Parenting stress and depressive symptoms in Taiwanese mothers of young children with autism spectrum disorder: Association with children's behavioural problems

Abstract

Background

This study examined the severity of parenting stress and depressive symptoms in Taiwanese mothers of young children with autism spectrum disorder (ASD) compared to mothers of young children with developmental delay (DD).The associations between parenting stress, depressive symptoms, and children's behavioural problems were also tested.

Methods

The study sample included 51 young children with ASD (mean age = 31 months), 51 young children with DD (mean age = 30 months) and their mothers.

Results

The results confirmed that mothers of young children with ASD experienced higher levels of parenting stress and depressive symptoms than mothers of young children with DD. In addition, children's behavioural problems were robust predictors of parenting stress and depressive symptoms in mothers of young children with ASD, but not in mothers of young children with DD.

Conclusion

The findings indicated that one of the critical goals in early intervention for young children with ASD and their families is to reduce children's behavioural problems.

Keywords: autism spectrum disorder, behavioural problems, depressive symptoms, parenting stress

Introduction

Autism spectrum disorder (ASD) is a neurodevelopmental disorder characterised by impairments in social interaction/communication as well as repetitive interests and stereotyped behaviours (American Psychiatric Association, APA, 2013). Previous studies suggested that parents, particularly mothers, of children with ASD reported elevated parenting stress (Estes et al., 2009; Estes et al., 2013; Giovagnoli et al., 2015). Higher level of parenting stress among parents of children with ASD has negative effects on interventions (Osborne, McHugh, Saunders, & Reed, 2008; Shine & Perry, 2010), marital relationships (Benson & Kersh, 2011; Sim, Cordier, Vaz, & Falkmer, 2016) and quality of life (Dardas & Ahmad, 2015; Reed, Sejunaite, & Osborne, 2016). Thus, it is important to examine parenting stress and their correlates in order to provide better services to children with ASD and their parents.

Parenting stressors can be classified into primary and secondary stressors (Pearlin, Mullan, Semple, & Skaff, 1990). Primary stressors are the strains and hardships that come directly from the activities of caregiving for a child with ASD. These include disturbed sleep patterns and physical as well as mental exertion. Secondary stressors occur outside of the direct activities of caregiving, such as potential social isolation and the emotional burden of diminished self and family-concepts (Pearlin et al., 1990). These stressors compound existing demands

from employment and household management tasks. This exposes parent caregivers to a higher level of stressors that may overwhelm parental coping mechanisms and may interact with existing vulnerabilities to increase the risk of developing mental health problems. Previous studies have shown that the association between parental stress and mental health issues is influenced by factors including formal and informal social supports, parental coping style, socioeconomic status, resources, and stigma, as well as children's internalising and externalising problems (Azeem et al., 2013; Cramm & Nieboer, 2011; Pearlin et al., 1990). Internalising problems are problems within the self, such as emotional reactivity, anxiousness/depressed, somatic complaints, and withdrawn, whereas externalising problems **encompass more acting-out behaviours such as hyperactivity, impulsivity, aggressiveness, and temper tantrums (Achenbach & Rescorla, 2000). Hence, it is important to examine that behavioural problems in children with ASD contribute to parenting stress and depressive symptoms of their mothers.**

There has been evidence suggesting that parents of children with ASD report more mental health problems, such as depressive symptoms, than parents of children without ASD (Benson, 2006; Gau et al., 2012; Lai, Goh, Oei, & Sung, 2015). Compared to fathers, mothers of children with ASD generally experience higher levels of depression (Davis & Carter, 2008; Gau et al., 2012). Moreover, maternal

depression is associated with a range of deficits in social, psychological, and cognitive development in children (Goodman et al., 2011). Depressive symptoms may also reduce parents' coping capacity when facing caregiving challenges and life stressors. Hence, mental health problems in parents of children with ASD may have wide-ranging impacts on the quality of life of the child, the parents, and the family as a whole.

