymia on parenting behaviors.

2. Method

2.1. Participants

The study involved 60 women with a diagnosis of SUD and their children, attending a residential rehabilitative program in an Italian Therapeutic Community. The facility offers residential care to mother-child pairs in the context of maternal SUD and other severe psychiatric illness, providing a comprehensive rehabilitation program over a 2-year period. In Italy, entrance in Therapeutic Communities is usually subsequent to Juvenile Court decrees that imply mandatory intervention for the mother, in order not to lose parental responsibility. An integrated intervention program is provided to the mother-child dyad, combining both therapeutic (group, individual, and mother-child therapy) and educational strategies. The diagnosis of SUD was based on the patients' medical history and on urine toxicology. Sample characteristics are presented in Table 1.

2.2. Procedure

The recruitment began after the mothers entered the facility. Participation to the study was voluntary. Mothers who agreed to participate to the research signed written informed consent and underwent an assessment protocol that took place during two one-hour sessions within the first 3-4 weeks after enrollment. The assessment included measures aimed at investigating socio-demographic and clinical information, alexithymia and depression. Moreover, mother-child dyads were videotaped during 15-minute free-play sessions, in order to assess the quality of parenting behaviors.

The research protocol was approved by Institutional board and carried out in accordance with the Declaration of Helsinki.

2.3. Measures

2.3.1. Alexithymia

Toronto Alexithymia Scale (*TAS-20*; Bagby, Parker, & Taylor, 1994; Bressi et al., 1996). To investigate the presence of alexithymia, the mothers were administered the 20-items TAS-20. Each item is scored on a 5-point Likert scale and can be grouped into three subscales representing the main factors of alexithymia: Difficulty in identifying feelings, Difficulty in describing feelings, and Externally oriented thinking. The scoring system also provides a Total alexithymia Score according to which each individual can be identified as non-alexithymic, borderline, or alexithymic with respect to cut-off values (<51, 52-60, and >61 respectively). The instrument has been previously validated in samples of substance abusers, resulting in a reliable and valid measure of the construct (Haviland, Hendryx, Shaw, & Henry, 1994). According to previous research (see Yürümez et al., 2014), for the purpose of the present study the participants were divided into two groups according to the Total alexithymia score ($\alpha = .725$): mothers with and without alexithymia, with a Total TAS score higher/lower than 51 respectively.

2.3.2. Depression

Symptom Checklist-90 Revised (*SCL-90-R*, Derogatis, 1994; Sarno, Preti, Prunas, & Madeddu, 2011). The presence of depressive

Table 1
Sample characteristics (N = 60)

Maternal characteristics	
Age (years)	29.20 (7.47)
Education (years)	9.32 (2.41)
Familiar history of SUD	28 (47)
Significant losses	39 (65)
Experience of maltreatment	17 (28)
Age of the onset of drug use (years)	16.10 (2.41)
Poly drug use	50 (83)
Primary substance of abuse:	
Cocaine	5 (8)
Heroin	42 (70)
Drug related illness (e.g., hepatitis C.)	31 (52)
Children's characteristics	
Gender (male)	30 (50)
Age (months)	19.37 (23.62)
Desired pregnancy	25 (42)
Prenatal drug exposure	46 (77)

Note: Data are given as n (%), mean (standard deviation).

symptoms in the mothers was investigated through the 13-item Depression scale of the SCL-90-R, a self-report questionnaire aimed at evaluating the presence of psychological distress and a wide range of psychopathological symptoms in clinical and non-clinical populations. Raw scores are converted into T-scores that are compared to norms and that aid the identification of clinically severe symptoms.

2.3.3. Parenting behaviors

Emotional Availability Scales (*EAS*, Biringen, 2008). Mothers with SUD and their children were videotaped while interacting together during a 15-min free-play condition with a standardized set of toys. Quality of parenting behaviors was coded according to the fourth version of the EAS which consider four maternal dimensions: sensitivity, structuring, nonintrusiveness, and nonhostility.

Sensitivity considers adult's affects, perception and responsiveness to child's signals, awareness of timing, flexibility, variety, and creativity during interactions, acceptance of the child, amount of interaction, and handling of conflict situations.

