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Maternal socialization and aggression of children with autism and in typical development

Socialização materna e agressão de crianças com autismo e em desenvolvimento típico

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Abstract

This study aimed to assess to what extent the socialization practices adopted by mothers of children with Autistic Spectrum Disorder and mothers of typically developing children are associated with those mothers' perception of their children's aggressive behavior. A total of 90 mothers of children with Autism and 46 mothers of typically developing children answered a sociodemographic questionnaire, the Aggression Questionnaire and the Socialization Techniques Instrument. The results revealed that the mothers' perception of external control was able to predict physical aggression ($B = 0.06$; Beta = 0.32; $t = 5.48$; $p = 0.01$; $R^2_{adj.} = 0.09$) and anger in children with Autism ($B = 0.07$; Beta = 0.26; $t = 2.57$; $p = 0.01$; $R^2_{adj.} = 0.05$). We hope that this and the other results found can support intervention programs.

Keywords: Aggression; Autism spectrum disorder; Children; Socialization.

Resumo

Este estudo teve como objetivo analisar em que medida as práticas de socialização adotadas por mães de crianças com Transtorno do Espectro Autista e de mães de crianças em desenvolvimento típico estão relacionadas à percepção materna acerca dos comportamentos agressivos de seus filhos. Participaram da pesquisa 90 mães de crianças com autismo e 46 mães de crianças em desenvolvimento típico, que responderam um questionário sociodemográfico, o Questionário de Agressão e o Instrumento de Técnicas de Socialização. Os resultados revelaram que a percepção das mães referente ao controle externo foi capaz de prever a percepção de agressão física ($B = 0,06$; Beta = 0,32; $t = 5,48$; $p = 0,01$; $R^2_{ajust.} = 0,09$) e de raiva dos filhos com

autismo ($B = 0,07$; $Beta = 0,26$; $t = 2,57$; $p = 0,01$; $R^2_{ajust.} = 0,05$). Espera-se que este e os outros resultados encontrados possam subsidiar programas de intervenção.

Palavras-chave: Agressão; Transtorno do espectro autista; Crianças; Socialização.

Aggression is a complex and multidimensional phenomenon, with different forms of manifestation and influencing factors (Dutra et al., 2022). Aggressive behaviors can be intentional, with the purpose of hurting or harming the other, triggered by an underlying motivation for the act, which manifests itself through physical aggression, verbal aggression, anger and/or hostility (Buss & Perry, 1992).

Socialization, in turn, is essential in the process of developing social skills and controlling the manifestation of aggressive behaviors (Eisenberg & Morris, 2001). In human relationships, it is possible to adopt different socialization practices, from those that resort to external control, such as real punishment, supernatural punishment, reward and withdrawal of affection, to those that are anchored in internal or rational control, such as inductive or explanatory practice (Camino et al., 2003; Hoffman, 1975). The set of these practices and attitudes used in the educational relationship between parents and their children can be called parenting styles (Lawrenz et al., 2020).

Socialization agents play a fundamental role in child development; they include parents, caregivers, teachers, and various institutions. In the Western society, the mother is generally recognized as the most significant socialization agent during childhood, due to her central role in the child's life as of the child's birth (Assis et al., 2021; Hoffman, 1975). Research reveals that, in typically developing children, maternal socialization plays a prominent role, since mothers are the most present and participatory figures in their children's lives, compared to other family members or external agents (Camino et al., 2012). Likewise, studies involving children with Autism Spectrum Disorder (ASD) demonstrate that maternal participation is more significant than paternal participation (Chaidi & Drigas, 2020) and that there is a high rate of paternal absence in families with children with ASD (Pinto et al., 2016; Portes & Vieira, 2020).

Especially regarding aggressive behavior, many studies have been carried out focusing on children with typical development (Gomes et al., 2013; Minayo, 2010). Studies with children with ASD reveal that the issue of aggressive behavior is a much more complex phenomenon, as it can manifest itself as a result of other factors common among autistic people, such as communication deficits, sensory deficits, behavioral patterns, stereotypy, and comorbidities such as Oppositional Defiant Disorder, Attention Deficit Hyperactivity Disorder, specifically High Abilities for demonstrating angry and hostile behaviors (American Psychiatric Association, 2023; Brites & Brites, 2019; Colpo et al., 2021; Nobre, 2021; Noten et al., 2020; Virgolim, 2021).

