

# Validity and Reliability of Parenting Stress Construct among Mothers of Children with Autistic Spectrum Disorder

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**Abstract.** Parents of children with developmental disorders are prone to experiencing parenting stress. This study aimed to examine the validity and reliability of the parenting stress construct. A total of 125 mothers of children with autistic spectrum disorder were involved in this study. The results showed that parenting stress consists of three domains: parent, child, and parent-child interaction. This was proven through a validity test using exploratory and confirmatory analysis. The exploratory analysis indicated that the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.716, meeting the requirement value of above 0.5. Additionally, Bartlett's test of sphericity was significant ( $p < 0.05$ ). Based on the confirmatory analysis, the model was classified as fit with the index:  $\chi^2$  (50,  $N = 125$ ) = 71.98,  $p = 0.023$ , RMSEA = 0.060, GFI = 0.91; IFI = 0.94; CFI = 0.94; and RMSEA = 0.077; convergent validity values ( $\lambda > 0.5$ ; and AVE values  $> 0.5$ ); construct reliability values (CR = 0.846). Analysis of psychometric properties of parenting stress met the assumptions of good construct validity and reliability.

**Keywords:** autistic spectrum disorder; parenting stress; reliability; validity.

Parents of children with developmental disorders are prone to experiencing parenting stress. One of the common sources of stress is dealing with children's inadequacy, such as those experienced when raising children with autism spectrum disorder (hereafter mentioned as ASD) (Estes, et al., 2009; Giallo, Wood, Jellet, & Porter, 2011; Falk, Norris, & Quinn, 2014; May, Fletcher, Dempsey, & Newman, 2015; Kousha, Attar, & Shoar, 2016), down syndrome (Hayat & Zafar, 2015; Norizan & Shamsuddin, 2010), intellectual developmental disorder

(Hassall, Rose, & McDonald, 2005; Hill & Rose, 2009), and Attention Deficit Hyperactivity Disorder (Wiener, Biondic, Grimbos, & Herbert, 2016). Parenting stress is generated by the difficulties caused by the severity of child's disorder and complexity of the problems parents must face.

There is a need to explore parenting stress further because it introduces adverse effects on both parents and children's growth (Pruitt, Wilis, Timmons, & Ekas, 2016). Parenting stress could affect the attitude, thoughts, and behaviour of a mother (Kousha et al., 2016). It could also trigger uncomfortable parent-child interac-

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tion (Ma, 2012), possibly generating maladaptive parenting (i.e., violence towards children) (Deater-Deckard, 2004).

Parents of children with these developmental disorders face many challenges and difficulties. Appropriate measuring tools to measure stress levels are required to accurately reveal the psychological problems parents feel during parenting. There are several parenting stress scales often used by researchers, such as *Parenting Stress Index* (PSI) (Abidin, 1995), *Perceived Stress Scale* (Cohen, Kamarck, & Mermelstein, 1983), *Questionnaire on Resources and Stress* (QRS; Friedrich Greenberg, & Crnic, 1983), *Perceived Stress Questionnaire* (PSQ; Levenstein, et al., 1993), and *Depression, Anxiety and Stress Scale-21* (DASS-21) (Lovibond & Lovibond, 1995). Most of them are similar in that they reveal the difficulties that an individual faces when confronted with a stressor. However, the Parenting Stress Index is unique in that it specifically explains the difficulties faced by parents during parenting.

This study used the *Parenting Stress Index* composed by Abidin (1995) because it enables the current researcher to explore parents' challenges in parenting, perception of their child's condition, as well as parent-child interaction. Deater-Deckard (2004) agreed that this scale has the advantage of examining the mutual parent-child relationship, parents' situations or behaviours that affect their children and vice-versa. Additionally, Abidin & Abidin (1990) stated that the Parenting Stress Index has been useful in aiding early detection programs that aims to identify and prevent domestic problems as well as interventions programs for children.