Characteristics of children with ASD, such as temperament, adaptive functioning, autistic symptoms, and behavioural problems, were also examined in relation to parenting stress and parental depression. For example, Peters-Scheffer, Didden and Korzilius (2012) suggested that children's behavioural problems were robust predictors of parenting stress and parental depression while both adaptive functioning and autistic symptoms showed inconsistent findings. Children with ASD often exhibited co-occurring behavioural problems, including internalising and externalising problems (Bauminger, Solomon, & Rogers, 2010; Gau et al., 2010; Narzisi et al., 2013). Thus, managing children's behavioural problems is a major challenge for parents of children with ASD.

Many studies have examined the relationships among children's behavioural problems, parenting stress and depression. For example, behavioural problems in school-age children with ASD are associated with parenting stress (Falk, Norris, &

Quinn, 2014; Hastings, 2003; Lecavalier, Leone, & Wiltz, 2006; Lovell & Wetherell, 2016; Peters-Scheffer et al., 2012) and depression (Falk et al., 2014; Hastings, 2003; Kim, Ekas, & Hock, 2016). Similar findings were also found in preschoolers with ASD aged 5 years (Weitlauf, Vehorn, Taylor, & Warren, 2014) and even before age 4 (Carter, Martínez-Pedraza, & Gray, 2009; Davis & Carter, 2008; Estes et al., 2009; Estes et al., 2013; Zaidman-Zait et al., 2017). Zaidman-Zait et al. (2017) further suggested that externalising problems could be the only predictor of parenting stress. In addition, Estes et al. (2009, 2013) reported that mothers of young children with ASD showed higher parenting stress compared to mothers of young children with developmental delay (DD) and typical development. Depressive symptoms were also higher in mothers of young children with ASD when compared to mothers of young children with DD (Estes et al., 2009). However, Estes et al. (2013) did not find a significant difference on depressive symptoms between mothers of young children with ASD, DD and typical development. Given this inconsistency, there was a need to further investigate parenting stress and depression in mothers of young children with ASD, DD and typical development as well as their relationships with children's behavioural problems.

Due to Taiwan's patrilineal culture and social norms, mothers of children with developmental disability or ASD may receive more criticism and experience increased

negative social stressors compared to fathers. Moreover, Taiwanese culture's emphasis on the importance of family over individual (Gau et al., 2010), may contribute to self and social stigma for mothers whose children experience a developmental or **behavioural** problem. Gau et al.'s study (2012) showed that Taiwanese mothers of children with ASD experienced greater parenting stress and mental health problems than Taiwanese mothers of typically developing children. However, there was no study in Taiwan examining parenting stress and depression in mothers of young children with ASD before age 4 and their relationships with children's behavioural problems. Therefore, we aimed to fill this research gap especially that children with ASD are now reliably diagnosed at younger ages (Guthrie, Swineford, Nottke, & Wetherby, 2013; Johnson & Myers, 2007; Malhi & Singhi, 2011), and both parenting stress and maternal depression affect child development and intervention effectiveness **(Goodman et al., 2011; Shaw, Connell, Dishion, Wilson, & Gardner, 2009; Osborne et al., 2008).**

This study used standardised measures to assess the severity of parenting stress and depressive symptoms in Taiwanese mothers of young children with ASD and with DD between 16-47 months of age. We also **investigated whether children's behavioural problems would be associated with their mothers' parenting stress and depressive symptoms.** We hypothesised that parenting stress and depressive

symptoms in mothers of young children with ASD would be higher than mothers of young children with DD. And children's behavioural problems would be correlated with maternal parenting stress and depressive symptoms. Ethics approval was obtained from the Research Ethics Committee of Chia-Yi Christian Hospital in Taiwan.