Research comparing children with typical development and those with ASD reveals that the severity of aggression was greater in the sample with individuals without a diagnosis of ASD, and that these children were more reactive in terms of hostility (Farmer et al., 2014). Furthermore, in both children with ASD and with Typical Development (TD), aggression tends to decrease with advancing age (Mazurek et al., 2013; Meque, 2011).

It is worth noting that there is divergence regarding the relationship between aggression and gender. The studies by Buss and Perry (1992) indicated that males had the highest rates of physical and verbal aggression and hostility. In addition, another study by Paiva et al. (2021), conducted in the Brazilian context, indicated that males showed more physical and verbal aggression than females, with no differences in anger and hostility. However, the study by Mariano (2020), in the same context, found more Verbal Aggression, Anger and Hostility in girls than in boys in high school (age 13 to 17).

Regarding socialization, research carried out with children with ASD demonstrates that caregivers of children with ASD tend to favor the use of protection and excessive control practices, with a low level of demand (Belyukova et al., 2021); or even indicate that mothers of children with ASD made little use of Rules and Discipline and used more Positive Parenting, behaviors that may be associated with the perception they have of their child as someone who needs special care (Maljaars et al., 2013).

In connection with the socialization topic, comparison between mothers of children with typical development and children with ASD, it was evidenced that mothers of children with ASD displayed fewer Rules and Discipline behaviors and more Positive Parenting, as well as they were more likely to use environmental adaptation strategies and to stimulate the healthy development of their children who exhibited aggressive behaviors (Maljaars et al., 2013).

Regarding the relationship between socialization variables and aggressive behaviors, the outcome of some studies reveal that coercive socialization practices influence the manifestation of aggressive behaviors in both children with ASD and those with typical development (Campbell et al., 2010; Kanne & Mazurek, 2011). Regarding internal control socialization practices (use of explanations), the results indicate that the use of explanations in the socialization process is negatively related to the manifestation of aggressive behaviors in typical children and those with Trisomy 21 (Chaves, 2018).

In view of the above, the general objective was to assess to what extent the socialization practices adopted by mothers of children with ASD and mothers of typically developing children are related to those mothers' perception of their children's aggressive behavior. In our study the following specific objectives were considered: 1) to verify to what extent the use of external control practices predicts mothers' perception of aggression attributed to their children with ASD; 2) to identify to what extent the use of internal control predicts mothers' perception of their children with ASD aggressions; 3) to compare mothers' perception of the use of socialization practices, according to the level of support for ASD; 4) to compare the perception of aggressive behavior of children with ASD considering the variable gender; 5) to compare mothers' perception of aggressive behavior of typically developing children and children with autism; 6) to compare the perception of mothers who have children with typical development with those who have children with autism regarding the use of socialization practices.

The importance of verifying whether there are differences in the socialization strategies used by mothers of children with ASD in relation to mothers of children with TD and how these strategies can interfere in the manifestation of aggressive behaviors arises considering that mothers of children with ASD, in addition to the challenges inherent to motherhood in raising children, face the challenging process of socializing a child who may exhibit a series of limitations associated with the disorder itself, such as communicating what he/she feels, not being able to relate adequately with peers, expressing intense tantrums when contradicted, manifesting self-injurious behaviors, presenting greater difficulty in regulating emotions and sensory processing disorders (Mazurek et al., 2013).

Method

Participants

The sample was a convenience and non-probabilistic sample, obtained using the snowball technique – a method in which participants, previously interviewed, are asked to indicate a network

of contacts with a similar sample profile, forming a recruitment “snowball” (Bockorni & Gomes, 2021). For this research, two types of samples were used, the first group being mothers of children diagnosed with ASD and the second group being mothers of children with typical development.