*Parenting Stress Index* has been translated and used in various countries,

such as the United States of America (Lee, Gopalan, & Harrington, 2016), China (Tam, Chan, & Wong, 1994; Yeh, Chen, Li, & Chuang, 2001), Spain (Diaz-Herrero, Brito de la Nuez, López-Pina, Pérez-López, & Martínez-Fuentes, 2010; Solis & Abidin, 1991), and Korea (Lee, 2011). It has also been applied in numerous studies related to parenting stress in parents of children with ASD (Al-khalaf, Dempsey, & Dally, 2014; Boonen, Esch, Lambrechts, & Maljaars, 2015; Farrell, 2012; Foody, James, & Leader, 2015; Hoffman et al., 2008; Mahoney, 2009; May et al., 2015; Richardson, 2010; Rodger, Keen, Braithwaite, & Cook, 2008; Wang et al., 2013; Zablotzky, Bradshaw, & Stuart, 2013; Zaidman-Zait et al., 2017).

The main ground of this study was the lack of available evidence-based parenting stress scales that are also culturally sensitive to the Indonesian local context. This was confirmed by Etikawati, Siregar, Widjaja, & Jatnika (2019) who stated that any parenting-theme scale should be adjusted with the local culture to ensure the accuracy of the depiction.

So far, Indonesian researchers have mainly adapted the existing scales. Several examples are studies done by Chairini (2013), Fitriani & Ambarini (2013), Fitria, Poeranto, & Supriati (2016), and Sa'diyah (2016). However, this may cause differences in the meanings of the items from the perspective of various culture. Several studies also modified Abidin's PSI based on three aspects: parent, child, and parent-child interaction, such as those conducted by Andika (2012), Hidayati (2013), and Mukhtar (2017). However, despite the importance of reliability and validity testing, no psychometric test explanation were reported in those modified PSI. Therefore, this study attempted to examine the psychometric properties of

the Indonesian version of the *Parenting Stress Index*, which measures three aspects of parenting stress. The current researchers also aimed to compose the items based on the obtained field data, specifically based on the complexity of Indonesian mothers' problems while nurturing their special-need children.

This study aims to develop a tool to measure the parenting stress level of mothers of children with autism spectrum disorder within the Indonesian context. It tends to be difficult for Indonesian parents to raise children with autism spectrum disorder due to stigma and lack of social support (Tucker, 2013; Daulay, Ramdhani, & Hadjam, 2018). It is believed that children with autism spectrum disorder are karma to the parents for their wrongdoings in the past. The difficulties in raising ASD could cause parents to feel stressed (Samadi, McConkey, & Bunting, 2014; Hayes & Watson, 2013). It is critical to understand parents' conditions to avoid the emergence of pathological distress due to unexpected stress. Therefore, the current researchers plan to develop a parenting stress scale that could later be used in studies about parenting stress. There are at least four stages to developing a measuring tool, i.e. composition of items, an examination of the items by experts, trial stage, and examination of psychometric properties (Hinkin, Tracey, & Enz, 1997). This study posed several questions: 1) How is the content validity of the parenting stress scale?; 2) How is the construct validity and reliability of parenting stress based on the exploratory factor analysis (EFA) and confirmatory factor analysis (CFA)?; 3) Is parenting stress reflected by three aspects (parent, child, and parent-child interaction)?

## Method

### *Study participants*

This study involved a total of 125 mothers of children with autism spectrum disorder. The inclusion criteria for the participants include: (1) the biological mother of children with autism spectrum disorder and (2) nurtures their children themselves, meaning that they did not entrust the children to boarding school for autistic children. Participants were identified from several institutions for autism (i.e., private and state special-need schools, special school for autism, autism service centre, therapy centres for special-need children) in Yogyakarta and Surakarta.

All participants had filled-in informed consent as evidence of their willingness to participate voluntarily. The procedures of data collection had met the standard issued by the committee for research ethics of the Faculty of Psychology, Universitas Gadjah Mada of Yogyakarta, Indonesia.

