

# Mother-child Relationship: The Impact of Maternal Parenting Stress on the Development of Behaviour Problems in Malaysian Children with Autism Spectrum Disorder

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## Abstract

Parenting children with autism spectrum disorder (ASD) may be stressful due to extra parenting demands placed on parents, and parenting stress may harm children, such as developing later behaviour problems. However, research on such relationships has not been extensively conducted outside Western settings. Therefore, the present study aims to investigate the relationship between maternal parenting stress and behaviour problems in Malaysian children with ASD. It is hypothesised that maternal parenting stress has a significant direct relationship with child behaviour problems. A cross-sectional survey was distributed to 198 Malaysian mothers with a child diagnosed with ASD aged 5 to 12 years old. Results reveal that maternal parenting stress did not significantly have a direct relationship with the development of behaviour problems in Malaysian children with ASD, indicating that parenting stress is not a predictor of child behaviour problems. The finding highlights the importance of conducting research across other cultures, particularly in the Asian context, for an increased understanding of how parenting stress relates to child behaviour problems.

**Keywords:** Mother-child relationship, maternal parenting stress, child behaviour problems, autism spectrum disorder

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## Introduction

Autism spectrum disorder (ASD) is a neurodevelopmental disorder with varying degrees of severity that is characterised by deficits in social communication and interaction as well as restricted or repetitive patterns of behaviour, activities, and interests (American Psychological Association; APA, 2013). In the most recent Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), ASD is categorised as a new DSM-5 disorder because it encompasses several diagnoses from the previous DSM-IV such as Asperger's disorder, autistic disorder, Rett's disorder, childhood disintegrative disorder, and pervasive developmental disorder.

Further, the number of children diagnosed with ASD has been steadily increasing worldwide since the first epidemiologic studies were conducted in the late 1960s and early 1970s (Baio et al., 2014). According to global data, an estimated one in 132 individuals has ASD, which equates to roughly 50 million people worldwide (Baxter et al., 2015). In Malaysia, an increasing number of children with ASD was also found when the Malaysian Ministry of Education reported an increase in the number of students enrolled in special education classes under the ASD category, increasing from 9,105 in 2018 to 14,073 in 2020 (Malaysia, Ministry of Education, 2018; 2020). As the number of children with ASD is on the rise, it is imperative for all professionals, including psychologists, healthcare professionals, family researchers, and developmentalists, to pay close attention to this growing population, as parents of children with ASD are also affected and may likely be under a high level of stress.

Research has indicated that parents of children with ASD face much stress when parenting their children (Estes et al., 2013; Illias et al., 2018). Interestingly, the parenting stress of parents of children with ASD is frequently reported at higher levels than parents of typically developing children (Hayes & Watson, 2013; Boonen et al., 2014; Miranda et al., 2015; Lee & Chiang, 2017). This parenting stress results from the extra parenting demands parents face when parenting their children with ASD. For example, parents must constantly monitor and supervise their children due to their inadequate daily life skills (i.e., eating, sleeping, bathing, and dressing), their rigid routine and unpredictable behaviour, as well as constantly being vigilant in managing children's mood changes and behaviour (Hoogsteen & Woodgate, 2013; Wang et al., 2013; Hsiao, 2016). This parenting stress has raised concern among researchers due to its association with adverse outcomes of children's development (Vierhaus et al., 2013; Puff & Renk, 2014; Weitlauf et al., 2014; Hsiao, 2016; Lu et al., 2018; Rutherford & Mayes, 2019).

Research has revealed that parenting stress has been associated with adverse outcomes for children, whereby it has been found that maternal parenting stress, in particular, contributes to the development of behaviour problems in children (Zaidman-Zait et al., 2014). The researchers further explain that mothers who raised their children when they experienced high levels of parenting stress tended to report that their children were more likely to exhibit more behaviour problems such as social withdrawal, aggressive behaviour, and depression later in life (Woodman et al., 2015; Rodriguez et al., 2019). The behavioural outcomes occurred because mothers faced difficulties monitoring and responding effectively and sensitively to their children's behavioural, emotional and social needs. This situation impairs parents' ability to instil self-regulation in their children, and increasing behaviour problems in children (Silva & Schalock, 2012).

However, despite the increasing number of studies that have found a link between maternal parenting stress and child behaviour problems, there is still a lack of research on the relationship between maternal parenting stress and behaviour problems in children with ASD (Rodriguez et al., 2019), as previous studies were more focused on children with Down Syndrome, other developmental disabilities, or motor impairment (Woodman et al., 2015). This indicates the need to research maternal parenting stress and child behaviour problems in the ASD population. Thus, this study hopes to extend the knowledge of the relationship between maternal parenting stress and behaviour problems among the autistic population in Malaysia.