In the first group, 90 mothers of children diagnosed with ASD were interviewed. The mothers were between 26 and 66 years old ($M = 37.10$; $SD = 7.54$); most had completed high school (42.2%); the others had completed higher education or postgraduate studies (24.4%), incomplete higher education (1.1%), incomplete high school (11.1%), complete elementary school (6.7%) and incomplete elementary school (14.4%). With regard to income, it ranged from R\$ 400 (2.2%) to R\$ 16,000 (1.1%) and the majority of the mothers was paid a minimum wage of R\$1,212.00 (value for the year 2022) (40%); Regarding marital status, the majority was married (42.20%); the others reported to be in common-law marriage (15.6%), in another relationship (1.1%), single (33.3%) and separated (7.8%); and the number of children these mothers had was on average 2.53 ($SD = 1.36$).

The children diagnosed with ASD were between 8 and 10 years and 11 months of age ($M = 8.93$; $SD = 0.79$). A total of 80% ($f = 72$) were male and 20% ($f = 18$) female. Regarding the level of support, 50% ($f = 45$) were diagnosed as mild, 27.8% ($f = 25$) moderate, 5.6% ($f = 5$) severe, 10% ($f = 9$) mild to moderate and 6.7% ($f = 6$) moderate to severe. It should be noted that the level of support is commonly designated in these terms among families and formally designated in the DSM-5 as support levels 1, 2 and 3. These children were mostly in the 5th grade and 62.2% ($f = 56$) of the sample studied in public schools, 35.6% ($f = 32$) in private schools and 2.2% ($f = 2$) did not study. All children were undergoing at least one type of intervention (ABA, psychotherapy, psychopedagogy, occupational therapy, speech therapy, etc.); a total 67.8% ($f = 61$) of the children were taking some type of medication, 61.1% ($f = 55$) had already presented a behavior of self-aggression or hetero-aggression, and 87.8% ($f = 79$) communicated, despite having the communication deficit that is typical of this disorder. The average time since ASD diagnosis was 3.86 years ($SD = 1.59$). Among the participants 54.4% ($f = 49$) had no comorbidities.

The second group consisted of 46 mothers of children with typical development. These mothers were between 22 and 49 years of age ($M = 33.80$; $SD = 5.74$); the majority had completed higher education (30.4%), and the others had completed high school (26.1%). Regarding marital status, the majority of the interviewees were married or in a common-law marriage (64.7%); the others reported being single (21.7%), divorced (8.7%) or widowed (2.2%); the number of children these mothers had was on average 2.17 ($SD = 1.01$).

Regarding children with typical development, these were aged between 7 and 10 years ($M = 8.28$; $SD = 1.10$); a total of 19 (41.3%) were male and 27 (58.7%) female. The majority of these children (63%) studied in private schools.

Instruments

The following instruments were used to collect data:

Sociodemographic Questionnaire – Developed by the authors, is divided into two parts: the first part refers to the child’s profile, with some questions exclusively for mothers of children with ASD (diagnosis, therapies, medication, sensory issues, aggression) and the second part to the profile of the mothers (marital status, education and age) and children with ASD and TD (gender, age, education).

Aggression Questionnaire (BPAQ) – Adapted version for mothers (Chaves, 2018), was originally developed by Buss and Perry (1992) and was adapted by Chaves (2018), to be answered

by Brazilian mothers. The instrument was designed to assess mothers' perceptions regarding their children's aggression in four dimensions: physical (items 1,5,10,12,20), verbal (items 2,8,11,14,19), anger (items 3,6,13,15,17) and hostility (items 4,7,9,18). In total, it contains 20 items, which should be assessed on a five-point Likert-type scale: 1 – Never, 2 – Rarely, 3 – Sometimes, 4 – Often and 5 – Always. In the present study, the instrument revealed adequate internal consistency values (Cronbach's Alpha) for research purposes in relation to the physical aggression factor ($\alpha = 0.69$), anger ($\alpha = 0.70$), hostility ($\alpha = 0.70$); however, the same did not occur with the verbal aggression factor: $\alpha = 0.47$.

Socialization Techniques Instrument (ITC) – Was developed by Camino et al. (2003) with the purpose of evaluating maternal socialization practices, distinguishing between external control and internal control strategies. The questionnaire consists of 46 items that are evaluated using a five-point Likert-type scale, ranging from 1 – “Never” to 5 – “Always”. The ITC items are grouped into two main factors: external control, which includes practices such as actual punishment, supernatural punishment, reward and withdrawal of affection; and internal or rational control, which includes inductive or explanatory practices. In the present study, the internal consistency of the instrument was evaluated using the Cronbach's Alpha coefficient, resulting in satisfactory indices: $\alpha = 0.94$ for the factor called external control and $\alpha = 0.88$ for the factor called internal control.