### *Procedure*

#### *Composition of the measuring tool*

A preliminary study was done to discover the characteristics of mothers, children, and mother-child relationship. More specifically, it examined factors that allow mothers to persevere as well as the stress they experienced while nurturing their child. This information was gathered through a Focus Group Discussion (FGD) with these mothers, aiming to identify both their positive and negatives experiences. The results of this preliminary study showed similarity in the themes exposed, namely that mothers experience stress due to the condition of their children, their own conditions, and their uneasy mother-child relationship. This was in line with the three aspects of

parenting stress by Abidin (1995). There are three domains determining parenting stress: 1) parent's psychological condition, 2) child's characteristics (i.e., maladaptive behaviours), and 3) the quality of mother-child interaction. Based on this preliminary study, some statements from the mothers became the ground for composing the scale items used in the survey.

#### *Analysis of content validity*

The delivery of the items is known as content validity. The items were examined quantitatively and qualitatively by experts (expert judgment). Retnawati (2015) explained that expert judgment seeks to determine the suitability of indicators with the aim of the measurement tool and theoretical basis, as well as the correctness of the item concept, content, answers, language, and culture. The judgment was done by 15 experts consisting of several lecturers in clinical psychology from leading universities in Yogyakarta, experts in the fields of psychometrics, developmental psychology, and those competent in the subject of parenting of children with a developmental disorder.

The content validity examination showed that the construct of parenting stress met the 26-item standard. The next step was assessing the face validity, namely whether the scale is deemed to look valid by the intended population. One of the efforts of measuring the face validity was made by ensuring appropriate wording and layout were used to convince and encourage participants to fill in seriously. The face validity was assessed by six mothers of children with ASD, three mothers of children with Down syndrome, three mothers of children with a physical disability, and ten mothers of children with an intellectual development disorder. Next, items were composed in the format

of a booklet and given to the 125 mothers of children with ASD.

During the data collection, parents were given questionnaires during parenting activity at school, accompanied directly by the current researchers. This was done to provide participants with the opportunity to ask the researchers about the items that are difficult to understand. Construct validity and construct reliability were examined to prove the level of measurement accuracy using Lisrel 8.8 program.

#### *Measurement*

A preliminary study was initially conducted by the current researchers to understand the Indonesian context of parenting stress. The information was obtained through an FGD session with mothers of children with ASD. The findings from the preliminary study were used to compose the items in each aspect based on the parenting stress construct stated by Abidin (1995). The construct included the following aspects: 1) Parent (i.e., depression, restriction of role, sense of competence, social isolation, relationship with spouse, parental health), 2) Child (i.e., adaptability, demandingness, mood, distractibility), and 3) Parent-child interaction (i.e., attachment, acceptability, reinforces parent).

The parenting stress scale is a 5-point Likert scale, consisting of five categories: Very Suitable (VS), Suitable (S), Uncertain (Ac), Unsuitable (U), and Very Unsuitable (VU). The score range of each statement was 1-5 by considering the nature of the item (i.e., favourable or unfavourable). The severity of stress the mothers experienced was seen from the high score of parenting stress scale, and vice versa.

*Data analysis*

The construct validity test of parenting stress scale used two factor analysis, namely EFA and CFA with the assistance of Lisrel 8.8 software. The construct validity test aims to measure whether a set of items accurately reflect the theoretical latent construct. In other words, construct validity is related to the accuracy of the measurement. Construct validity is determined based on the value of the convergent and discriminant validity. Convergent validity explains the relationship of the scaling tool that measures the same attribute while discriminant validity explains whether the latent construct differs from other constructs (Hair, Black, Babin, & Aderson, 2014). The convergent validity is deemed fulfilled based on several criterias: (1) it has a standardized factor loading  $\geq 0.50$  or  $> 0.70$ , (2) the average variance extracted achieved a minimum score of 0.5, and (3)  $\sqrt{AVE}$  of the construct has a higher value compared to the correlation between constructs.