Structuring refers to the adult's ability to offer successful guidance with the right amount, integrating both verbal and nonverbal channels of structuring, limit setting, remaining firm in front of child's pressure, and maintaining an adult role.

Nonintrusiveness considers the parent's ability to follow the child's lead, the adoption of optimal ports of entry into interaction, the use of commands, directives, and didactic teaching, quality of adult talking, the presence of verbal and physical interferences, and the child's reactions to adult's behaviors.

Nonhostility refers to the regulation of negative affects, to the absence of mocking and disrespectful behaviors towards the child, to the lack of threats of separation and of frightening behaviors, to the ability to show composure during stressful situations, and to the absence of silences and hostile play themes during interactions.

The coding system can be applied from infancy to adolescence and considers the global quality of the interaction observed rather than discrete behaviors. Each scale is rated on a global score, ranging from 1 to 7 with higher scores referring to more functional behaviors; specifically, scores between 5.5 and 7 are considered functional, scores around 4 indicate inconsistency, and scores of 3 or below refer to more difficult/problematic behaviors. The instrument has shown good psychometric properties both in normative and clinical populations, proving to be a valid and sensitive measure of parenting and of relational dyadic affective quality (Biringen et al., 2014). For the purpose of the present study the videos were coded by two independent raters reliable to the system. Inter-rater reliability was calculated using Intraclass Correlation Coefficients on a randomly selected subsample of 20% of the cases, with values ranging from 0.80 to 0.95.

2.4. Statistical Analyses

First, descriptive statistics were run on the data, in order to examine mean scores, frequencies, and percentages. Secondly, the total sample of mother-child dyads was split into two groups depending on mothers' alexithymia scores, resulting in a group with maternal alexithymia and a group without maternal alexithymia. Distributions of the parental behaviors that scored below 4 in each of the EAS were reported in the total sample as well as in the two groups, with or without alexithymia. Logistic regressions were used to test whether alexithymic mothers were more at risk for at risk parenting behaviors or not. Differences between alexithymic and non-alexithymic mothers were then assessed on the EAS expressed in their continuous form, as well as other relevant variables. T tests were used for the continuous variables (i.e., child's and mother's age) and logistic regressions for the dichotomous variables (child's gender and maternal depression SCL-90-R score above the clinical cut-off). Thus, the differences in the EAS between alexithymic and non-alexithymic mothers were controlled for potentially confounding variables, by means of linear regressions. In a first step, maternal alexithymia, mother's and child's age were listed as predictors and in a second step also the depression subscale of SCL-90-R was added to the model, since the known overlap between TAS-20 and depressive symptomatology. In addition, in supplementary materials, we provide also the same regression models controlling for global psychopathology and anxious symptomatology. Finally, in supplementary materials, we provide also a correlation table between the continuous variables used in the study (i.e., maternal alexithymia, mother's and child's age, depressive symptomatology and the EAS).

Table 2
Distribution of the parental behaviors at risk within the sample

	Parenting behaviors at risk (EAS scores $\leq$ 4)			
	Total (n = 60)	Mothers without alexithymia (n = 34)	Mothers with alexithymia (n = 26)	OR
Sensitivity	47 (78)	25 (74)	22 (85)	1.96
Nonhostility	14 (23)	5 (15)	9 (35)	3.01
Structuring	40 (67)	19 (56)	21 (81)	2.30*
Nonintrusiveness	40 (67)	20 (59)	20 (77)	3.30

Note. Data are given as n (%).
* $p < .05$
OR = Odd Ratio resulted from Fisher's Exact Test

3. Results

The results highlighted that 43% of the mothers reached thresholds for the presence of alexithymia. Table 2 presents the distribution of parental behaviors at risk within the full sample of the study and in the groups of mothers with or without alexithymia. All the EAS, except for Nonhostility, show scores below 4 and therefore can be considered at risk, both in the global sample and in the two groups. Structuring scores show difference in distribution between groups, since more at risk behaviors are shown by the mothers with alexithymia. No significant differences were found for the other scales.

