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This Honors thesis entitled

The Effects of Parenting on the Behavior of Children with Autism: A Meta-analysis

written by

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meets the criteria for acceptance
and has been approved by the undersigned readers.

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The Effects of Parenting on the Behavior of Children with Autism: A Meta-analysis

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Abstract

Parenting impacts a child's behavior, mental health, social relationships, cognitive development, and more. However, research has shown that parents of children with autism spectrum disorder (ASD) express more negative behaviors such as being overly controlling, hostile towards the child, and having poor communication with the child when compared to parents of typically developing children (Ku et al., 2019). The current study examines the effects of positive and negative parenting behaviors on the internalizing behaviors, externalizing behaviors, and social skills of children with ASD. A meta-analysis was done to analyze the effects of parenting behaviors on children with ASD. Twenty-one studies were found that met the predetermined inclusion criteria through a manual search. Parenting behaviors were categorized as positive parenting or negative parenting. The child behaviors were categorized into internalizing behaviors, externalizing behaviors, and positive social skills. Negative parenting behaviors resulted in a positive correlation with externalizing behaviors, while positive parenting behaviors resulted in a positive correlation with social skills and a weak positive correlation with internalizing behaviors. By better understanding common parenting practices for parents of children with ASD, education can be given to optimize positive behaviors and reduce negative ones.

The Effects of Parenting on the Behavior of Children with Autism: A Meta-analysis

Introduction

Parents/guardians play a major role in the development of their children. A lot of behavioral problems and mental health issues for children can be correlated with what parenting style was used. A parenting style is the thoughts and actions of the parents towards their child and the emotional environment these actions are used in (Darling & Steinburg, 1993). There are three main parenting styles: authoritarian, authoritative, and permissive. Considerable research has been conducted looking at neurotypical children's behavior in correlation with the style used by their parents. However, when the child is not neurotypical, the different parenting styles could have a different effect on the child. The effects of the different parenting styles on children with autism is not fully known because there are some discrepancies in previous research conducted. A meta-analysis is a research study that combines and analyzes all the data from previous research that meets the inclusion criteria. This will show a more accurate effect size for the variables being researched, reduces bias in research, and provides a better foundation for future studies in this topic. The current study conducted a meta-analysis exploring the relationship between parenting style and children's internalizing behaviors, externalizing behaviors, and social skills for children with ASD.

Parenting Styles

The three main parenting styles are authoritative, authoritarian, and permissive. These parenting styles were originally described by Baumrind (1971) and have been extensively researched since. Each style was defined based on the level of control the parents used, how nurturing and accepting the parents are, and how the parents communicate with their child.

Authoritative focuses more on autonomy support while still having rules and some punishment (Baumrind, 1971). This style is warm and nurturing, but still has rules and expresses a healthy level of control. Under this style the parents explain and communicate effectively with their children and act as a guide to help their child through their development into independence. Children that are raised with authoritative parenting have been seen to be more confident, less depressed, and do better at regulating their emotions which leads to more positive peer interactions (Masud et al., 2019; Milevsky et al., 2007; Morris et al. 2007). These factors as well as other positive behaviors in children under this parenting style correlates with their higher academic achievement (Aunola et al., 2000; Pong et al., 2010).

Authoritarian parenting is defined by the parents' stressing obedience and harsh punishment and lacking communication with their child (Baumrind, 1971). This parenting style lacks the warmth and nurturing seen in authoritative parenting. Parents under this style tend to not explain punishments and have overly high expectations and rules for their children. Parents tend to assert their authority by using fear which causes their child to be more afraid of failure or act out against their strict rules. Under authoritarian parenting, neurotypically children are able to follow directions, but can be more aggressive, shy, and dependent on others due to poor self-esteem (Martínez & García, 2007; Masud et al., 2019).

Permissive parenting is more relaxed and encourages the child but has little to no rules (Baumrind, 1971). This style has the warmth of authoritative parenting by lacks the rules and discipline needed. These parents generally act more like friends than authority figures in their children's lives. Some will have some punishment but the rules and discipline used is inconsistent and thus not affective. Children under permissive parenting do have self-esteem, but can be very demanding and lack self-regulation due to lack of rules set by the parents (Leeman et al., 2014;

Piotrowski et al., 2013). This population has higher rates of risky behaviors such as gambling and substance use in adolescents because of this lack of control (Leeman et al., 2014). When inconsistent punishment is used it could also negatively affect the self-control of the child and cause them to be more frustrated and aggressive (Kochanska, 1995; Lengua & Kovacs, 2005).

Child Outcomes

The current study focuses on the externalizing behaviors, internalizing behaviors, and positive social skills seen in children.

Externalizing behaviors include hostility, impulsivity, aggression, and acting out such as throwing tantrums (American Psychiatric Association, 2013). These are behaviors that are externally expressed by the child. Positive parenting behaviors seen in authoritative parenting has been correlated with a decrease in such behaviors in neurotypical children (Moreno Méndez et al., 2020). While negative parenting behaviors seen in authoritarian and permissive styles have shown to increase externalizing behaviors (Marcone et al., 2017).