Procedures

After submitting this study to the Ethics Committee and after its approval, the investigators contacted a few institutions that provide specialized care for people with ASD, as well as schools, both public and private, to apply the “snowball” procedure.

The data collection was carried out individually, in an interview, in a room reserved for this purpose; only the mother and the investigator were present. On the day of the application, the mother was initially presented with the Free and Informed Consent Form; subsequently the sociodemographic questionnaire created by this study's researchers was applied, followed by the Aggression Questionnaire (BPAQ), a version adapted for mothers (Chaves, 2018) and the *Instrumento de Técnicas de Socialização* (ITC, Socialization Techniques Instrument) (Camino et al., 2003).

The results were reviewed using the IBM®SPSS® software, version 21. Descriptive measures such as frequency, mean and standard deviation were first calculated to characterize the sample.

Next, the hypothesis of data normal distribution from the adapted BPAQ for mothers was verified by the Shapiro-Wilk test, through which it was verified that the results found for each of the dimensions of the aggression scale refuted the hypothesis of normality: physical aggression ($z = 0.85, p < 0.001$), verbal aggression ($z = 0.92, p < 0.001$), anger ($z = 0.94, p < 0.01$) and hostility ($z = 0.85, p < 0.001$). Similarly, the results found for the dimensions of the ITC also indicated that the data were not normally distributed: external control ($z = 0.78; p < 0.001$), internal control ($z = 0.92; p < 0.001$), thus adopting non-parametric statistical tests.

In turn, rank comparison tests (Mann-Whitney and Kruskal-Wallis) were adopted to verify whether there were differences in the mothers' perception of their children's aggressive behavior, depending on sociodemographic variables (e.g. level of ASD, presence of comorbidities, child's gender).

Finally, Multiple Linear Regression analyses were performed to assess the extent to which maternal perception of socialization predicts the perception of aggressive behavior. The regression model was constructed using the backward method, given that, among the step-by-step methods indicated for exploratory models, the backward method is the least prone to Type 2 errors, i.e.,

missing a predictor that actually predicts the dependent variable (Field, 2020). Furthermore, it is noteworthy that although the data distribution was not normal, before performing the Multiple Regression Analysis, the assumptions specific to this type of analysis were tested, namely: 1) Additivity and linearity; 2) Independence of errors; 3) Homoscedasticity; and 4) Normal distribution of errors (residuals), verifying the possibility of performing it.

For all the analyses, the value of $p < 0.05$ was adopted as the significance criterion. Furthermore, the effect size (r) for the results found was calculated using the formula:

$$r = \frac{z}{\sqrt{N}}$$

Where z is the z -score, calculated by IBM®SPSS®, and N is the total size of observations made, on which z was based. It should be noted that effect sizes up to 0.30 are considered small, values above 0.30 to 0.50 are considered moderate effects, and values above 0.50 are considered large effects (Field, 2020).

This study was approved by the Research Ethics Committee of the Federal University of Paraíba, under CAAE number: 57335622.4.0000.5188. Furthermore, the entire study was conducted in compliance with the ethical precepts recommended by resolution 510/2016 of the *Conselho Nacional de Saúde* (National Health Council).

Results

The results of this study will be presented in two sections, according to the sequence of the listed objectives. In the first section, analyses of maternal socialization and aggressive behaviors of children with ASD will be presented, and in the second section, this group will be compared with children in TD in relation to maternal socialization and aggressive behaviors.

Maternal Socialization and Aggressive Behaviors in Children with Autism Spectrum Disorder

The following objectives were examined: 1) to verify to what extent the use of external control practices predicts mothers' perception of aggression attributed to their children with ASD and 2) to identify to what extent the use of internal control predicts mothers' perception of aggression attributed to their children with ASD. The analyses used the Multiple Linear Regression, considering socialization practices (internal and external control) as predictors and each of the BPAQ dimensions adapted for mothers as consequent variables (Table 1).