Method

Participants

This study recruited 51 young children with ASD (mean age = 31.81 months) and 51 young children with DD (mean age = 30.16 months) and their mothers from a teaching hospital in the Southwest area of Taiwan. Social workers or physician explained the study to caregivers, who suspected that their children had a developmental problem. If the caregivers agreed to participate in the study, they were referred to the researchers. The researchers then contacted the caregivers to arrange for an assessment. Some of the children received early intervention (i. e., occupation therapy) at the time of recruitment. Young children with ASD were assessed and diagnosed according to DSM-5 and with reference to developmental history, parental concerns, children's daily activities and performance, clinical observation, and the results of the Autism Diagnostic Observation Schedule (ADOS; Lord, Rutter,

DiLavore, & Risi, 1999) by a multidisciplinary team. The team included senior child psychologists with Ph.D. degree and child psychiatrists. According to the DSM-5, children would meet the criteria for an ASD diagnosis **if they manifest three deficits in social communication/interaction and two restricted/repetitive behaviours. However, previous studies (e.g., Frazier et al, 2012) indicated that these criteria in DSM-5 showed lower sensitivity when compared to DSM-IV-TR (American Psychiatric Association, APA, 2000). The strict criteria in DSM-5 would impede early intervention for children with ASD. Thus**, we relaxed the DSM-5 criteria by requiring one less symptom in either social communication/interaction or restricted/repetitive behaviours as suggested by Frazier et al. (2012) and Young and Rodi (2014) in order to increase the sensitivity of the DSM-5 for ASD. **It would be helpful for maximising intervention resources and decreasing family burdens if we recruited children with ASD based on relaxed criteria. For example, only 40 out of 51 (76%) children with ASD in our study met strict criteria for an ASD diagnosis of DSM-5; that is nearly 25% these children might not receive the early intervention they need.**

All children were also assessed by the Mullen Scales of Early Learning (MSEL; Mullen, 1995) to obtain four domains of development abilities (i.e., visual reception, fine motor, receptive language, and expressive language). Young children with DD

were determined by failing to reach a score of 35 in any one of the four domains or that their Mullen total scores were lower than 85. The corresponding age equivalents of each domain were also recorded. These age equivalents were then summed together and divided by four, constituting a child's overall mental age (MA).

Young children with DD were matched to young children with ASD by chronological age, overall MA, and ratio of gender. However, young children with ASD showed significantly higher severity of autistic symptoms than young children with DD according to the results of the ADOS. In addition, mothers in DD group were matched to mothers in ASD group on chronological age, years of education, numbers of children, and status of marriage. Sample characteristics are presented in Table 1.

Insert Table 1

Procedure

Each child was individually assessed using the MSEL and the ADOS. The MSEL was administered by a postgraduate student studying for a MSc course in clinical psychology under the supervision of a licenced clinical psychologist with Ph.D. degree whereas ADOS was administered by a licenced clinical psychologists with Ph.D. degree. While children were being assessed, mothers were asked to complete

questionnaires on parenting stress and depressive symptoms, and child's behavioural problems.

Measures

The Achenbach System of Empirically Based Assessment: Child Behavior Checklist for Ages 1½ -5 (CBCL/1½-5; Achenbach & Rescorla, 2000) is a widely used questionnaire for measuring child behavioural and emotional problems. CBCL/1½-5 contains 99 items and can be divided into three main scales, which are internalising scale, externalising scale and total problem scale. For summary scales the cutoff for normal range is a T score < 60, borderline is from 60 to 63, and the clinical range is $\geq$ 64. The Cronbach's alphas as a measure of internal consistency for CBCL/1½-5 were between .62 to .95 (Wu et al., 2012). The CBCL/1½-5 had moderate to excellent reliability. Internalising scale, externalising scale and total problem scale were used in this study as an indicator of behavioural problems.

The Parenting Stress Index (PSI; Weng, 2003) which was adapted from the PSI devised by Abidin (1990) was used in this study. The PSI is used to measure parenting stress in parents with children under 12 years old. It has 94 items, which can be divided into 44 items of child scale and 50 items of parent scale. Total parenting stress can be summed by child and parent scales. Within the child scale, six subscales evaluate sources of stress as gathered from the parent's report of child characteristics.