Internalizing behaviors are more related to emotional problems such as anxiety, depression, and somatization (American Psychiatric Association, 2013). These behaviors are harder to test as they are more emotional and are not tangible actions like externalizing behaviors. Negative parenting behaviors has been related to an increase in internalizing behaviors in neurotypical children (Marcone et al., 2017). Positive parenting behaviors have been seen to give the opposite results and decrease these behaviors (Moreno Méndez et al., 2020).

Positive social skills were defined as being prosocial and empathetic, friendship-making skills, and problem-solving skills. Negative parenting has been correlated with poor social skills (Argyrious et al., 2016; Gugliandolo et al., 2015; Wang et al., 2019). Positive parenting behaviors

has been correlated with an increase in social skills (Wang et al., 2019). However, these results are only for neurotypical children and might not be the case for children with a disorder or disability.

Autism Spectrum Disorder

The DSM-V categorizes ASD as having social communication and interaction deficits as well as having repetitive behaviors and interests (American Psychiatric Association, 2013). This current ASD diagnosis includes early infantile autism, childhood autism, Kanner's autism, high-functioning autism, atypical autism, and Asperger's disorder (American Psychiatric Association, 2013). Symptoms start showing at 12-24 months of age but can be seen earlier or later based on the severity of the symptoms (American Psychiatric Association, 2013). ASD is a spectrum and thus many individual experience different severity levels and deficits in different areas. There is a high comorbidity rate with intellectual and language impairment and deficits in motor skills are common (American Psychiatric Association, 2013). Language impairment can range from lack of speech to just lacking social reciprocity within their speech (American Psychiatric Association, 2013). Individuals sometimes show echoed speech and will repeat what they have heard in random settings and times (American Psychiatric Association, 2013). Body language and facial expressions are impaired and can be seen as being awkward, stiff or exaggerated (American Psychiatric Association, 2013). Individuals with ASD tend to have poor eye contact and lack joint attention with others and when expressing something themselves (American Psychiatric Association, 2013). Poor social skills (e.g., lack of social interest, passivity, inappropriate behavior, self-isolation from others) is common in this population (American Psychiatric Association, 2013). Individuals will stim or fixate their attention on movements or objects. They will repeat these behaviors to help regulate their sensory input or to resist change (American Psychiatric Association, 2013). These behaviors could be simple movements (e.g., hand flapping),

involve objects (e.g., lining up objects), or making noises (e.g., repeatedly saying a word or making a noise). Self-injury (e.g., biting, head banging, running into objects) is commonly seen in this population sometimes as a result of these repetitive behaviors.

Children with ASD have been shown to have higher rates of internalizing and externalizing behaviors than neurotypical children (Bauminger et al., 2010; Hartley et al., 2008). For example, Bauminger et al. (2010) found that mothers of children with ASD experienced more stress than mothers with neurotypical children. Increased parenting stress has been correlated with more internalizing and externalizing behaviors in neurotypical children and was also seen in children with ASD (Bauminger et al., 2010). Individuals with ASD tend to show more externalizing behaviors due to their aggressiveness and repetitive movements. 70% of people with ASD have just one comorbid mental disorder, but 40% have two or more (American Psychiatric Association, 2013). Depression and anxiety are very common within this population (Lainhart & Folstein, 1994; Meyer Mundy et al., 2006; Ghaziuddin et al., 2010; Kim et al., 2000). The increased levels of externalizing and internalizing behaviors experienced by this population could be due to the language impairment seen in this population. By not being able to fully express themselves to others or by not being able to adapt to change could cause this increase in anxiety and frustration. Attention deficit/hyperactivity disorder (ADHD), oppositional defiant disorder (ODD), and conduct disorder symptoms are also common comorbidities with ASD (Gadow et al., 2005; Ghaziuddin et al., 2010). Hyperactivity is commonly seen in individuals with ASD and being defiant against change to keep their routine would lead to an increase rate of ADHD and ODD in this population. By decreasing externalizing and internalizing behaviors and increasing positive social skills, individuals with ASD could express and communicate more freely with others. Parenting could be impacting these behaviors and if so, should be addressed in order to help the

development of children with ASD and allow them to flourish and not be plagued by these negative feelings and behaviors.