Table 3 presents the differences between groups in the main variables of the study. Mothers in the alexithymic group present higher odds for dysfunctional structuring behaviors, while Sensitivity as well as children's age present lower scores in the alexithymic group that show only a trend toward significance. Depression symptomatology is also more likely to be present in the alexithymic mothers. Then we tested the effect of alexithymia groups on each EA Scale, controlling for the potential confounding role of mothers' and children's age. Results are presented in Table 4, where we also tested the effect of depression in order to determine whether the alexithymia effect was specific, in light of the known overlap between the two constructs. Results show that controlling for mothers' and children's age, both Sensitivity and Structuring are predicted by the presence of alexithymia, but only the effect on Structuring survives to the effect of depression symptomatology. Results remain substantially unaltered when we controlled for other SCL-90-R symptomatology scales over the clinical cutoff, such as anxiety and the Global Severity Index (results of the regression models are presented in Tables 2a and 3a in the supplementary materials).

Finally, for sake of completeness, we report also the results of the correlations between the continuous variables in supplementary materials (Table 1a). The EAS scales resulted non-significantly associated with alexithymia. Only the Nonintrusiveness scale was positively correlated with both child's and mother's age, while only the Sensitivity scale was negatively associated with depression symptomatology. Alexithymia and depression showed a positive correlation.

4. Discussion

The objective of the present study was to investigate the impact of maternal alexithymia on parenting behaviors in mothers with SUD, a high-risk condition both for caregiving and for child development (Hans & Jeremy, 2001; Parolin & Simonelli, 2016). Although several studies reported a high incidence of alexithymic traits in individuals with substance abuse and dependence (Cleland et al., 2005; Speranza et al., 2004; Thorberg et al., 2009), no previous research has investigated this aspect with respect to the specific domain of parenting.

As expected, we found the dyads in our sample to show relatively low-quality parenting behaviors, mostly characterized by inconsistency, incoherence, and other difficulties, such as detachment and unpredictability, in most of the domains considered. The range of scores we found on the EAS was consistent with other studies on parents with SUD (Frigerio et al., 2019; Salo et al., 2009), and it was systematically lower than what is typically found in normative, low-risk samples (e.g., Licata, Kristen, & Sodian, 2016). Although some studies did not report the presence of interactive difficulties within this population (Black et al., 1993; H. L. Johnson & Rosen, 1990; Neuspiel et al., 1991), the mothers in our sample presented low sensitivity and structuring, as well as high intrusiveness when interacting with their children. These characteristics have been previously linked to more severe forms of dysfunctional caregiving practices in the parent, such as harsh discipline or even maltreatment (e.g., Bauer & Twentyman, 1985; Joosen, Mesman, Bakermans-Kranenburg, & van IJzendoorn, 2012), as well as undesired developmental outcomes in children (Swanson et al., 2000), providing evidence of the detrimental effect that prolonged substance abuse can have on parental practices (Johnson et al., 1990).

Differently from previous studies (Fitzgerald et al., 1990; Pajulo et al., 2001), our data did not highlight particular difficulties in the parental domain of negative emotion regulation (i.e., the nonhostility scale). It is possible that the context of free play in which observations were conducted was not stressful enough to elicit plainly hostile behaviors. Another explanation could be that admission to treatment could have buffered more severe forms of difficulties (Fraser et al., 2010).

With respect to alexithymia, as expected, 43% of the mothers in our study presented scores above the TAS-20 cutoff, confirming the

Table 3
Group differences in the variables of the study

	Mothers without alexithymia (n = 34)	Mothers with alexithymia (n = 26)	β	Ω_0^2
Sensitivity	4.19 (0.80)	3.85 (0.60)	−0.24†	0.04
Nonhostility	5.38 (1.08)	4.96 (1.03)	−0.14	0.01
Structuring	4.46 (0.73)	4.04 (0.56)	−0.30*	0.07
Nonintrusiveness	4.19 (1.33)	3.83 (1.17)	−0.20	0.02
Child's Age	19.82 (26.69)	18.77 (19.36)	0.21†	0.03
Mother's Age	29.74 (7.82)	28.50 (7.07)	0.06	0.01
			OR	
Depression Symptomatology (cutoff)	7 (21)	10 (38)	4.83**	
Child's Gender (male)	17 (50)	13 (50)	1	