Table 1

Multiple Linear Regression of aggression factors, using the external control factor of the Control Techniques Instrument (CTI) as a predictor

BPAQ Factors	Predictor variable: external control					
	R	R ² _{adj}	F	B	Beta	T
Physical aggression	0.32	0.09	5.06	0.06	0.32	5.48**
Anger	0.26	0.05	3.28	0.07	0.26	2.57**

Note: ** $p < 0.01$.

Regarding the effect of external control reported in Table 1, it was shown that it significantly predicted the perception of children's physical aggression and anger. Regarding the variable perception of verbal aggression and perception of hostility, the results were not significant.

Regarding the effect of internal control, the results indicated only a positive and significant relationship with the hostility dimension ($B = 0.12$; $\text{Beta} = 0.30$; $t = 3.00$; $p = 0.003$; $R^2_{\text{adj.}} = 0.08$). It is noted that, in relation to the perception of verbal aggression, neither external nor internal control were significant predictors.

Through the analysis of the results, related to objective 3) to compare the mothers' perception of the use of socialization practices according to the level of support for ASD, summarized in Table 2, it was found that there were differences in the mothers' perception of the use of socialization practices according to the perception of the child's level of support, both in relation to the use of external control practices [$H(2) = 6.47$; $p = 0.03$] and the use of internal control [$H(2) = 7.92$; $p = 0.01$]. Specifically, it was observed that mothers whose children had a mild and moderate level of support indicated that they used more external control practices when compared to those mothers whose children had a severe level of support. It was also possible to observe that mothers whose children had a mild and moderate level of support perceived that they used internal control practices more than those whose children had a severe level of support.

Table 2

Perception of Maternal Socialization as a Function of Autism Spectrum Disorder Level

Socialization practices	Support Level	N	Rank Average	Sig.	r
External Control	Severe -	5	10.70	0.04*	0.34
	Mild	45	27.14		
	Severe	5	6.70	0.01*	0.45
	Moderate	25	17.26		
	Mild	45	34.89	0.66	0.05
Internal Control	Moderate	25	36.76		
	Severe	5	10.70	0.002*	0.41
	Mild	45	27.47		
	Severe	5	6.90	0.01*	0.44
	Moderate	25	17.22		
	Mild	45	36.03	0.76	0.05
	Moderate	25	34.54		

Note: *For this analysis, only data from children who presented a specific level of support were included, and those who fit into more than one category were excluded. The values in bold represent significant results.

Regarding objective 4) to compare the perception of aggressive behavior of children with ASD considering the gender variable, the results showed a significant difference in the perception of aggression that mothers attribute to their children, specifically in relation to the dimensions of anger and hostility, according to the gender variable: female children were perceived as having more anger (Rank Mean = 64.84) than male children (Rank Mean = 40.72) ($U = 992.50$; $p = 0.001$; $r = 0.37$), and as having more hostility (Rank Mean = 57.97) than boys (Rank Mean = 42.38) ($U = 872.50$; $p = 0.02$; $r = 0.24$). The effect sizes for these results were low.

Comparisons of Maternal Socialization and Aggression in Children with Autism Spectrum Disorder and Typical Development

In addition to the results presented, we sought (objective 5) to compare the mothers' perceptions of the aggressive behavior of their children with typical development and children with autism.

In this connection, it is important to highlight that the averages for the physical aggression and hostility components were higher for the person with ASD, just as verbal aggression was higher in the person with TD, although this was not statistically significant. Furthermore, the analyses comparing the groups of mothers revealed that there were significant differences between the two groups of mothers, indicating that the mothers of autistic children perceived more anger than those with children with typical development. The effect size for this result was low, as described in Table 3.

Table 3

Differences in maternal perception of children's aggression depending on their type of development (TD vs. Autistic)

Factors of Aggression	Development Type	N	Rank Average	U	Sig.	r
Physical Aggression	Autistic	90	49.08	893.50	0.25	0.10
	TD	46	42.86			
Verbal Aggression	Autistic	90	45.04	991.00	0.72	0.03
	TD	46	46.98			
Anger	Autistic	90	52.72	732.50	0.01*	0.21
	TD	46	39.42			
Hostility	Autistic	90	46.53	1011.00	0.84	0.02
	TD	46	45.48			

Note: TD: Typical Development. *The values in bold represent significant results.