Cross-Disability Comparison

There is a high comorbidity rate between ASD and ADHD due to some of the similar characteristics between the two disorders. Similarly, to ASD, children with ADHD have high rates of internalizing and externalizing behaviors (McRae et al. 2020). Positive parenting behaviors were found to be correlated with fewer internalizing behaviors and negative parenting behaviors was correlated with externalizing behaviors in children with ADHD (McRae et al. 2020). Research has shown that children with ASD tend to have parents that use more authoritarian or permissive behaviors (Hutchison et al., 2016). A study by De Clercq et al. (2019), compared parenting and child behaviors in children with and without ASD, cerebral palsy (CP), and down syndrome (DS). In relations to children with CP and DS, children with ASD expressed more internalizing and externalizing behaviors and had less psychosocial strengths (De Clercq et al. 2019). Parents of children with CP were more responsive than the parents of children with no disabilities and parents of children with ASD (De Clercq et al. 2019). Parents of children with DS or CP used less negative parenting behaviors than parents of children with no disability (De Clercq et al. 2019). Children with CP showed more externalizing behaviors and relatively fewer internalizing behaviors than children without a disorder (De Clercq et al. 2019). Children with DS showed fewer internalizing behaviors than children with ASD, CP, and without a disability, but still expressed externalizing behaviors as the level that children with CP did (De Clercq et al. 2019; van Gameren-Oosterom et al., 2011). In children with DS and children with CP, negative parenting was associated with externalizing behaviors and positive parenting with positive social skills (De Clercq et al. 2019).

Rationale and Hypotheses

In neurotypical children, research has shown that parenting has been correlated with externalizing behaviors, internalizing behaviors, and social skills. In this population positive parenting behaviors and styles such as authoritative parenting has been shown to increase positive social skills and decrease the externalizing and internalizing behaviors of a child. However, the research for parenting and children with ASD is not as clear. There are discrepancies within that data which makes it unclear what role parenting behaviors play in the behaviors seen in children with ASD. A meta-analysis allows us to see a bigger picture of what the true effect of parenting styles is on externalizing and internalizing behaviors as well as social skills. This will help alleviate the discrepancies in the current research.

We hypothesized that negative parenting behaviors would be correlated with externalizing behavior. This was based on the previous findings that neurotypical children showed more externalizing behaviors when negative parenting was used (Martínez & García, 2007; Masud et al., 2019). Similar results were found with children with ADHD, DS, and CP suggesting that children with ASD could also have higher rates of externalizing behaviors with negative parenting (De Clercq et al. 2019; McRae et al. 2020). When positive parenting was used there were lower rates of externalizing behaviors as well (Moreno Méndez, Espada Sánchez, & Gómez Becerra, 2020).

We also expect that negative parenting would be associated with internalizing behaviors. Neurotypical children have been found to have higher rates of anxiety when negative parenting is used (Marcone, Affuso, & Borrone, 2017). Due to anxiety and depression being common in this population being more responsive and having more positive parenting behaviors should lessen the internalizing behaviors expressed as seen in previous research (Moreno Méndez, Espada Sánchez, & Gómez Becerra, 2020).

We also hypothesize that positive parenting would be correlated with positive social skills. In neurotypical children, positive parenting behaviors was associated with better social skills (Wang, Li, & Zhu, 2019). This was also seen in children with CP and DS suggesting that these results are not just seen in neurotypical children or children without disabilities (De Clercq et al. 2019).

Method

Literature Search

Twenty-one studies were found that met the predetermined inclusion criteria by using a systematic database and manual search (see Table 1). PsychINFO, EbscoHost, JSTOR, PubMed, ERIC, ScienceDirect, and ProQuest were the databases used. Several combinations of the following search terms were used: *autism spectrum disorder, Asperger's, parenting style, parenting, authoritarian, permissive, authoritative, externalizing, externalizing behavior, internalizing, internalizing behavior, social skills, and anxiety*. There were 454 results in the PsychINFO search, 46 in EbscoHost, 116 in JSTOR, 486 in PubMed, 97 in ERIC, 1,316 in Science Direct, and 4,279 in ProQuest. Due to lack of time unpublished data and conference programs were not searched. The variables measured for parenting behaviors and child behavior, the measures used, correlations, sample sizes, sample characteristics and ages of participants were recorded.

Inclusion and Exclusion Criteria

In order to be included in the current study a correlation between internalizing behaviors, externalizing behaviors, or positive social skills and positive parenting or negative parenting behaviors must have been measured. The children used in the studies must also had to be diagnosed with ASD. There were no limitations placed on the severity of the diagnosis. If a parental behavior

had been shown in previous studies to have a positive or negative affect on a neurotypical child's behavior the parenting behavior was categorized based on if it was positive or negative. Internalizing and externalizing behaviors were based on the DSM-V's definitions. Table 2 states how each variable was categorized under the previously mentioned categories. Studies were excluded if there was not a correlation measured or if the correlation was between different variables or the variables that were used were not able to fit into one of those categories previously listed. Studies were also excluded if they could not be translated into English.

Child Behavior Measures

The most frequently used measure for the child's behavior was the Child Behavior Checklist for Ages 6-18 (CBCL; Achenbach, 2001). The CBCL is a part of the Achenbach System of Empirically Based Assessment (ASEBA). The CBCL measures problem behaviors associated with the following categories: affective, anxiety, somatic symptoms, attention deficit/hyperactivity, oppositional defiance, and conduct disorder. These categories were based off the DSM-IV criteria. The responder scored the participant as 0, 1, or 2 for each category to indicate how consistent the participant was with that specific category. The CBCL asks behavioral questions (e.g., demands a lot of attention, bites fingernails, too fearful or anxious, sets fires, wets the bed, and refuses to talk.)