Furthermore, conducting this study is essential to determine whether a relationship between maternal parenting stress and child behaviour problems also exists in the ASD population since mothers of children with ASD often experience high levels of parenting stress (Lee & Chiang, 2017; Porter & Loveland, 2018; Enea & Rusu, 2020) while children with ASD are also reported to exhibit more behaviour problems (Georgiades et al., 2011). Understanding such relationships in the ASD population is essential as researchers, professionals, and practitioners could be informed that maternal parenting stress needs to be addressed seriously to reduce behaviour problems among children with ASD, and a proper intervention programme can be developed for this population. Therefore, the present study investigates the relationship between maternal parenting stress and behaviour problems in Malaysian children with ASD. It is hypothesised that a significant relationship would be found between maternal parenting stress and child behaviour problems among Malaysian children with ASD.

## Literature Review

### Main concepts

#### Parenting stress

Deater-Deckard (1998) conceptualised parenting stress as a form of psychological distress caused by the psychological costs associated with parenthood (that is, the stress responses to the demands of being a parent). In other words, *parenting stress* can be defined as an “aversive psychological reaction to the demands of being a parent” (Deater-Deckard, 1998, p. 315). Through these definitions, it can be understood that parents, particularly mothers, experience distress and discomfort with their parenting demands as those demands have exceeded their ability to cope healthily. Research also reveals that this parenting stress is a negative feeling that is often experienced by both mothers and fathers when raising their children, regardless of whether the children are typical (Liu & Wang, 2015; McSherry et al., 2019; Mak et al., 2020) or atypical (Peters-Scheffr et al., 2012; Estes et al., 2013; McStay et al., 2014; Siu et al., 2018; Clauser et al., 2021; Rahman & Jermadi, 2021) developing children.

Research evidence indicates that the level of parenting stress experienced by each parent differs, with both mothers and fathers of children with ASD reporting higher levels of parenting stress than parents of typical children (Estes et al., 2013; Giovagnoli et al., 2015; Lai et al., 2015; Lee et al., 2017; Siu et al., 2018; Basri & Hashim, 2019; Enea & Rusu, 2020) or those diagnosed with other disabilities such as cerebral palsy, down syndrome, developmental delay and intellectual disability (Estes et al., 2013; Valicenti-McDermott et al., 2015; Hemati Alamdarloo & Majidi, 2021).

Concerning the high level of parenting stress experienced by parents of children with ASD, studies have also revealed that mothers and fathers report different levels of parenting stress, with mothers consistently reporting higher levels than fathers (Wang et al., 2013; Lee & Chiang, 2017; Porter & Loveland, 2018; Enea & Rusu, 2020; Hemati Alamdarloo & Majidi, 2021). These differences may be due to differences in caregiving responsibilities and involvement when raising children, with mothers taking full responsibility for their children (i.e., helping them with their daily activities, being more involved in teaching the child and managing the child's behaviour) compared to fathers (Gau et al., 2012; Ang & Loh, 2019). In addition, research has also indicated that this parenting stress experienced by mothers, in particular, is associated with the development of behaviour problems in children with ASD, such as withdrawn behaviour, aggressive behaviour,

delinquency problems, or depression (Zaidman-Zait et al., 2014; Ueda et al., 2020).

### **Child behaviour problems**

Researchers have generally described that child behaviour problems manifest both externally and internally (Achenbach, 1978). Externalising behaviour problems are when children express their behaviours externally through hyperactivity, aggression, rule-breaking behaviour, delinquency, and impulsivity (Hickey, 2017; Ueda, 2018, Bader & Barry, 2014; Maljaars et al., 2014; Dieleman et al., 2017; McRae et al., 2019; Ueda, 2018; De Clercq et al., 2020). On the other hand, internalising behaviour problems are behaviours that are expressed inwardly towards the self (Hickey, 2017; Ueda, 2018) and frequently manifest as anxiety, withdrawal, low self-worth, shyness, fearfulness, depression, irritability, sadness, psychosomatic complaints, peer relationship problems and social regression (Maljaars et al., 2014; Zaidman-Zait et al., 2014; Woodman et al., 2015; Dieleman et al., 2017; McRae et al., 2019; Ueda et al., 2018; De Clercq et al., 2020).

Researchers have found that child behaviour problems are more common in children with ASD (Georgiades et al., 2011; Horiuchi et al., 2014; Charman et al., 2015; Li et al., 2019) than in typically developing children (Boonen et al., 2014; Giovagnoli et al., 2015; Ueda et al., 2020) and those diagnosed with other disabilities (Mayes et al., 2012; Baptista et al., 2018; Hou et al., 2018). Notably, those child behaviour problems are consistently reported to fall within the "clinical range" (Georgiades et al., 2011; Horiuchi et al., 2014; Giovagnoli et al., 2015; Vaillancourt et al., 2016; Lin et al., 2021).