**Result**

Demographic data of the participants showed that most of them were housewives (71.2%) aged between 18 to 40 years old (74.4%) who were still married (94.4%). They mainly had a high school diploma (77.6%). Most participants were Javanese (89.6%), Islam (87.2%), classified into the lower-middle in terms of social-economic status (i.e., monthly income ranging from IDR 1.000.000 to 3.000.000) (50.4%), and has two children in their respective families (76.8%).

*Content validity*

The result of the content validity test showed that the parenting stress scale met the 26-item standard, with the V value

ranging from 0.75 to 0.88. According to Aiken (1985), with 15 experts and having a significance level of 0.01, the minimum limit of the V value would be 0.73. The minimum limit of the V value with a significance level of 0.05 is 0.67. Every aspect of parenting stress was represented by six favourable items and six unfavourable items. The parent-child interaction aspect was represented by three favourable items and three unfavourable items. In total, there were 26 items grouped into 13 favourable items and 13 unfavourable items.

*Construct validity*

As suggested by Abidin (1995), the parenting stress instrument was based on three aspects: parent, child, and parent-child interaction. The items were developed by the current researchers based on the field data. Exploratory factor analysis showed that the Kaiser-Meyer-Olkin (KMO) had met the requirements, i.e. 0.716 ( $p > 0.5$ ), and the Bartlett's test was also significant 0.00 (0.05). According to Ghozali (2016), factor analysis could be continued if the KMO  $> 0.5$  and the Bartlett's test is  $< 0.05$ . The anti-image matrices showed that there was a high correlation between each item, ranging between 0.7 and 0.829. The total variance test using SPSS found that factor 1 could explain 26.4% of the total variation, factor 2 contributes 13.9%, while factor 3 contributes 11.1%. Overall the three factors explained 51.49% of the total variation, confirming that the parenting stress items fall into one of three aspects: parent, child, or parent-child interaction. The unidimensionality analysis of parenting stress was proven based on the results of the first order of CFA on each item of the parenting stress construct.

*Parent aspect*

The first model showed seven items with a factor loading  $\geq 0.5$  (item 1, 2, 3, 4, 7, 11) and five items with a factor loading  $\leq 0.5$  (item 2, 8, 9, 10, 12) (Hair et al., 2014). The standardized factor loading should be between  $\geq 0.50$  or  $\geq 0.70$ . For the goodness of fit test, the model showed the result matching with an index  $\chi^2$  (50,  $N = 125$ ) = 71.98,  $p = 0.023$ , RMSEA = 0.060, GFI = 0.91; IFI = 0.94; CFI = 0.94; and RMSEA = 0.077 (Hair et al., 2014). The final result of the unidimensionality test of the aspect of parent domain can be seen in the fit model.

The parent aspect in the fit model showed a better factor loading compared to that within the first model, moving from 0.67 to 0.74, and considered fit the index:  $\chi^2$  (19,  $N = 125$ ) = 33.14,  $p = 0.023$ , RMSEA = 0.077, GFI = 0.92, IFI = 0.90, CFI = 0.90 (Hair et al., 2014). As a whole, seven items could represent the parent aspect, namely items with a factor loading  $\geq 0.5$  (item 1, 3, 4, 5, 6, 7, 11).

*Child aspect*

The first model showed that there were four items with a factor loading  $\geq 0.5$  (items 14,16,18,20) and four items with a factor loading  $\leq 0,4$  (items 13, 15, 17, 19). For the goodness of fit test, the model showed fit results with an index:  $\chi^2$  (19,  $N = 125$ ) = 31.35  $p = 0.037$ , RMSEA = 0.072, GFI = 0.94; IFI = 0.95; CFI = 0.95; (Hair et al., 2014). The final results of the unidimensionality test aspects of the child domain can be seen in the model fit.