While the CBCL was the most used measure of child behaviors, other measures were also used. The other measures included the Children's Social Behavior Questionnaire, Children's Behavior Questionnaire, Revised Children's Manifest Anxiety Scale, ectara (see Table 1).

Parent Behavior Measures

The Parenting Styles and Dimensions Questionnaire (PSDQ) was the most used measure for parenting behaviors. The PSDQ uses Baumrind's (1971) definition of authoritative,

authoritarian, and permissive parenting styles to categorize parent behaviors such as warmth and involvement, good nature, democratic participation, reasoning, verbal hostility, corporal punishment, punitive strategies, and directiveness (Robinson et al., 2001). The questionnaire asks questions about if the parent encourages the child to talk about the child's troubles, if they give reasons why their child should obey rules, if they respect their child's opinion and encourage them to express it, if physical punishment is used, if hostility such as shouting and anger is shown to the child, if they explain the child's punishment, if they spoil the child, or if they do not actually punish the child after threatening to.

While the PSDQ was the most used measure of child behaviors, other measures were also used. The other measures included the Parenting Practices Questionnaire, Parental Behavior Scale, Alabama Parenting Questionnaire, etcetera (See Table 1).

Coding and Aggregation

The sample size, child behavior measure, parent behavior measure, and sample characteristics are listed in Table 1. Scores were averaged if the article had multiple variables that fell under one of the behavioral categories. For longitudinal studies the first correlation was used to keep the ages of participants to 1- to 18-years-olds. Authoritative parenting styles was categorized under positive parenting as the caring and adaptive nature of the style fit under the positive parenting behaviors. Negative parenting behaviors were defined as being harsh, controlling, disengaged, having harsh punishment, over lax parenting, uninvolved, and inconsistent. Authoritarian and permissive styles were categorized under negative parenting behaviors.

Results

Positive Parenting

Fifteen studies (k) were used that compared positive parenting with externalizing behaviors and total N = 1,597. In positive parenting, $\rho = .007$ (95% CI: $-.083, .097$). There was an insignificant positive correlation between positive parenting behaviors and externalizing behaviors ($p = .879$). $I^2 = 0.00$, which indicates that there was a less than 1% total variation in the studies due to heterogeneity than due to chance. A chi-squared test of independence was used to examine heterogeneity. $Q(df) = 14.159(15)$, and the chi-squared test was not significant ($p = .513$), suggesting there is low heterogeneity and potentially a common effect size. Therefore, this result could represent the true effect in this population.

For internalizing behaviors, $k = 11$ and total N = 1,342. Positive parenting was significantly correlated with internalizing behaviors, $\rho = .068$ (95% CI: $.019, .117$), $p = .006$. $I^2 = 0.00$, implying that there were few inconsistencies among the studies looking at internalizing behaviors with positive parenting behaviors. There was not a significant p-value for the chi-squared test ($p = .487$), and $Q(df) = 10.484(11)$ indicated low heterogeneity and a possible common effect size among the data. This suggests that the results could be the true effect in this population as well.

Eight studies were used for social skills and positive parenting with the total N= 508. Positive parenting did have a significant positive correlation, $\rho = .228$ (95% CI: $.126, .325$), $p < .001$, $I^2 = 0.00$, suggesting that there was consistency between the studies used. There is potential that these studies also had a common effect size and low heterogeneity because $Q(df) = 6.057(7)$, $p = .533$. This effect could then be the true effect size of these variables in this population.

Negative Parenting

There were thirteen studies (k) used that compared negative parenting behaviors with externalizing behavior in children with ASD and total N = 1,335. There was a significant positive correlation between these two variables, $\rho = .245$ (95% CI: $.191, .298$), $p < .001$. These studies

were also very consistent with each other as $I^2 = 4.746$. $Q(df) = 13.648(13)$ and $p = .399$ suggests that there is low heterogeneity between these studies used and there could potentially be a common effect size between them. Thus, the true effect seen in this populations could be effect found in these results.

For internalizing behaviors, $k = 11$ and total $N = 1,158$ Negative parenting was not significantly correlated, $\rho = .099$ (95% CI: $-.049, .242$) and $p = .191$. The chi-squared test was not significant ($p = .144$), and $Q(df) = 15.927(11)$ indicated low heterogeneity and a possible common effect size among the data. These studies used with this variable still had a moderately low inconsistency, $I^2 = 30.937$. This could then be inferred that these results could be the true effect seen in this populations; however, there could be some inconsistencies.

Six studies (k) were used for social skills and negative parenting ($N = 508$). Negative parenting was not significantly correlated, $\rho = -.016$ (95% CI: $-.152, .120$), $p = .817$. There was also low inconsistency with these studies, $I^2 = 0.00$. The chi-squared test was not significant ($p = .453$) and $Q(df) = 4.708(5)$, suggesting a possible common effect size and low heterogeneity amongst the studies. Therefore, the results could show the true effect that is seen in this population.