Within the parent domain, seven subscales measure sources of stress related to parent characteristics. **The Cronbach's alphas as a measure of internal consistency** for the two domains were above .70, except that the reinforces parent in the child domain and the attachment and the health in the parent domain were **between .40 to .50. The PSI had moderate to good reliability.**

The Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996) is an effective tool for measuring depressed mood and it was used to investigate the severity of depression in adolescents and adults. It contains 21 items while each answer can be scored on a scale value of 0-3. The BDI-II is consistent with DSM-IV criteria for depression. Total score of BDI-II is 63, higher score means higher severity. Scores of 0-13 means minimal depression, scores of 14-19 are suggestive of mild depression, scores of 20-28 stand for moderate depression and scores higher than 29 means severe depression. **The Cronbach's alphas as a measure of internal consistency were .92 for the clinical sample, and .93 for the nonclinical sample. The BDI-II had excellent reliability**.

Data analysis

Data analyses were executed using the Statistical Package for Social Sciences (SPSS 20.0 for Windows). Differences between ASD and DD groups were executed by independent t tests. Pearson's correlation analyses were used to examine

relationships between children's behavioural problems, parenting stress, and depressive symptoms in mothers of young children with ASD. In order to explore if children's behavioural problems could predict parenting stress, and depressive symptoms in mothers of young children with ASD, linear regressions were used. Given that the internalising/externalising scales of the CBCL/1½-5 were highly correlated with the total problem scale, only internalising scale and externalising scale were included in the linear regressions to avoid collinearity.

Results

Children's behavioural problems, parenting stress, and depressive symptoms

Table 2 shows the scores of all measures for the two groups. Young children with ASD had significantly higher scores of internalising problems, externalising problems and total behavioural problems than young children with DD. When compared to mothers of young children with DD, **mothers of young children with ASD showed significantly higher parenting stress and depressive symptoms.** In addition, 25.4% of mothers with ASD children showed moderate **or severe** depressive symptoms while 15.6% of mothers with DD children showed moderate or severe depressive symptoms. However, there was no significant difference in mothers who reached the diagnosis criteria of depression.

Insert Table 2

Relationships between children's behavioural problems, parenting stress, and depressive symptoms

Pearson's correlation analyses were performed separately for the ASD and DD groups. Table 3 shows the correlational coefficients between all variables. For the ASD group, internalising problems, externalising problems and total problems of children with ASD were significantly correlated with parenting stress and depressive symptoms in mothers. For the DD group, except that externalising problems were not significantly correlated with the parent scale of the PSI, all scales of behavioural problems were significantly correlated with all scales of the parenting stress. However, no significant association was found between children's behavioural problems and depressive symptoms in mothers.

Insert Table 3

Predicting parenting stress and depressive symptoms

Table 4 shows the findings of the regression models in predicting parenting stress and depressive symptoms for the two groups. For the ASD group, internalising and externalising problems together accounted for 69% of the child scale variance of the PSI, 32% of the parent scale variance of the PSI, 58% of the total stress variance of the PSI, and 24% of the depressive symptoms. Children's externalising problems were robust predictors of parenting stress and depressive symptoms while children's internalising problems only predicted the child scale of the PSI. For the DD group, internalising and externalising problems together accounted for 36% of the child scale variance and 26% of the total stress variance. Only children's externalising problems predicted the child scale of the PSI.

Insert Table 4

Discussion

This study examined the severity of parenting stress and depressive symptoms in Taiwanese mothers of young children with ASD and DD. We also tested whether children's behavioural problems were associated with parenting stress and depression. Previous studies have shown that children with ASD demonstrated frequent behavioural problems, including internalising and externalising problems (Gau et al., 2010; Giovagnoli et al., 2015; Narzisi et al., 2013; Rescorla, Kim, & Oh, 2015). This

was supported by the current study that young children with ASD in Taiwan showed more severe behavioural problems compared to young children with DD.