In objective 6) we sought to compare the perception of mothers who had children with typical development with those who had children with autism regarding the use of socialization practices. These data are reported in Table 4.

Regarding the mothers' perception of the type of socialization they used, it was also found that there was a difference depending on the type of development of their children: mothers of children with typical development perceived that they made greater use of external and internal control practices, when compared to mothers of autistic children. The effect sizes for these results were moderate (Table 4).

Table 4

Differences in maternal perception of socialization according to the type of development of children (TD vs. Autistic)

Socialization practices	Development Type	N	Rank Average	U	Sig.	r
External Control	Autistic	90	59.11	1224.50	0.0001	0.33
	TD	46	86.88			
Internal Control	Autistic	90	54.19	782.50	0.0001	0.51
	TD	46	96.49			

Note: TD: Typical Development.

Discussion

Regarding the objective 1) that was to verify to what extent the use of external control practices predicts mothers' perception of aggression attributed to their children with ASD, it was found that external control was able to positively and significantly predict the perception of physical aggression and anger, corroborating the study by Campbell et al. (2010) and Kanne and Mazurek (2011), in which they found that coercive practices influenced the aggressive behaviors of children

with ASD and TD; there is also the study by Chaves (2018), in which he found that external control positively predicted the aggressive behaviors of children with Trisomy 21.

However, regarding objective 2) which was to identify to what extent the use of internal control predicts mothers' perception of their children with ASD aggression, it was found that the use of internal control by mothers of children with ASD does not negatively predict mothers' perception of aggressive behaviors (physical aggression and anger) attributed to their children, which differs from the outcome of Chaves' (2018) studies. In fact, contrary to what was expected, internal control was positively and significantly associated with the hostility dimension, which may indicate that when the mother tries to explain something to a child with ASD, the child's reaction is hostile. This result ought to be further investigated in further studies, in order to find out whether mothers are able to use the explanation while respecting the age and limitations associated to ASD, such as deficits in social interaction and communication, cognitive rigidity, and difficulty in the regulation of emotions.

Based on these data, it is believed that mothers of children with ASD, before intervening to control their children's aggressive behavior, need to understand that different factors can explain aggressive behavior in an individual with ASD, such as deficits in communication and social interaction, cognitive rigidity, restricted and repetitive patterns, sensory processing disorder, crises and emotional dysregulation, among others (American Psychiatric Association, 2023; Colpo et al., 2021). In addition, other variables can also explain aggressive behavior in a subject with ASD, such as symptoms related to different comorbidities, such as Attention Deficit Hyperactivity Disorder (ADHD), which leads to impulsive and hyperactive behaviors (Silva et al., 2020), and Oppositional Defiant Disorder (ODD), in which the subject presents great irritability, hostility and negative verbalization (Brites & Brites, 2019; Silva et al., 2020). Regarding comorbidities, the small sample size did not allow us to investigate the role of other disorders in an aggressive behavior. It is suggested that further studies be carried out in this direction and that psychoeducational intervention programs be carried out with mothers of children with ASD to help them understand and manage their children's aggressive behaviors.

It is also important to highlight that the external and internal control dimensions were not significant predictors of the perception of verbal aggression. This factor, in addition to having low internal consistency, represents behaviors that may have limitations in their manifestation in patients with ASD, who typically present deficits in social communication (American Psychiatric Association, 2023).

Regarding the relationship between the level of support and the use of socialization strategies, in connection with objective 3) which was to compare the mothers' perception of the use of socialization practices, according to the level of ASD support, it was found that mothers of children with ASD at a mild to moderate level of support used more internal and external control practices than mothers of children with severe support ASD.

It is considered, as expected, that children with a more severe support level of ASD have more difficulty understanding explanations than children with a mild and moderate support level due to serious impairments in communication and social interaction (American Psychiatric Association, 2023) and that, contrary to what was hypothesized, mothers of children with a higher level of support (severe) use fewer coercive strategies (external control) than mothers of children with ASD, with support level 1 and 2, which can be explained by the potential belief that children with a higher degree of impairment (support level 3) may not understand what they are doing and should not be punished in the same way as children with a mild and moderate support level. This assumption is based on

the study carried out by Chaves (2018) with children with Trisomy 21, where mothers used internal and external control strategies less than mothers with children with typical development, because they had the false belief that their children would not understand. In any case, it is suggested that this result be deepened with multivariate analyses from a larger sample, which takes into account different variables at the same time, such as the mothers' age and level of education, the children's age and gender, the presence or absence of Intellectual Disability, among others.