Publication Bias

Funnel plots were used to test for publication bias in the studies used which could lead to bias in the current study. Figure 1 and 2 suggest that there was no missing studies or publication bias for the results found for externalizing behaviors and internalizing behaviors. Both figures do not indicate missing data and are fairly symmetrical. Figure 3 indicates that there could be missing studies looking at social skills. There is potential for some publication bias as the figure is also slightly asymmetrical.

Discussion

The way parents behave and interact with their child plays a major role in that child's development. The first hypothesis was that negative parenting behaviors would be correlated with externalizing behavior. The results confirmed that there was a significant positive correlation between externalizing behaviors in children with ASD and negative parenting behaviors. This is consistent with the findings seen in neurotypical children and children with ADHD, DS, and CP (De Clercq et al. 2019; Martínez & García, 2007; Masud et al., 2019; McRae et al. 2020). Our results suggest that behaviors such as being overly controlling, uninvolved, harshly punishing, inconsistent, and unloving is related to a child with ASD being more aggressive, having more meltdowns, or being more hostile towards others. This is important for parents to know because decreasing negative parenting behaviors could reduce problem externalizing behaviors that are common for children with ASD. Using more positive parenting behaviors such as being more responsive, accepting, supportive, and not being overly controlling but still having rules could help lessen the burden parents face when dealing with externalizing behaviors.

The second hypothesis was that negative parenting would be associated with internalizing behaviors as well. This hypothesis was not confirmed as the results suggest that positive parenting was positively correlated with internalizing behaviors. Behaviors such as anxiety and depression would then be increased by positive parenting behaviors that are meant to reassure the child and effectively communicate with them. This conflicts with the results seen for neurotypical children (Marccone, Affuso, & Borrone, 2017; Moreno Méndez, Espada Sánchez, & Gómez Becerra, 2020). This would need further research before drawing conclusions; however, due to the high commodity rate for disorders relating to internalizing behavior in this population it is possible that negative parenting behaviors illicit a more external response while positive

parenting behaviors cause the child to think and not physically express their emotions.

Internalizing behaviors are difficult to measure and with a population that has deficits in communication it can be hard to get an accurate measurement of these behaviors.

The final hypothesis was that positive parenting would be correlated with positive social skills. This was confirmed by the results as positive social skills also were significantly correlated with positive parenting behaviors. This does align with the results seen in children with CP and DS as well as neurotypical children (De Clercq et al. 2019; Wang, Li, & Zhu, 2019). Increased positive parenting behaviors have the potential to help children with their social communication skills, a key deficit for individuals with ASD.

By understanding how behaviors in children with ASD could be affected by common parenting practices, education can then be given to the parents to maximize positive behaviors and lesson negative behaviors in this population. Parents can then understand that while children with ASD have higher rates of externalizing and internalizing behaviors the rate at which their child expresses these behaviors could be due more to their parenting and less to their child's disorder. Using positive parenting behaviors can allow a child with ASD to feel more secure and not feel overwhelmed. This can allow for less tantrums and aggressive behaviors caused by these feelings as well as anxiety. Thus, change can be done and the stress that these behaviors caused can be helped by changing the behaviors of the parents which then in fold will help elevate the stress of the child and the parent and allow the parent to use more positive behaviors. Social skills are very important in our society which makes it difficult for children with ASD. By using positive parenting behaviors, children with ASD can potentially increase their social skills and allow them to bond and communicate with others more which in turn can help them have better communication with their parents.

Limitations

One limitation of the study was not knowing the sample size for each parenting style or behavior. This could skew the data if the sample sizes do not accurately reflect what was used in the correlations. To test if the sample sizes would affect the results the analysis was run using half of the sample size for negative parenting and positive parenting. This did not significantly affect the results, suggesting that this limitation would not change the results found in the current study. Another limitation is the lack of studies. By including more studies in the meta-analysis, the results would be more accurate. Unpublished articles, conference programs, articles not in English, and other databases would ideally have been checked and included if the inclusion criteria were met. Future studies can use more diverse sample in order to prevent this limitation.

Future Directions

For further studies, looking at the connection between parenting stress and attachments between the parent and child and what style the parent uses would be beneficial to understand how connected the child's behavior is to the stress, attachment, and parenting style the parent feels and uses. Also looking at the relationship between gender and the parenting style used and gender of the child would be helpful. Parents can use different style so looking at the connection between gender and style as well as the impact of the two styles has on the child would be beneficial. Parents have also been shown to use different styles based on the gender of their child. Also, boys and girls react differently to different styles so looking at the gender of the child would also help to get a better understanding of this topic.

Conclusion

Parenting behaviors do impact the behaviors seen in a child. Positive parenting behavior can lead to an increase in social skills in children with ASD which will positively affect the child

and their development. Negative parenting behaviors can lead to an increase in externalizing behaviors which is already seen more in children with ASD which can increase the stress experienced by the parents even more. Training parents on how to work with their child while they are experiencing externalizing and internalizing behaviors will improve the overall development of that child as well as help the parents.