Consistent with previous studies (Estes et al., 2009; Estes et al., 2013; Giovagnoli et al., 2015), Taiwanese mothers of young children with ASD showed higher level of parenting stress than mothers of young children with DD. Taiwanese mothers of young children with ASD also showed more depressive symptoms than mothers of young children with DD, corresponding to Estes et al.'s (2009) findings. Estes et al. (2013) proposed that mothers of children with ASD in very early years did not show high level of depressive symptoms until their children became older and parenting demands increased. **When compared to normative sample**, our results **demonstrated** that mothers of children with ASD around 32 months old showed **symptoms similar to mild** depressive symptoms. **Consistent with previous study (e.g., Davis & Carter, 2008), the findings also supported many mothers of children with ASD did not go on to show clinical levels of psychopathology**. In addition, we also found that depressive symptoms in mothers of children with ASD were more higher compared to mothers of children with DD. However, it is worth to note that 25.4% of mothers with ASD children showed moderate depressive symptoms, establishing the need for a reducing maternal depression to be given priority in future studies.

Taiwanese mothers tend to take full caregiving responsibilities in the household and may experience higher levels of caregiving stress (Gau et al., 2012), thus increasing the vulnerability for the development of depressive symptoms. Chiayi is a rural county with limited resources for specific early intervention programmes for children with ASD (Chu, Chiang, Wu, Hou, & Liu, 2017). The lack of intervention and support services may also increase mothers' parenting stress and depressive symptoms. There are other challenges for Taiwanese mother of young children with ASD, including (a) the over-burden of trained professionals and longer waiting for early diagnosis and early intervention; (b) few private and public specific educational placements for young children with ASD; (c) misunderstanding their children's behaviours due to lack of adequate information, especially for children younger than age 3, which may impede mothers looking for suitable help. The aforementioned environmental stressors experienced by parents of children with ASD in Taiwan combined with expectations to serve as the primary caregiver may increase the risk of stress and depressive symptoms among mothers in rural Taiwan.

Consistent with previous studies (Estes et al., 2009; Estes et al., 2013; Giovagnoli et al., 2015; Zaidman-Zait et al., 2017), the findings of this study showed that children's behavioural problems correlated with parenting stress and depressive symptoms in Taiwanese mothers of young children with ASD. Moreover, when

examining significant predictors of parenting stress and depressive symptoms in Taiwanese mothers of young children with ASD, our findings showed that only externalising problems contributed to all of parenting stress domains and depressive symptoms. However, internalising problems significantly contributed to the child scale of the PSI. Consistent with previous studies (Carter et al., 2009; Davis & Carter, 2008; Zaidman-Zait et al., 2017), our findings suggested that the prominent predictor of parenting stress and depressive symptoms was externalising problems instead of internalising problems. Thus, empowering mothers' management of behavioural problems, especially externalising problems, is an important goal for intervention. In addition, children's behavioural problems accounted for a relatively small variance of the parent scale of parenting stress and depressive symptoms. Thus, the behavioual problems of children with ASD may not be the only variable that influencing parenting stress and depressive symptoms. Previous studies suggested that coping strategy (Benson, 2010; Hastings et al., 2005), social support (Pozo, Sarriá, & Brioso, 2014) and parenting behaviours (Guajardo, Snyder, & Peterson, 2009) were significantly related to parenting stress or depression. Exploring the contribution of these factors for parenting stress and depression alongside behavioural problems and resource considerations, may help in designing effective goals for early intervention in rural populations.

Except for the marginally significant relation between externalising problems and the parent scale (p = .056), the findings of the study showed that children's behavioural problems was correlated with parenting stress rather than depressive symptoms in Taiwanese mothers of young children with DD. This might be explained by the low level of depressive symptoms found in mothers of young children with DD. Moreover, when examining significant predictors of parenting stress in Taiwanese mothers of young children with DD, our findings showed that only externalising problems contributed to the child scale of the PSI. This result further suggested children's behavioural problems **did not affect mothers of young children with DD as much as they influenced mothers of young children with ASD.** Taken together, our findings suggested that children's behavioural problems are significantly associated with parenting stress and depressive symptoms **of their mothers, especially for the ASD group**.