Regarding the objective 4) which was to compare the perception of aggressive behavior of children with ASD considering the gender variable, it was found that girls had higher scores than boys associated with the anger and hostility components. These data differ from those obtained by Zequinão et al. (2016) and Kaartnen et al. (2012), who found more aggression in boys, and from the studies of Kanne and Mazurek (2011), who found no differences by gender in subjects with ASD. However, as the effect size found was low, further studies will be needed to confirm the data obtained in the present study. On the other hand, it is important to remember that the results of studies on the influence of the gender variable on aggression in children with typical development are contradictory – there is no clear consensus on this matter, especially when considering investigations related to anger and hostility (Paiva et al., 2021). It is also worth noting that comparisons by gender, in people diagnosed with ASD, are limited because it is difficult to find a female sample equivalent to a male sample (Reis et al., 2019).

As to objective 5) when comparing mothers' perceptions of aggressive behaviors of typically developing children and of children with autism, it was found that mothers of children with Autism Spectrum Disorder perceive more anger in their children than mothers of typically developing children. This is likely because children with ASD tend to have a lower threshold for frustration, due to their tendency toward cognitive rigidity, sensory problems, and because they have more difficulty communicating and, consequently, more anger manifestations than children with typical development (American Psychiatric Association, 2023; Colpo et al., 2021).

On the other hand, it is noteworthy that no significant differences were found in relation to physical aggression, verbal aggression and hostility when comparing typical development and autism children, which differs from what is reported in the literature. When comparing the two groups, children with TD demonstrated more verbal aggression and children with ASD more physical aggression (Farmer et al., 2014).

In summary, the stereotype according to which the mothers perceive more aggressiveness in their sons than in their daughters with ASD (Nobre, 2021) and that there is more aggression in children with disabilities than in those with typical development (Roberts et al., 2003) were not confirmed in this study. However, it is worth considering that the effect size was low and, therefore, further studies with this perspective are needed.

Regarding the last objective assessed 6), comparing the perception of mothers who have children with typical development with those who have children with autism regarding the use of socialization practices, it was found that mothers of children with TD made more use of internal control than mothers of children with ASD. Mothers of children with TD made more use of both control practices (external and internal) and mothers of children with ASD made little use of such practices. This fact may be associated with the communication deficit, typical of children with ASD, which may generate difficulties in understanding some explanations, and may also be related to the fact that parents of children with disabilities underestimate their children's understanding capability as some studies have shown (American Psychiatric Association, 2023; Chaves, 2018; Kurestein et al., 2018).

Final Considerations

This study sought to contribute to the understanding of the relationship between maternal socialization and aggressive behavior in children diagnosed with ASD, a topic that has been little explored, especially in Brazil.

The main findings revealed that: mothers' perception of external control was a predictor of the perception of physical aggression and anger in children with ASD; mothers of children with more severe ASD used fewer explanations, while mothers of children with mild or moderate levels of ASD used these strategies more frequently; girls with ASD presented higher levels of anger and hostility than boys with ASD; mothers of children with ASD reported a greater perception of anger in their children compared to mothers of children with typical development (TD); mothers of children with ASD used less internal control (explanations) compared to mothers of children with TD.

Despite its contribution, this study has some limitations. The data collection period occurred during a pandemic, which made it difficult to collect data and, consequently, a better distribution of the groups considering the variable gender and level of support for ASD. In addition, the perception of aggression by the child, obtained through the mother's perspective, may not be sufficient to assess the aggression of children. In this sense, as a future study, it would be interesting to conduct participatory research that would investigate the use of socialization practices and aggression in the home environment, as well as analyze aggressive behaviors from the perspective of therapists and teachers. As mentioned before, a study with a larger sample would be welcomed as it would allow the performance of multivariate analyses for a more robust comparison of the different variables assessed in this investigation.

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