Note. Data are given as n (%), mean (standard deviation)
†p< .1; * p < .05; ** p < .01
OR = Odd Ratio resulted from Fisher's Exact Test
Ω_0^2 = Partial Omega Squared

Table 4
Effect of Alexithymia and Depression on Mother's Emotional Availability Scales

	Emotional Availability Scales - Mother															
	Sensitivity				Nonhostility				Structuring				Nonintrusiveness			
	Model 1		Model 2		Model 1		Model 2		Model 1		Model 2		Model 1		Model 2	
Predictors	β	Ω_0^2	β	Ω_0^2	β	Ω_0^2	β	Ω_0^2	β	Ω_0^2	β	Ω_0^2	β	Ω_0^2	β	Ω_0^2
Alexithymia	−0.25*	0.04	−0.19	0.04	−0.19	0.02	−0.16	0.02	−0.32*	0.07	−0.35*	0.07	−0.12	0.01	−0.10	0.01
Child's Age	0.18	−0.01	−0.15	0.02	−0.25†	0.03	−0.09	−0.01	−0.08	0.01	0.08	−0.02	0.35**	0.17	−0.03	−0.01
Mother's Age	−0.27†	0.05	0.17	−0.01	0.12	0.00	−0.26†	0.02	−0.19	0.01	−0.07	0.01	0.22†	0.03	0.35**	0.17
SCL - Depression			−0.23	0.03			0.15	0.00			−0.21	0.02			0.23	0.03
R^2	0.12†		0.14†		0.10†		0.10†		0.14*		0.15†		0.25**		0.25**	
AIC	134.06		134.73		181.52		183.10		125.73		127.35		190.27		192.21	
Model Comparison	$F(1,55) = 1.23$, $p = .27$				$F(1,55) = 0.38$, $p = .54$				$F(1,55) = 0.35$, $p = .55$				$F(1,55) = 0.06$, $p = .80$			

†p< .1; * p < .05; ** p < .01; *** p < .001;
Ω_0^2 = Partial Omega Squared.

high prevalence of this trait in SUD individuals also in the context of motherhood. Several studies indicate alexithymia to be a common trait in adult and young substance abusers (Handelsman et al., 2000; Oyefeso et al., 2008; Parolin et al., 2018; Torrado, Ouakinin, & Bacelar-Nicolau, 2013), suggesting that it could be a potential risk and sustaining factor for SUD (De Rick & Vanheule, 2006; de Timary, Luts, Hers, & Luminet, 2008). Specifically, it has been hypothesized that in the case of alexithymic traits, the assumption of substances could be used to compensate for deficits in emotional self-awareness (Taylor, Bagby, Parker, & Grotstein, 1997). At the same time, various studies have pointed out associations between alexithymia and quality of parenting in infancy (Schechter et al., 2015), childhood (Yürümez et al., 2014), and adolescence (Cuzzocrea et al., 2015; Kliewer et al., 2016), suggesting that it can be an additional risk factor for adequate caregiving in parents with SUD. Differently from what expected, our first hypothesis on the associations between maternal alexithymia and maternal sensitivity was only partially confirmed suggesting that, in our group, difficulties in becoming aware of one's own emotions had only a marginal impact on the ability to affectively attune to children's emotional signals and to create a healthy and emotional connection with them. It is possible that this lack of significant associations is linked to methodological characteristics, as for example sampling procedures or the conceptualization of maternal sensitivity provided by the EAS, which take into specific account the emotional climate of parent-child interactions rather than discrete parenting behaviors or self-reported parenting attitudes per se. On the other hand, we might wonder whether parental sensitivity as measured by the EAS could be more linked to parental psychopathological characteristics which are different from maternal alexithymia, as for example depression, as highlighted by the results of our study and by previous research (Trapolini, Ungerer, & McMahon, 2008).