Therefore, reducing child behaviour problems in children with ASD is essential as research findings show that the presence of child behaviour problems can negatively impact their daily life functioning, such as doing poorly in school (Van Lier et al., 2012; Forbes et al., 2019); having more social problems and emotional issues (Bierman et al., 2015) and having poor self-daily living skills (Hoogsteen & Woodgate, 2013). Given that there is extensive evidence for a link between parenting stress, especially maternal parenting stress, and child behaviour problems in typically developing children, it is crucial to research such a link in the autism population so that research findings can inform that reducing maternal parenting stress is a crucial factor that must be addressed seriously when attempting to reduce the development of behaviour problems in children with ASD.

## Parenting stress and child behaviour problems

Parenting is not easy because it involves many responsibilities and the day-to-day demands of caregiving in raising children. Consequently, most fathers and mothers are frequently reported to have high-stress levels. Parenting stress, especially maternal parenting stress, is concerning because it has been linked to several adverse child outcomes, including the development of behaviour problems in children (Woodman et al., 2015; Davis & Neece, 2017; Rodriguez et al., 2019).

The association between maternal parenting stress and child behaviour problems has been well-documented for typically developing children. In particular, several studies have reported that the higher the levels of maternal parenting stress that mothers experience, the more behaviour problems their children display. For example, in a three-year longitudinal quantitative study involving 606 parents of 14-month-old infants, Tharner et al. (2012) reported that childrearing-related parenting stress (including both mothers' and fathers') was significantly associated with child behaviour problems such as aggressive behaviour, attention deficit problems, withdrawn behaviour, and emotional reactivity. This significant relationship is also evident in children aged 4 to 10 (Mackler et al., 2015). These findings indicate that parenting stress (i.e., for both mothers and fathers) has predictive power over child behaviour problems. As a result, when parents' parenting stress increases, the development of child behaviour problems also increases (Tupper et al., 2020).

Recognising that the results of studies on typically developing children cannot be generalised to atypically developing children, some researchers researched the relationship between parenting stress and behaviour problems in atypically developing children. Longitudinal studies found consistent findings that parenting stress predicts later child behaviour problems (Totsika et al., 2013). For example, Rodriguez et al. (2019) conducted a longitudinal study to examine the bidirectional links between parenting stress and child behaviour problems in families of children with ASD (ages 5-12 years). The study found that maternal parenting stress is positively predicted to increase aggression, impulsivity, depressed mood, and social withdrawal. With significant findings in the relationship between parenting stress and child behaviour problems, parent-driven rather than child-driven effects are demonstrated, in which parenting stress (including maternal parenting stress) predicts a later increase in child behaviour problems but not vice versa (Zaidman-Zaid et al. 2014).

Despite consistent findings that parenting stress is a predictor of child behaviour problems, some studies found contradictory findings that parenting stress is not a predictor of child behaviour problems. However, child behaviour problems do predict later parenting stress. For instance, Giavagnoli and colleagues (2015) investigated the interaction of parenting stress (i.e., both mothers' and fathers') and child behaviour problems in a sample of pre-schoolers. Through this study, Giavagnoli et al. (2015) discovered a child-driven effect in the relationship between parenting stress (i.e., both mothers' and fathers') and child behaviour problems, in which child behaviour problems are a strong predictor of parenting stress and not the other way around. Specifically, researchers indicate that an increase in behaviour problems exhibited by children contributed to an increase in parenting stress (i.e., both mothers' and fathers') (Hall & Graff, 2012). Recent research also confirms that child behaviour problems are robust predictors of parenting stress (including maternal parenting stress) (Hou et al., 2018), supporting these findings on child-driven effects.

Furthermore, only a handful of studies have investigated the relationship between maternal parenting stress and child behaviour problems outside Western countries. Intriguingly, despite limited research conducted in non-Western countries, there are contradictory conclusions regarding the relationship between maternal parenting stress and child behaviour problems. Some studies support that maternal parenting stress predicts child behaviour problems, while others do not. For example, in a Chinese study, Lin et al (2021) reveal a significant direct relationship between parenting stress (especially mothers') and child behaviour problems in Chinese samples, indicating that parenting stress is a predictor of child behaviour problems. This significant finding is also supported by Japanese studies, particularly one conducted by Ueda et al. (2020), which found that maternal parenting stress plays a significant role in predicting child behaviour problems, indicating that high-elevated levels of parenting stress experienced by parents are more likely to contribute to the later development of behaviour problems in their children.