Both parenting stress and depressive symptoms in mothers of children with ASD have an impact on themselves, their children and family. Previous studies suggested that intervention for parents of a child with developmental disorder may be effective if it focused on the sources of stress (Hamlyn-Wright, Draghi-Lorenz, & Ellis, 2007). Recently, Taiwan's medical policy advocates the implementation of family- centred early intervention which requires an assessment of parenting stress and depressive

symptoms in mothers of children with ASD. However, Taiwanese mothers under-reported or denied their stress and distress (Gau et al., 2012) so future studies may need to assess them by combining information from multiple sources (e.g., scales, interview). Given that children's behavioural problems are significantly associated with parenting stress and depressive symptoms in Taiwanese mothers of children with ASD, clinicians and service providers should consider screening for depressive symptoms or discussing parenting stress as part of intervention. There are some empirically based programmes for parent-implemented interventions to address challenging behaviours (Dababnah & Parish, 2016). Programmes aimed at improving challenging child behaviours could potentially reduce some stressors. Additionally, parent-focused interventions to teach parents engaging coping mechanisms and to strengthen protective factors for depression such as social support and self-efficacy may reduce stress and depression experienced by this population (Benson, 2010; Weiss et al., 2013; Zaidman-Zait et al., 2017).

The findings suggest that one of the critical goals in early intervention for young children with ASD, and their families is to reduce behavioural problems (e.g., externalising problems) while engaging with mothers to reduce stress and vulnerability for depressive symptoms. The positive parenting behaviours (e.g., responsiveness, warmth) would improve externalising behaviours of children

(Glazemakers & Deboutte, 2013). In addition, the Positive Behavioral Support (PBS) is composed of a comprehensive set of procedures and individualized strategies that address the prevention of problem behaviours, the development of adaptive skills and improved social interaction (Fox, Dunlap, & Cushing, 2002). It could be helpful for enhancing social interaction of children with ASD, thus reducing their behavioural problems. In addition, through integrating treatments such as cognitive behavior therapy (CBT) alongside early ASD intervention, parents of children with ASD may experience improvements in stress, depression level, emotion regulation and perceptions of their children (Maughan &Weiss, 2017).

The results of this study provided support for the suggestion that children's behavioural problems are a prominent challenge for Taiwanese mothers of young children with ASD. However, additional studies are required for replication and verification due to the following limitations of the study. First, we could not infer causation from correlation because there was a bidirectional relationship between parenting distress and children's behavioural problems (Zaidman-Zait et al., 2014). Behavioural problems could impact on parenting stress and depression, and vice versa. This study is a cross-sectional, and a longitudinal study is required to examine cause and effect between stress, depression, and child behavioural problems. Second, other

factors, such as social support and coping style, were not included in this study. Thus, what impacts these factors might have on parenting stress and depression of mothers of young children with ASD remains uncertain. Third, we did not examine parenting stress and depressive symptoms in fathers of young children with ASD. Further study is required to examine whether mothers and fathers differ in parenting stress and depression. Finally, only self-reported data were used in this study and objective measurements are required in the future study.

Conclusions

Consistent with previous study, the results of this study demonstrated that young children with ASD showed more behavioural problems than young children with DD. The findings also suggested that Taiwanese mothers of young children with ASD have higher parenting stress and depressive symptoms than mothers of young children with DD. In this study, we found that children's behavioural problems are robust predictors of parenting stress and depressive symptoms in mothers of young children with ASD. **Therefore, we suggested that early intervention needed to simultaneously focus on behavioural problems of children with ASD, parenting stress and psychopathology of their mothers to improve the adjustments of children with ASD and their family.**

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Table 1

Sample characteristics for ASD and DD groups

	ASD $n = 51$	DD $n = 51$		
	M (SD)	M (SD)	t/χ^2	p
Child				
Age (months)	31.81(7.34)	30.16(8.68)	1.05	.30
Overall MA (months)	22.28(9.13)	23.80(7.95)	0.90	.37
Gender(% male)	88%	75%	3.17	.08
ADOS score	16.67(3.36)	3.88(3.01)	20.23	.00
Mother				
Age (years)	34.73(4.50)	33.04(5.59)	1.68	.10
Years of education	13.82(2.57)	14.06(2.19)	0.50	.62
Number of child	1.67(0.74)	1.82(0.77)	1.05	.30
In marriage (%)	96%	90%	1.38	.24