The goodness of fit model showed that the child domain aspect was proven to have a better factor loading than the

first model, which moved from 0.68 to 0.74, and classified as fit with an index:  $\chi^2$  (5,  $N = 125$ ) = 10.66,  $p = 0.059$ , RMSEA = 0.76, CFI = 0.95, GFI = 0.95, IFI = 0.95, and AGFI = 0.91 (Hair et al., 2014). Overall, four items can represent the child aspect, namely items with a factor loading  $\geq 0.5$  (items 13, 15, 17, 19).

*Parent-child interaction aspect*

Based on the parent-child interaction aspect, there were two items with a factor loading  $\geq 0.4$  (item 23, 25) and four items with a factor loading  $\leq 0.4$  (items 21, 22, 24, 26). For the goodness of fit test, the model showed fit results with an index:  $\chi^2$  (9,  $N = 125$ ) = 15.70,  $p = 0.074$ , RMSEA = 0.077, GFI = 0.96; IFI = 0.87 (marginal); CFI = 0.85 (marginal) (Hair et al., 2014). The final results of the unidimensionality test of parent-child interaction aspect can be seen in the fit model.

The goodness of fit model showed that the parent-child interaction aspect was proven to have a better factor loading than the first model, which moved from 0.73 to 0.76 and was classified as fit with the saturation model (best fit) (Hair et al., 2014). Overall, there were two items able to represent the parent-child interaction aspect, namely items with a factor loading  $\geq 0.5$  (items 23, 25).

Based on EFA and CFA, the parenting stress items are proven to measure one factor (unidimensional), as evidenced from the thirteen items with high factor loading  $\geq 0.5$ . These items include item 1, 3, 4, 5, 6, 7, and 11 from the parent aspect, items 14, 16, 18, and 20 from the child aspect, and item 23 and 25 from the parent-child interaction aspect.

CONSTRUCT VALIDITY AND RELIABILITY OF PARENTING STRESS

Table 1.

Item Distribution with a *Factor Loading*  $\geq 0.5$

Aspect	Item No.			
	Favourable	Standardized Loading Favourable Item	Unfavourable	Standardized Loading Unfavourable Item
1. Parental distress				
• Depression	1	0.67	(2)	(0.11)
• Restriction imposed by parent role	3	0.74	4	0.73
• Feeling of competence	5	0.70	6	0.68
• Social isolation	7	0.71	(8)	(0.24)
• Relationship with spouse	(9)	(0.24)	(10)	(0.05)
• Parental health	11	0.73	(12)	(0.08)
2. Difficult child				
• Adaptability	(13)	(0.23)	14	0.71
• Demandingness	(15)	(0.16)	16	0.74
• Mood	(17)	(0.16)	18	0.70
• Distractability	(19)	(0.36)	20	0.68
3. Parent-child Dysfunctional Interaction				
• Attachment	(21)	(0.33)	(22)	(0.15)
• Acceptability of child to parent	23	0.73	(24)	(0.38)
• Child reinforced parent	25	0.76	(26)	(0.09)

Note: ( ) item with a factor loading  $< 0.5$  are eliminated

Table 2.

Goodness-of-Fit Summary

Criteria	Result	Note
Based on absolute fit measures		
RMSEA	< 0.08	0.079
GFI	> 0.90	0.85
ECVI	the model value that was little and close to ECVI saturated	M* = 1.34 S* = 1.47 I* = 5.84
Based on incremental fit measures		
NNFI	0 to 1.0	0.87
CFI	$\geq 0.90$	0.88
Based on parsimonious fit measures		
PGFI	0 to 1.0	0.63
AIC	The model value that was little and close to AIC saturated	M* = 166.09 S* = 182.00 I* = 724.41
CAIC	The model value that was little and close to CAIC saturated	M* = 235.00 S* = 235.00 I* = 774.18

Note: M\* = Model; S\* = Saturated; I\* = Independence

The statements expressed in forming the parenting stress measurement tool consisted of 26 items, the value of the factor loading of the parenting stress construct moved from 0.67 to 0.76. Based on these calculations it could be seen that the parenting stress construct had seven items that reveal mothers' depressing conditions; four items on the difficulties of the child's condition, and two items on the non-functioning interaction between mother and child. In total, thirteen items were considered capable to measure parenting stress. The results of the analysis

of the measurement model on parental stress was classified as fit (Table 3).