In contrast, Chung et al. (2013) found no significant relationship between maternal parenting stress and child behaviour problems in Korean samples. Contradictory findings between Chung et al. (2013) and previous research (i.e., Ueda et al., 2020; Lin et al., 2021) suggest that more research is required to achieve more consistent results regarding the relationship between parenting stress, specifically maternal parenting stress and child behaviour problems in non-Western settings. Therefore, the present study attempts to fill this gap by conducting research in a non-Western setting, specifically in Malaysia, focusing on atypical

child populations (i.e., ASD) to understand such relationships in the Malaysian population. The present study aims to investigate the relationship between maternal parenting stress and child behaviour problems in Malaysian children with ASD. It is hypothesised that there is a significant direct relationship between maternal parenting stress and behaviour problems in Malaysian children with ASD.

## Methodology

### Study design and participants

The present study used a quantitative method and utilised a cross-sectional survey to collect data from participants via an online platform (i.e., Google Form) and a physical platform (i.e., a paper questionnaire). A sample of 198 mothers of children with ASD was recruited in the present study.

**Table 1** Socio-Demographic Profile

		N	%
<b>Children's Profile</b>			
Ages= 5 – 12-years-old (M = 7.71, SD = 1.94)			
<b>Children's Gender</b>	Boy	163	82.3%
	Girl	35	17.7%
<b>Mothers' Profile</b>			
Ages= 19 – 54-years-old (M = 37.78, SD = 4.79)			
<b>Mothers' Ethnicity</b>	Malay	177	89.4%
	Chinese	9	4.5%
	Indian	4	2%
	Others	8	4%
<b>Mothers' Education</b>	No school	2	1%
	SPM	43	21.7%
	Certificate	10	5.1%
	Diploma	49	24.7%
	Master's	90	45.5%
	PhD	4	2%
<b>Mothers' Work Status</b>	Civil servant	62	31.3%
	Private servant	38	19.2%
	Self-employed	20	10.1%
	Retiree	1	0.5%
	Housewife	77	38.9%
<b>Mothers' Marital Status</b>	Not married	2	1%



	Married	186	93.9%
	Single mother	5	2.5%
	Divorced	5	2.5%
<b>Family's Financial Status</b>	B40 (<RM3,860)	70	35.4%
	M40 (RM3,860- RM8,319)	84	42.4%
	T20 (>RM8,319)	44	22.2%

(N=198)

## Children's demographic profile

A total of 35 were girls (17.7%), while the remaining 163 were boys (82.3%). The age of the children ranged from 5 to 12 years old ( $M = 7.71$ ,  $SD = 1.94$ ).

## Mothers' demographic profile

The mother's age ranged between 19 and 54 years old ( $M = 37.78$ ,  $SD = 4.79$ ). The majority of the mothers' ethnicity was Malay (177;89.4%), while Chinese, Indians, and others were the minority (9; 4.5%), four (2%), and eight (4.5%), respectively. Regarding educational status, two (1%) did not have formal education, followed by 43 (21.7%) who completed SPM, ten (5.1%) with a certificate, 49 (24.7%) with a diploma level, 90 (45.5%) with a Master's degree and four (2%) who completed their Ph.D.

In terms of occupation, the majority of mothers were homemakers, which is 77 (38.9%), followed by working in the government sector, which is 62 (31.3%), working in the private sector, which is 38 (19.2%), self-employed, 20 (10.1%), and retiree, which is one (0.5%). In terms of marital status, the majority of mothers were married, which is 186 (93.9%), followed by single mothers, which is five (2.5%), divorced mothers, which is five (2.5%), and not married, which two (1%). In terms of financial status, the majority of families belong to the M40 group (with a monthly salary of RM3,860-RM8,319), which is 84 (42.4%), followed by B40 (<RM3,860), which is 70 (35.4%) and T20 (>RM8,319), which is 44 (22.2%).

## Sampling technique

Participants were recruited through purposive sampling to ensure that data was collected from the specific target population (i.e., mothers of children with ASD). All participants recruited in the present study met all inclusion criteria, such as (1) being a Malaysian mother, (2) having a child diagnosed with ASD, and (3)

the child is aged between 5 and to 12-years-old. The present study excluded participants who were:

1. Children diagnosed with multiple combination disorders,
2. Children who had not been diagnosed with ASD; and
3. Children who were over the age of 12 years old.

## Research Measures

All research measures (i.e., demographic questionnaire, Parenting Stress Scale (PSS), and Strength and Difficulties Questionnaire (SDQ)) were translated into Bahasa Malaysia (BM) for participants' comprehension. The BM version of SDQ was readily accessible and could be obtained from the website ([www.sdqinfo.com](http://www.sdqinfo.com)). An expert translator then translated the Parenting Stress Scale (PSS) with a psychology background to ensure that the translated items were consistent with the original meaning and context. The PSS had gone through the forward translation process, with the English language translated into Malay. Then, pre-testing was conducted for the scales to determine whether the translated scales were appropriate for instruction and language. In addition, small-scale analyses of reliability and validity were also performed.