Table 2

Children's behavioural problems in CBCL, parenting stress in PSI and depressive symptoms in BDI for ASD and DD groups

	ASD n = 51	DD n = 51		
	M (SD)	M (SD)	t	p
Child：CBCL summary scales[a]				
Internalising problems	65.31 (9.96)	57.61 (10.57)	3.79	.00
Externalising problems	60.94 (10.32)	54.43 (12.06)	2.93	.00
Total problems	65.90 (11.38)	57.73 (12.82)	3.49	.00
Mother：PSI[b]				
Child scale	129.00(20.05)	116.3(21.92)	3.05	.00
Parent scale	152.76(20.53)	141.94(24.21)	2.44	.02
Total stress	281.76(36.03)	258.27(40.67)	3.08	.00
Mother：BDI[b]				
Depressive symptoms	13.98(8.70)	10.35(9.16)	2.05	.04
Minimal depression (%)	29(56.9%)	36(70.6%)		
Mild depression (%)	9(17.6%)	7(13.7%)		
Moderate depression (%)	9(17.6%)	4(7.8%)		
Severe depression (%)	4(7.8%)	4(7.8%)		

[a] T score; [b] raw score

Table 3

Relationships between children's behavioural problems in CBCL, parenting stress in PSI and depressive symptoms in BDI for ASD and DD groups

	CBCL：Internalising problems	CBCL：Externalising problems	CBCL：Total problems	BDI：Depressive symptoms
ASD				
PSI：Child scale	.80***	.78***	.85***	.37**
PSI：Parent scale	.44**	.56***	.49***	.55***
PSI：Total stress	.69***	.75***	.75***	.51***
BDI：Depressive symptoms	.33*	.78***	.38**	--
DD				
PSI：Child scale	.54***	.57***	.62***	.45***
PSI：Parent scale	.30*	.27	.32*	.73***
PSI：Total stress	.47**	.47***	.53***	.67***
BDI：Depressive symptoms	.24	.24	.23	---

*p < .05; **p < .01; ***p < .001

Table 4

Regression analyses predicting parenting stress in PSI and depressive symptoms in BDI for ASD and DD groups

	ASD		
	B(β)	*t*	R^2
PSI：Child scale			.69***
CBCL：Internalising problems	1.03(.51)	3.69**	
CBCL：Externalising problems	.69(.36)	2.57*	
PSI：Parent scale			.32***
CBCL：Internalising problems	-.15(-.07)	-0.34	
CBCL：Externalising problems	1.23(.62)	3.02**	
PSI：Total stress			.58***
CBCL：Internalising problems	.89(.24)	1.50	
CBCL：Externalising problems	1.93(.54)	3.38**	
BDI：Depressive symptoms			.24**
CBCL：Internalising problems	-.16(-.18)	-0.83	
CBCL：Externalising problems	.53(.63)	2.88**	
	DD		
	B(β)	*t*	R^2
PSI：Child scale			.36***
CBCL：Internalising problems	.58(.28)	1.74	
CBCL：Externalising problems	.68(.37)	2.33*	
PSI：Parent scale			.10
CBCL：Internalising problems	.50(.22)	1.14	
CBCL：Externalising problems	.24(.12)	0.62	
PSI：Total stress			.26**
CBCL：Internalising problems	1.08(.28)	1.61	
CBCL：Externalising problems	.92(.27)	1.57	
BDI：Depressive symptoms			.07
CBCL：Internalising problems	.14(1.16)	0.84	
CBCL：Externalising problems	.09(.12)	0.63	

B, unstandardised regression coefficient; β, standardised regression coefficient

*p < .05; **p < .01; ***p < .001