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Table 1
Summary of studies included in meta-analysis

Study	N	Child variables	Child measure	Parent variables	Parent measure	Sample characteristics
Bader et al. (2014)	111	EB	CBCL/CSBQ	PP, NP	APQ	Children age 1-14 in USA
Baker et al. (2019)	61	EB	CBC/DISC	PP, NP	AFSS/APQ	Children age 6-10 in USA
Bonnen et al. (2014)	206	EB, IB	SDQ	PP, NP	PBS-ASD	Dutch children age 6-12
Bontinck et al. (2018)	16	SS	SCQ	PP	EG	European children age 5
Caplan et al. (2019)	176	SS	SSiS	PP, NP	PDI-R	Children age 4-7 in USA
DeClercq et al. (2019)	95	EB, IB, SS	CBCL/BERS-2	PP, NP	CRPBI/PCS/POPS	Belgium children age 7-15
Dieleman et al. (2017)	139	EB, IB	CBCL	PP, NP	PBS	European children age 6-12
Dieleman et al. (2019)	41	EB, IB, SS	CBCL/PS Scale/SDQ	PP, NP	PCS/POPS	Belgian Children age 7-15
Guajardo et al. (2008)	47	EB, IB	CBCL	NP	PS	Children age 3-5 in USA
Jonovich et al (2007)	62	IB, SS	CMA/SSRS	NP	PBI	Children age 8-18 in USA
Jordan et al. (2020)	64	IB	ADIS-C/P	PP, NP	CCNES	Children age 8-16 in USA
Latouf et al. (2008)	14	EB, SS	BQ	PP, NP	PSDQ	South African Children age 5
Lindsey et al. (2020)	129	EB, IB	CSBQ	PP, NP	DDQ	Children age 4-10 in USA
McRae et al. (2017)	67	EB, IB	CBCL	PP, NP	APQ	Children age 6-12 in USA
O'Niones et al (2019)	222	EB, IB	EDI/HSQ/EDA/IUS	PP	PBS	Children age 6-17 in USA
Rahman et al. (2021)	79	EB, IB, SS	SDQ	PP, NP	PSDQ	Malaysian children age 4-12
Refferty et al. (2020)	117	EB	CBCL	PP, NP	PBI	Children age 10-17 in USA
Ross et al. (2016)	71	EB, IB, SS	EQ/ADOS-2/CBQ/EATQ-R	PP, NP	PSDQ	Male children age 4-18 in Western Cape
Santhanam et al. (2014)	16	EB, SS	CDI/WG / CDI/WS	PP	SIRS	Children age 3-5 in USA
Ueda et al. (2020)	42	EB, IB	CBCL	PP, NP	PSDQ	Children age 6-12 in Japan

Note. EB= Externalizing Behaviors, IB= Internalizing Behaviors, SS= Social Skills, PP= Positive Parenting, NP= Negative Parenting, PSDQ= Parenting Styles and Dimensions Questionnaire, PBS= Parental Behavior Scale (PBS), PBI= Parental Bonding Instrument, SDQ= Strengths and Difficulties Questionnaire, CBCL= Child Behavior Checklist for Ages 6–18, APQ= Alabama Parenting Questionnaire, CSBQ= Children's Social Behavior Questionnaire (CSBQ), BERS-2= Behavioral and Emotional Rating Scale-2, PCS= Psychological Control Scale, POPS= Perceptions of Parents Scale, CRPBI= Child Report of Parenting Behavior Inventory, DISC= Diagnostic Interview Schedule for Children, AFSS= Autism Five-Minute Speech Sample, PDI-R= Parent Directiveness and Interference-Revised, SSiS= Social Skills Improvement System, DDQ= Diagnostic and Demographic Questionnaire, SSRS= Social Skills Rating System, CCNES= Coping with Children's Negative Emotions Scale, ADIS-C/P= Anxiety Disorders Interview Schedule for Children and Parents, SIRS= Social Interaction Rating Scale, CDI/WG= Words and Gestures, CDI/ WS= Words and Sentences, EQ= Empathy Quotient, EATQ-R= Early Adolescent Temperament Questionnaire (Revised), EG= Erickson global rating scales, SCQ= Social Communication Questionnaire (lifetime version), BQ= Behavioral Questionnaire, PS= The Parenting Scale, PS Scale= Prosociality Scale, CMA= Revised Children's Manifest Anxiety Scale, EDI= Emotion Dysregulation Inventory, HSQ= Home Situations Questionnaire-ASD, EDA= Extreme demand avoidance Questionnaire, IUS= Intolerance of Uncertainty Scale.