## Demographic questionnaire

The questionnaire for the demographic variables in the present study was divided into two parts; the child's information and the mother's information. In the child's information section, questions were asked about: (1) the child's age and (2) gender. For the mother's information, information was garnered about: (1) her age, (2) her ethnicity, (3) her education, (4) her occupation, (5) her marital status, (6) her household income, and (7) her number of children (if any).

## Parenting Stress Scale (PSS)

The PSS is an 18-item self-reported scale that measures parental feelings and experiences (can be assessed by both mother and father) in terms of stress, satisfaction, rewards, and controllability (Berry & Jones, 1995; Cheung et al., 2019). The items were scored using a 5-point Likert scale ranging from 1 to 5, i.e., strongly disagree (1), disagree (2), undecided (3), agree (4), and strongly agree (5). Eight items (Items 1, 2, 5, 6, 7, 8, 17, and 18) were reverse-coded into negative words, and all 18 items were put together to yield a total score ranging from 18 to 90 points (Berry & Jones, 1995). The highest score reflects the highest level of parenting stress, while the lowest score reflects the lowest level.

PSS was chosen because it is a reliable and psychometrically sound measure of parental stress (Berry & Jones, 1995). This scale has high internal consistency (as measured by Cronbach's alpha), ranging from .83 (Berry & Jones, 1995) to .86 (Gavita et al., 2014; Shapiro, 2014). PSS has good test-retest reliability (.81), indicating that PSS scores are stable over time (Berry & Jones, 1995). The scale has shown good psychometric properties. This scale has previously been used to assess parenting stress in children with ASD (Hwang et al., 2015; Cheung et al., 2019). In the present study, the internal consistency of this scale was .90.

### **Strength and Difficulties Questionnaire (SDQ)**

The SDQ is a 25-item self-reported scale that measures children's behaviour problems and strengths (Goodman, 1997). The SDQ consists of five subscales: (1) emotional symptoms, (2) hyperactivity/inattention; (3) peer relationship problems; (4) conduct problems; and (5) prosocial behaviour (Goodman, 1997). However, only four subscales were measured in the present study as these subscales reflect child behaviour problems such as (1) emotional symptoms, (2) hyperactivity/inattention; (3) peer relationship problems; and (4) conduct problems (Totsika et al., 2013; Boonen et al., 2014; Altafim et al., 2018; Tupper et al., 2020). The items were scored using a three-point Likert scale ranging from 0 to 2, i.e., not true (0), somewhat true (1), and undoubtedly true (2). Five items (Items 7, 11, 14, 21, and 25) were reverse-coded into negative words, and then the scores of all items were summed (Goodman, 1997; Stokes et al., 2014; Abdul Kadir et al., 2015). The highest score reflects the highest level of behaviour problems, while the lowest score reflects the lowest level of behaviour problems.

The SDQ was chosen for its psychometrically sound measure of behaviour problems in children as it has consistently been found to be satisfactory in studies of different populations across the world (Goodman, 1997; Goodman & Scott, 1999; Smedje et al., 1999; Klasen et al., 2000; Goodman, 2001). The internal consistency (measured by Cronbach's alpha) of this scale was generally satisfactory for each subscale (emotional symptoms = .67, hyperactivity-inattention = .77, peer problems = .57, and conduct problems = .63) and had good internal consistency for total difficulties scores = .82 (Goodman, 2001). The scale has shown adequate psychometric properties. This scale also shows high reliability and validity when used to screen for behaviour problems in children with ASD (Goodman, 1997; Totsika et al., 2011; Maljaars et al., 2014; Boonen et al., 2015). In the present study, the internal consistency of this scale was: total

difficulties score .77, emotional symptoms .75, conduct problems .76, hyperactivity .78, and peer problems .71.

## Procedures

Data collection began after the present study received ethics approval from the IIUM Research Ethics Committee (IREC) to conduct research. Data were collected using two platforms, namely physical and online platforms. Participants were given a paper questionnaire (survey) on the physical platform. Each participant was given two weeks to complete the questionnaire. In addition, Google Form questionnaires were sent via email, WhatsApp group, and Facebook to the participants on the online platform. The autism centre and school of special education had been approached to recruit participants, and only those who met the inclusion criteria were chosen.

To uphold ethical consideration, the survey and Google form were organised as follows: in the first section, participants were briefed on the present study (i.e., its purpose, the voluntary nature of participation, the right to withdraw, and the confidentiality and anonymity of their information and responses); in the second section, participants completed the consent form as their acknowledgment to participate in the study; in the third section, participants completed the demographic questionnaires; and in the fourth section, participants completed the scales (PSS and SDQ).