After the factor loading value and the model fit test (overall model fit) met the proposed goodness of fit criteria, the next step was to test the convergent validity by determining the values of the average variance extracted and construct reliability in each aspect of the parenting stress construct.

It was proven that the seven items of the parent aspect have good reliability and AVE.

Table 3.

The Reliability and Average Variance Extracted of the Parent Aspect

Item	Standardized Loading	(Standardized Loading) <sup>2</sup>	Standardized Loading <sup>2</sup>	Error Variance
1	0.71	(4.97) <sup>2</sup>	0.504	0.49
3	0.71		0.504	0.49
4	0.72		0.518	0.48
5	0.71		0.504	0.49
6	0.71		0.504	0.49
7	0.71		0.504	0.50
11	0.70		0.490	0.51
Total	4.97	24.7009	3.528	3.45

Reliability =  $24.7009 / (24.7009 + 3.45) = 0.877$  (Good)  
 Average Variance Extracted/AVE =  $3.528 / (3.528 + 3.45) = 0.505 = 50.5\%$  (Good)

Table 4.

The Reliability and Average Variance Extracted from the Child Aspect

Item	Standardized Loading	(Standardized Loading) <sup>2</sup>	Standardized Loading <sup>2</sup>	Error Variance
14	0.68	(2.85) <sup>2</sup>	0.462	0.54
16	0.72		0.518	0.49
18	0.70		0.490	0.51
20	0.75		0.562	0.44
Total	2.85	8.1225	2.03	1.98

Reliability =  $8.1225 / (8.1225 + 1.98) = 0,804$  (good)  
 Average Variance Extracted/AVE =  $2.03 / (2.03 + 1.98) = 0.506 = 50.6\%$  (Good)

CONSTRUCT VALIDITY AND RELIABILITY OF PARENTING STRESS

It was proven that all four items in the child aspect have good reliability and AVE. Likewise, the values of reliability and AVE in the parent-child interaction aspect was good.

Seen in each aspect of parenting stress, the reliability and value of the average variance extracted were classified as good, as evidenced by the criteria of reliability value  $\geq 0.70$  and AVE value  $\geq 0.50$  (Hair et al., 2014). Based on the reliability value

and AVE value, it can be concluded that parenting stress has good convergent validity.

The next step was to examine the discriminant validity to determine the extent to which the aspects representing parenting stress differs from other aspects. The  $\sqrt{\text{AVE}}$  value from each aspect showed highed value compared to the correlation between the aspects, indicating that the items have good discriminant validity.

Table 5.  
The Reliability and Average Variance Extracted of the Parent-Child Interaction Aspect

Item	Standardized Loading	(Standardized Loading) <sup>2</sup>	Standardized Loading <sup>2</sup>	Error Variance
23	0.73	(1.49) <sup>2</sup>	0.532	0.47
25	0.76		0.577	0.43
Total	1.49	2.2201	1.110	0.9

Reliability =  $2.2201 / (2.2201 + 0.9) = 0.711$  (Good)  
 Average Variance Extracted/AVE =  $1.110 / (1.110 + 0.9) = 0.552 = 55.2\%$  (Good)

Table 6.  
The Average Variance Extracted and Reliability of Parenting Stress Construct

Parenting Stress Aspect	Standardized Loading	(Standardized Loading) <sup>2</sup>	Standardized Loading <sup>2</sup>	Error Variance
Parental Distress	4,97	24,7009	3,528	3,45
Difficult Child	2,85	8,1225	2,03	1,98
Dysfunctional Interaction	1,49	2,2201	1,110	0,9
Total	9,31	35,04	6,668	6,33