On the contrary, in line with our second hypothesis, the mothers in our study who reported the presence of alexithymia presented with significantly lower scores on structuring supporting the expectation that in this clinical group, the presence of alexithymia is associated with difficulties in guiding, scaffolding activities and setting age appropriate limits.

The impact of maternal alexithymia on structuring remained even when controlling for depression (as well as mothers' and children's age), suggesting that the difficulties in becoming aware of one's own feelings could play a specific role in the ability to guide and scaffold interactions in an emotionally attuned way and to subsequently set age-appropriate limits. This result is in line with previous work that suggests a specific effect of alexithymia on parenting, also accounting for maternal psychopathology (Yürümez et al., 2014), and partially extends these results to a SUD clinical sample. Anyway, it seems that besides the partial overlapping between depression and alexithymia, both in terms of psychological disease and of their effect on caregiving, the role of the latter seems specific for the parental domain of structuring rather than other parental characteristics. Appropriate structuring refers not only to the provision of a sufficient amount of suggestions and of guidance but also to its quality, which should be proactive and emotionally attuned to the child's age, condition, and level of understanding, and also provided through an integration of different channels to be effective (Biringen, 2008; Sullivan & Horowitz, 1983). In other words, to properly guide and scaffold a child's abilities, the parent's suggestions should be advanced with the right timing, when the child is ready or prepared to pick them up, and through different verbal and nonverbal modalities to be understandable and to act within the child's zone of proximal development (Carr & Pike, 2012). Previous studies highlighted that substance-using mothers show difficulties providing adequate guidance during teaching interactions with their children (Blackwell et al., 1999). It is possible that when SUD co-occurs with alexithymia, parents experience additional difficulties in understanding when their suggestions are contingent on the child's level of comprehension and thereby fail to provide adequate structuring, resulting in a series of attempts that could be too much (i.e., over-structuring), too little (i.e., under-structuring), or incoherent with respect to the child's needs (Meins, 1997). At the same time, as previously reported in studies on parents without SUD (Cuzzocrea et al., 2015), it is possible that parents with alexithymia attempt to compensate for the lack of emotional understanding with a lack in limit-setting. These results seem to support studies pointing out deficits in parents' higher order mentalizing abilities after extended substance use, which would prevent the possibility to assume the children's perspective, understanding their experience in terms of mental states, and subsequently failing to organize and modulate appropriate scaffolding responses (Håkansson et al., 2018; Pajulo et al., 2008). Notably, these abilities and other processes involved in the understanding of others' inner emotional experiences, have shown correlations with maternal emotional availability (Möller et al., 2017) and have been found to be further damaged by the presence of alexithymia (Moriguchi et al., 2006; Sonnby-Borgström, 2009)

Finally, differently from what we expected from our third hypothesis, we did not find associations between alexithymia and nonintrusiveness (i.e., the tendency to avoid controlling and intruding into interactions), suggesting that, at least in the case of maternal SUD, the tendency to interfere could be linked to other mechanisms, possibly more dependent on neuropsychological functioning (Porreca et al., 2018).

A final consideration should be addressed to the fact that we found significant differences in parenting behaviors when considering alexithymia a dichotomous variable (i.e., parents with vs. without alexithymia) rather than a continuous one. Although the choice to dichotomize the construct relied on previous work in which this procedure proved to be effective in explaining the relationships between parenting and alexithymia (see Yürümez et al., 2014), it is noteworthy that in our study these two domains presented only a tendency toward a linear relation, which was clearly evident in studies on normative parents (e.g., Cuzzocrea et al., 2015). Some authors suggest being careful in dichotomizing variables during statistical analyses (e.g., MacCallum, Zhang, Preacher, & Rucker, 2002), whereas other authors state that the adoption of this procedure in clinical psychology and psychiatry could be particularly helpful (e.g., Farrington & Loeber, 2000; Flouri, 2008). Specifically, in this field, dichotomization, which helps to identify extreme categories, could help to reveal a specific clinical phenomenon and its effects, which could be otherwise concealed by product-moment correlations between continuous variables (Farrington & Loeber, 2000). Future studies should further investigate this issue in the field of at-risk parenting to understand whether this aspect could be linked to methodological limits in the measures and analyses adopted or rather to the specific clinical condition of the group considered.