## Data analysis

The IBM SPSS Statistic 22 software for Windows was used to perform descriptive analysis to calculate the frequency, percentage, mean, and standard deviation of the demographics (i.e., children's age and gender; mothers' ethnicity, education, work status, marital status and family's financial status). In addition, the PLS-SEM with SmartPLS version 3.0 was used to test the direct relationship between maternal parenting stress and child behaviour problems.

## Results

### Measurement model

First, measurement models were tested for validity and reliability. This was assessed through factor loadings, composite reliability (CR), average variance extracted (AVE), and discriminant validity. Table 2 shows the values of factor loadings, CR, AVE, and discriminant validity for all studied variables (i.e., maternal parenting stress and child behaviour problems).

**Table 2** Results of Measurement Model

Constructs	Items	Loadings	AVE	CR	M	SD
Parenting Stress	I am happy in my role as a parent.	.621	.9	.501	1.318	.536
	There is little or nothing I wouldn't do for my child(ren) if it was necessary.*	.578			1.298	.529
	Caring for my child(ren) sometimes takes more time and energy than I have to give.*	-.049			4.298	.777
	I sometimes worry whether I am doing enough for my child(ren).*	-.299			4.46	.64
	I feel close to my child(ren).	.662			1.348	.507
	I enjoy spending time with my child(ren).	.759			1.495	.557
	My child(ren) is (are) an important source of affection for me.*	.538			1.298	.457
	Having child(ren) gives me a more certain and optimistic view for the future.	.667			1.53	.649
	The major source of stress in my life is my child(ren).*	.574			2.081	.966
	Having child(ren) leaves little time and flexibility in my life.*	.532			2.758	1.142
	Having child(ren) has been a financial burden.	.706			2.025	1.022



	It is difficult to balance different responsibilities because of my child(ren).*	.533			2.389	1.018
	The behaviour of my child(ren) is often embarrassing or stressful to me.*	.605			1.864	.897
	If I had it to do over again, I might decide not to have child(ren).	.678			1.439	.761
	I feel overwhelmed by the responsibility of being a parent.	.792			1.697	.904
	Having child(ren) has meant having too few choices and too little control over my life.	.681			2.04	1.058
	I am satisfied as a parent.*	.573			1.611	.707
	I find my child(ren) enjoyable.	.657			1.333	.482
<b>Emotional symptoms</b>	Often complains of headaches, stomach-aches, or sickness.*	.403	.748	.509	1.273	.519
	Many worries or often seems worried.	.791			1.359	.566
	Often unhappy, depressed or tearful.*	.578			1.308	.523
	Nervous or clingy in new situations, easily loses confidence.	.614			1.813	.697
	Many fears, easily scared.	.682			1.646	.686

<b>Conduct problems</b>	Often loses temper.	.847	.761	.621	1.742	.651
	Generally, well behaved, usually does what adults request.*	.254			1.869	.597
	Often fights with other children or bullies them.	.609			1.227	.506
	Often lies or cheats.*	.596			1.106	.324
	Steals from home, school or elsewhere.*	.47			1.04	.197
<b>Hyperactivity</b>	Restless, overactive, cannot stay still for long	.826	.78	.549	2.192	.692
	Constantly fidgeting or squirming.	.688			1.566	.691
	Easily distracted, concentration wanders.	.598			2.333	.644
	Thinks things out before acting.*	.548			2.333	.586
	Good attention span, sees chores or homework through to the end.*	.493			2.116	.645

\*deleted

Through factor loading analysis, the results show that most items loading exceeded the recommended value of .5 (Hair et al., 2014) except for several items that possessed less than .5, which were deleted. Composite reliability values, which depict the degree to which the construct indicators indicate the latent construct, and results show that all studied variables exceeded the recommended values of .7. Average Variance Extracted (AVE) reflects the overall amount of variance in the indicators accounted for by the latent construct, and results show that all studied variables exceeded the recommended value of .5 (Hair et al., 2014; 2021) except for peer problems.

Discriminant validity refers to the extent to which the measures do not reflect some other variables; this is indicated by low correlations between the measure of interest and the measures of the other constructs. Finally, the discriminant validity was assessed through the heterotrait-monotrait ratio of correlation (HTMT), as Henseler et al. (2016) suggested.

Table 3 shows that all studied variables (i.e., parenting stress, child behaviour problems) have good HTMT values as HTMT values were less than the thresholds of .85 and .90. If the HTMT value is greater than the recommended values of .85 and .90 as recommended by Henseler et al. (2016), then discriminant validity is a problem. Based on results from the measurement model analysis, one subscale of child behaviour problems, such as peer problems, has been omitted from the present study as the construct of peer problems has problems in convergent validity (AVE less than the recommended value of .5).