Table 2
Summary of how each variable was defined for the current study

Study	Child Variables	Defined Child Variables	Parent Variables	Defined Parent Variables
Bader et al. (2014)	Externalizing Behaviors	EB	Positive parenting practices Negative parenting practices	PP NP
Baker et al. (2019)	Externalizing Behaviors	EB	Positive Parenting Negative Parenting	PP NP
Bonnen et al. (2014)	Externalizing Behaviors Internalizing Behaviors	EB IB	Positive Parenting Negative Control ASD Adapted Parenting	PP NP PP
Bontinck et al. (2018)	Social Communication	SS	Supportive Presence	PP
Caplan et al. (2019)	Social Skills-Parent Report Social Skills- Teacher Report	SS SS	Supportive Directiveness Supportive Engagement Interference	PP NP NP
DeClercq et al. (2019)	Internalizing Problems Externalizing Problems Psychosocial Strengths	IB EB SS	Responsivity Autonomy Support Psychological control	PP PP NP
Dieleman et al. (2017)	Externalizing Behaviors Internalizing Behaviors	EB IB	Positive Parenting Negative Parenting	PP NP
Dieleman et al. (2019)	Internalizing Behaviors Externalizing Behaviors	IB EB	Autonomy Supportive Parenting Authoritarian	PP NP
Guajardo et al. (2008)	Internalizing Behaviors Externalizing Behaviors	IB EB	Lax Parenting Overreactive Parenting	NP NP
Jonovich et al (2007)	Child Anxiety	IB	Perception of Control Parental Acceptance Parental Control	NP PP NP
Jordan et al. (2020)	Child Reported Anxiety	IB	Expressive Encouragement Emotion-Focused Problem-Focused Punitive Minimization	PP PP PP PP PP
Latouf et al. (2008)	Aggression Hyperactive Detached Acceptable Social	EB EB SS SS	Authoritative Authoritarian Permissive	PP NP NP

Lindsey et al. (2020)	Externalizing Behaviors	EB	Positive Parenting	PP
	Internalizing Behaviors	IB	Negative Parenting	NP
McRae et al. (2017)	Externalizing Behaviors	EB	Parental adjustment	PP
	Internalizing Behaviors	IB	Harsh/disengaged parenting	NP
			Warm/supportive parenting	PP
O'Niones et al (2019)	Reactivity	EB	Reinforcement Approaches	PP
	Demand-specific	EB	Reducing Uncertainty	PP
	Socially inflexible	EB	Accommodation	PP
	Extreme demand avoidance	EB		
	Intolerance of uncertainty	IB		
Rahman et al. (2021)	Emotional Problems	IB	Authoritative	PP
	Conduct problems	EB	Authoritarian	NP
	Hyperactive	EB	Permissive	NP
	Peer problems	SS		
	Prosocial	SS		
Refferty et al. (2020)	Externalizing Behaviors	EB	Warmth & Acceptance	PP
			Psychological Control	NP
Ross et al. (2016)	Empathic Behaviors	SS	Authoritative	PP
	Social Competence	SS	Authoritarian	NP
	Surgency	EB	Permissive	NP
	Negative Affectivity	IB		
Santhanam et al. (2014)	Communicative Acts	SS	Maternal Responsiveness	PP
	Joint Engagement	SS		
	Surgency	EB		
Ueda et al. (2020)	Internalizing	IB	Authoritative	PP
	Externalizing	EB	Authoritarian	NP
			Permissive	NP

Note. EB= Externalizing Behaviors, IB= Internalizing Behaviors, SS= Social Skills, PP= Positive Parenting, NP= Negative Parenting

Table 3
Meta-analytic results

	<i>k</i>	Total <i>N</i>	ρ (95% CI)	<i>Q</i> (<i>df</i>)	<i>I</i> ²
Positive Parenting					
Externalizing Behaviors	15	1,597	.007 (-.083,.097)	14.159 (15)	0.000
Internalizing Behaviors	11	1,342	.068* (.019,.117)	10.484 (11)	0.000
Social Skills	8	508	.228* (.126,.325)	6.057 (7)	0.000
Negative Parenting					
Externalizing Behaviors	13	1,335	.245* (.191,.298)	13.648 (13)	4.746
Internalizing Behaviors	11	1,158	.099 (-.049,.242)	15.927 (11)	30.937
Social Skills	6	467	-.016 (-.152,.120)	4.708 (5)	0.000

Note. * $p < .05$; *Q* = Cochran's *Q* statistic for heterogeneity; *I*² = the amount of the observed variance that is due to true differences in effect size