Taken together, these data indicate that the presence of alexithymia in parents with SUD is more likely to lead to incoherent or withdrawn patterns of dysfunctional caregiving that in their most extreme form might result in the complete absence of scaffolding, or

even in child neglect, rather than in physically abusive behaviors.

5. Study limitations

The study presents a series of limitations. First, it is characterized by a relatively small (albeit clinical) sample. The adoption of a larger sample in the future would provide more information on the phenomenon of parental alexithymia and its implications for caregiving behaviors in the context of parental SUD. A second limitation of the study is linked to the absence of a control group, the adoption of which in the future could help to understand whether the mechanisms linking presence of alexithymia and low levels of structuring in parenting behaviors are generalizable to all parents or are specific to parents with SUD. A third limitation concerns the use of a self-report measure to assess alexithymia. Although the results of the present study showed excellent reliability with respect to the TAS-20 total score, and previous literature effectively adopted the instrument with similar research designs (Cuzzocrea et al., 2015; Schechter et al., 2015; Yürümez et al., 2014), it could be critical for an individual with alexithymia, which per definition presents difficulties in acknowledging and describing his or her own emotional states, to accurately describe his or her alexithymic symptoms. Therefore, the adoption of multi-informant assessments in future studies would provide a better and more global understanding of the phenomenon. A fourth limitation concerns the heterogeneity of children's age, which we tried to compensate for by adopting an instrument (the EAS) that allowed us to assess parenting from infancy to adolescence and controlling for children's age in statistical analysis. Finally, a limitation is represented by the lack of measures specifically aimed at investigating maternal mentalizing abilities, as reflective functioning, which could be particularly important in the context of SUD. In our study this aspect was captured only to some extent through the EAS coding system and, thus, should be further investigated in future research, to better understand how maternal alexithymia could affect the psychological mechanisms that allow parents to get in touch with their children's inner experiences and feelings.

6. Clinical implications

Despite the limitations, the results of this study provide a series of clinical implications with respect to the implementation of assessment and intervention strategies for parents with SUD. As previously highlighted, parental SUD is a complex clinical condition in which various medical, social, psychological, and relational-behavioral characteristics are involved. The results of this study stress the importance of simultaneously investigating parenting behaviors and individual psychopathological characteristics in the parent, such as alexithymia. As our results highlight, the sample of mothers considered presents general difficulties in almost all domains of parenting behaviors, but when alexithymia is clinically present, caregiving difficulties seem to specifically involve structuring. In this sense, future assessment protocols should try to go beyond the simple identification of challenges in parenting behaviors to understand whether specific difficulties could be better understood by also considering specific psychopathological traits in the parent.This attempt could have important implications for clinical treatment. In the context of high-risk parenting, as in the case of parental SUD, one of the main targets of interventions is represented by highly severe behaviors, such as hostility and intrusiveness, which could be contingently linked to undesired outcomes such as maltreatment and disorganized attachment in the child (Swanson et al., 2000). The results of the present study stress the importance of considering and intervening also in more subtle and less "evident" parenting behaviors, offering support for a wider range of parental strategies in the context of parental SUD. In the specific case of alexithymia, particular attention should be addressed to the possibility of providing parents with effective strategies to structure and scaffold their children's activities, and to provide adequate and understandable limits where necessary.

7. Conclusions

In conclusion, this is the first study to investigate the impact of maternal alexithymia on quality of caregiving in mothers with SUD, highlighting a specific effect of the first on the parental domain of structuring, even after controlling for psychopathology. Future studies could explore the origins of these alexithymic traits in SUD parents, determining whether they are associated with mothers' past traumatic experiences (De Carli, Riem Madelon, & Parolin, 2017) or more directly related to drug assumption. Finally, research should focus on testing whether these associations could represent pathways toward more severe forms of parental difficulties (e.g., maltreatment in the form of neglect) and whether they could be sensitive to interventions.

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Declaration of Competing Interest

The authors report no declarations of interest.

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Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:https://doi.org/10.1016/j.chiabu.2020.104690.

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