**Table 3** Heterotrait-Monotrait Ratio (HTMT) of all Variables

	Conduct problems	Emotional symptoms	Hyperactivity	Parenting stress
Conduct problems				
Emotional symptoms	0.887			
Hyperactivity	0.636	0.556		
Parenting stress	0.175	0.199	0.241	

### Structural model

To assess the structural model, Hair et al. (2014) suggested looking at the R<sup>2</sup>, beta, and corresponding t-values via the booting strapping procedure with a resample of 5000. In addition to these fundamental measures, researchers should report predictive relevance (Q<sup>2</sup>) and the effect sizes (f<sup>2</sup>). Table 4 summarises the results of path coefficients between parenting stress with all three child behaviour problems.

**Table 4** Results of Structural Model

Hypothesis	Sample Mean (M)	Std. Beta	t-value	p-value	R <sup>2</sup>	Adj.R <sup>2</sup>	f <sup>2</sup>	Q <sup>2</sup>	Decision
Parenting stress → emotional symptoms	-.201	-.204	1.79	.073	.111	.097	.039	.032	Not supported



Parenting stress conduct problems	→	-.138	-.136	1.623	.105	.112	.024	.017	.048	Not supported
Parenting stress hyperactive	→	.149	.143	1.6	.11	.087	.072	.019	.029	Not supported

Critical t-values: 1.96 ( $p < 0.05$ ); 2.58 ( $p < 0.01$ )

Maternal parenting stress has no significant effect on conduct problems ( $\beta = -.136, t=1.623, p = .105$ ), hyperactive ( $\beta = .143, t=1.6, p = .11$ ) and emotional symptoms ( $\beta = -.204, t=1.79, p = .073$ ). Predictive accuracy of the relationships as measured by the coefficient of determination score ( $R^2$ ) indicates weak levels of predictive accuracy. Based on Cohen's (1988) criteria, the predictive accuracy of parenting stress was weak on conduct problems ( $R^2 = .112$ ), emotional symptoms ( $R^2 = .111$ ), and hyperactivity ( $R^2 = .087$ ), explaining 11.2%, 11.1%, and 8.7% of the variance, respectively.

Next, the effect sizes ( $f^2$ ) were assessed. Following Cohen's (1988) guidelines, the results indicate that there were slight effects sizes for the parenting stress in producing the  $R^2$  for conduct problems ( $f^2 = .02$ ), emotional symptoms ( $f^2 = .039$ ), and hyperactivity ( $f^2 = .02$ ). In addition, the blindfolding procedure was used to examine the predictive relevance of the relationships. According to Hair et al. (2014), researchers should examine Stone-Geisser's  $Q^2$  to estimate the model's predictive relevance indicator. The PLS-SEM model exhibits predictive relevance if the  $Q^2$  values are larger than zero. In other words, it accurately predicts the data points of indicators in reflective measurement models of endogenous constructs. Following Hair et al.'s (2014) method, maternal parenting stress exhibit predictive relevance for conduct problems ( $Q^2 = .048$ ), emotional symptoms ( $Q^2 = .032$ ), and hyperactivity ( $Q^2 = .029$ ).

In conclusion, even though there is a significant predictive accuracy ( $R^2$ ), effect size ( $f^2$ ), and predictive relevance ( $Q^2$ ) for conduct problems, emotional symptoms, and hyperactivity, its path coefficients did not reach the acceptable threshold. Therefore, the hypothesis that there is a significant direct effect between maternal parenting stress and child behaviour problems (i.e., conduct problems, emotional symptoms, and hyperactivity) was not supported.

## Discussion

The present study mainly investigates the relationship between maternal parenting stress and child behaviour problems among Malaysian children with ASD. In particular, the present study attempts to identify whether or not maternal parenting stress is a significant predictor of the development of behaviour problems among Malaysian children with ASD. Based on the responses collected from 198 Malaysian mothers of children with ASD, the findings contradict those of earlier studies (i.e., Rodriguez et al., 2019; Ueda et al., 2020) in which maternal parenting stress does not have a significant direct effect on the behaviour problems of Malaysian children with ASD. The findings imply that maternal parenting stress is not a strong predictor of child behaviour problems; in particular, maternal parenting stress is not related to the development of children's conduct problems, hyperactivity, and emotional symptoms.

A possible explanation that may account for the insignificant direct effect of maternal parenting stress on child behaviour problems in Malaysian children with ASD is the possibility of a child-driven effect rather than a parent-driven effect, in which child behaviour problems contribute to the emergence of parenting stress. The reason to speculate the emergence of a child-driven effect in the present study could be due to the age of the children. According to Woodman et al. (2015), the child-driven effect is more pronounced during mid-to-late childhood (ages 5-10 years), whereas the parent-driven effect is only detectable as children age. Given that most of the children in the present study are in their mid-childhood (ages 6–8 years), it is possible to have a child-driven effect rather than a parent-driven effect in the present study.