Figure 1. Funnel Plot for Externalizing behaviors

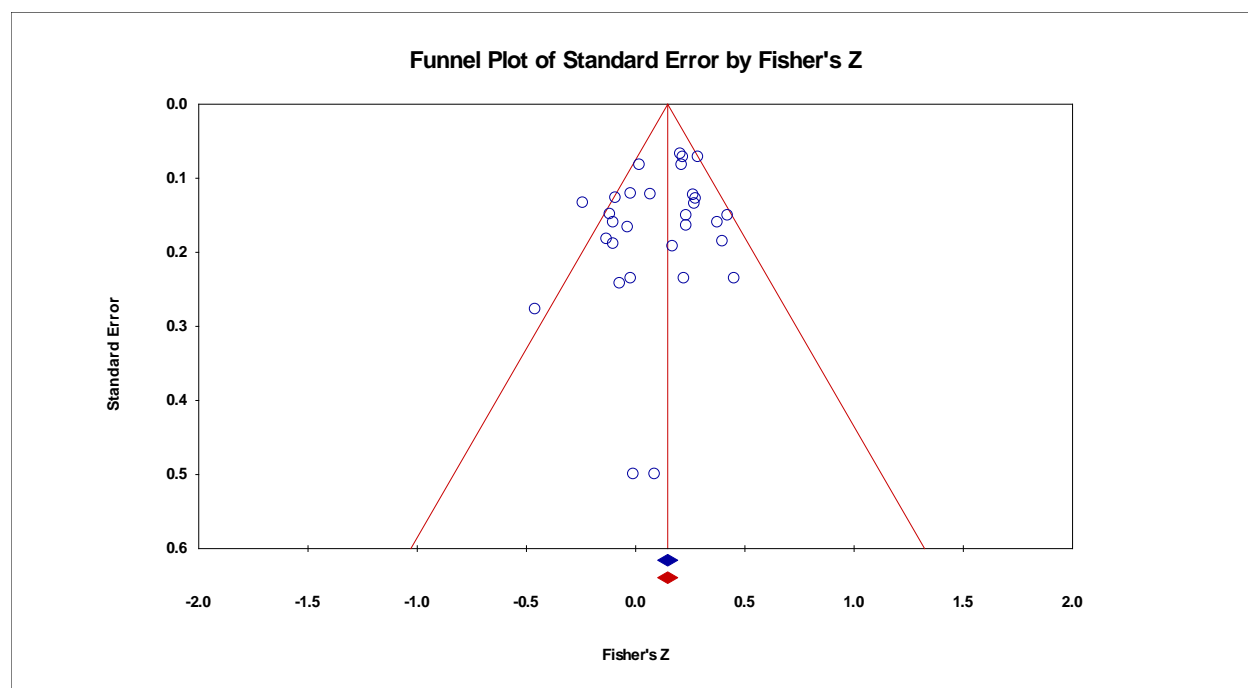


Figure 2. Funnel Plot for Internalizing Behaviors

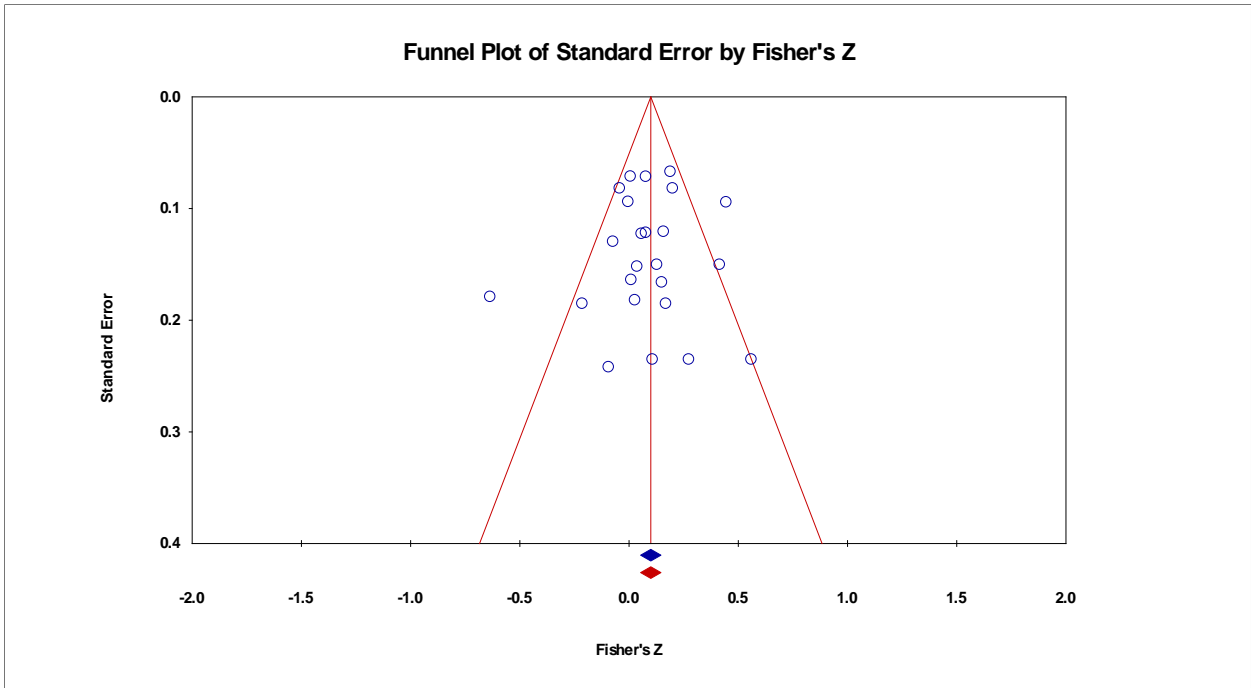


Figure 3. Funnel Plot for Social Skills