This child-driven effect is possible because Malaysian children are frequently diagnosed late (typically in middle childhood between the ages of three and four) due to late recognition (Chu et al., 2018; Ramanchandram, 2019). This delayed diagnosis is due to mothers' lack of understanding of their children's condition; as a result, mothers frequently struggle to manage their children's behaviour. This scenario causes mothers to become more stressed. Therefore, it is possible that the present study may not have found a significant relationship in which maternal parenting stress is not a predictor of child behaviour problems. However, the possibility of a child-driven effect in the present study is only a speculative assumption that warrants further examination. Longitudinal studies focusing on maternal parenting stress and child behaviour problems with Malaysian samples are required to understand the direction of the effects of this relationship.

The other possible reason for the insignificant direct effect between maternal parenting stress and child behaviour problems in the present study could be that Malaysian mothers report lower levels of their children's behaviour problems. In contrast to previous findings that found significance in relationships, mothers reported that their children with ASD have high behavioural problems (i.e., Rodriguez et al., 2019; Ueda et al., 2020). The possible reason for Malaysian mothers reporting lower levels of their children's behaviour problems could be social desirability. Social desirability refers to an individual's proclivity to select more socially desirable responses over less desirable responses (Grimm, 2010).

Given that child behaviour problems are perceived as less desirable behaviour, Malaysian mothers may underreport their children's behaviour problems (i.e., give a low rating in SDQ). This phenomenon of underreporting may be caused by society's judgmental attitude and negative social stigma toward parents who have children with ASD who exhibit behaviour problems. Due to their inability to manage or control their children's behaviour, parents of children with ASD frequently bear the stigma of being bad parents. In Malaysian society, these environments of judgement (negative stigma and false evaluations of parents of children with ASD) exist (Illias et al., 2019). As a result, these societal characteristics may have influenced parental reporting style, resulting in Malaysian mothers under-reporting their children's behaviour problems (to avoid societal stigma and other negative societal responses).

Overall, the present study finds that maternal parenting stress does not have a significant relationship with the development of behaviour problems in Malaysian children with ASD, which means maternal parenting stress is not a predictor of behaviour problems in Malaysian children with ASD. Therefore, the present study encourages additional research on parenting stress and child behaviour problems, particularly among Malaysian children, to learn more about the relationship between parenting stress, particularly maternal parenting stress, and child behaviour problems in children with ASD. Furthermore, future research should focus on children with ASD whose behaviour problems fall between borderline and abnormal clinical ranges. Focusing on this type of sample makes it possible to obtain more significant findings about the relationship between parenting stress and child behaviour problems in children with ASD in Malaysia.

In addition, this present study has limitations that merit careful consideration. Firstly, a cross-sectional design was used to collect the data for the study's variables. Future research should examine this relationship using

longitudinal design so that any changes that occur in different periods can be documented. Secondly, a self-reported survey was used to gather the data for the studied variables. Future research should replicate this study by using alternative sources to collect the data, such as reports from multiple reporters or through observation or face-to-face interviews, to obtain a more accurate response (i.e., provide a more unbiased response). This is because mothers might have a tendency to either under or over-report their parenting stress or children's behaviour problems (social desirability) when self-reporting. Thirdly, the present study only focused on the mothers of children with ASD. Therefore, these findings have limited applicability and cannot be generalised to other groups (i.e., fathers). Future research would benefit from including both fathers and mothers to comprehensively understand the relationship between parenting stress and child behaviour problems.

## Conclusion

Parenting stress impacts children's outcomes, with maternal parenting stress as a predictor of the emergence of child behaviour problems. Furthermore, elevated maternal parenting stress is associated with severe child behaviour problems. Therefore, further research on this relationship is needed, particularly in non-western nations, to understand better how parenting stress is related to child behaviour problems and identify the probable link between this relationship across countries.

Overall, the present study's findings highlight the insignificant direct relationship between parenting stress and child behaviour problems; in particular, maternal parenting stress is not a strong predictor for the development of behaviour problems in Malaysian children with ASD. This insignificant finding in the Malaysian population postulates that more research conducted in different countries is required as the generalizability of findings is limited.

In addition, there is a possibility that the relationship between maternal parenting stress and child behaviour problems may vary across countries since each country has a unique culture, sets of rules, or value system, which result in each country having its own unique set of characteristics, including their thinking patterns, behaviour, and sense and response to stress. Therefore, researching each country's population can aid in demonstrating findings representative of that country's population, and such information can help professionals design intervention programmes appropriate in the context of their own society. More research conducted in different settings and across cultures may help researchers

better understand the relationship between maternal parenting stress and child behaviour problems.

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