Construct Reliability =  $35.04 / (35.04 + 6.33) = 0.846$  (Good)  
 Average Variance Extracted /AVE =  $6.668 / (6.668 + 6.33) = 0.513 = 51.3\%$  (Good)

The relationship between the parent aspect and child aspect as well as child aspect and parent-child interaction aspect were low compared to the value of  $\sqrt{\text{AVE}}$ , meaning that the relationship between these aspects could be distinguished from

one another (discriminant). However, the parent aspect and parent-child interaction aspect showed a higher correlation value than the value of  $\sqrt{\text{AVE}}$ , indicating that both aspects had low discriminant validity.

Table 7.  
The Measurement Results of AVE and  $\sqrt{AVE}$

Parenting Stress Aspect	AVE	%	$\sqrt{AVE}$
Parent Aspect	0.505	50.5%	0.711
Child Aspect	0.506	50.6%	0.711
Parent-Child Interaction Aspect	0.552	55.2%	0.742

Table 8.  
Parenting Stress Aspects and  $\sqrt{AVE}$  Correlation

	PD	CD	ID
Parent Aspect	<u>0.711</u>		
Child Aspect	0.51	<u>0.711</u>	
Parent-Child Interaction Aspect	0.81	0.26	<u>0.742</u>

Table 9.  
Confirmatory Factor Analysis of Parenting Stress Scale (items with a factor *loading* > 0.5)

Aspect	Indicators	Items
Parent Aspect	Depression	1. I feel guilty when I remember about the disability my child has (F)
		2. Taking care of my child doesn't give me time for myself (F)
	Restriction of role Sense of competence	3. I can still spare time to enjoy things that I like (UF)
		4. I am unsure of my ability to help my child develop better (F)
		5. I am convinced that taking care of a child is not as difficult as I imagined (UF)
	Social isolation	6. Most of my time is used to take care of my child, causing me to have less social interaction (F)
	Parental health	7. I get tired easily after being occupied with the task of nurturing my child (F)
Child Aspect	Adaptability	8. My child can adapt to the environment (UF)
	Demandingness	9. My child can still do certain things independently (UF)
	Mood	10. I feel like my child can say the things that he or she wants (UF)
Parent-child interaction aspect	Disability	11. My child can follow my instruction (UF)
	Acceptability	12. Sometimes I feel unable to accept the disability that my child has (F)
	Child reinforced parent	13. My child rarely does things that make me proud (F)

Note: F = favorable items; UF = unfavourable item

### Discussion

The initial study conducted through FGD in mothers of children with ASD showed that these mothers experienced challenges in caring for their children, often leading to stress. Various issues aggravate this

stressful states, such as the condition of the children with ASD (Pruitt et al., 2016), lack of support (Ekas, Lickenbrock, & Whitman, 2010), lack of community acceptance (Tucker, 2013), mothers' limited ability to control negative emotions (Zaidman-Zait et al., 2014), and

mother's rejection of her child (Corcoran, Berry, & Hill, 2015). Based on the results of this study, these stressful conditions are represented in the items of the parenting stress measurement tool. This is in line with several previous studies that have attempted to prove the psychometric property of the parenting stress index.

A study was done by Aracena et al. (2016), which answered that the psychometric characteristics correlate with parenting and stress of the lower-income population in Chile. Furthermore, a study by Dardas and Ahmad (2014) on parents of children with autism spectrum disorder in Jordania also supported the previous finding. The main goal of this study was to identify the condition of stress in parents by revealing the psychometric properties of parenting stress construct. The findings suggested that parenting stress construct which consisted of 30 items could be used to measure the stress experienced by parents of children with autism spectrum disorder in Arab. Lee, et al. (2016) conducted a study on minority population i.e. Afro and Latin caregivers of children with disabilities. The stress in this population could be revealed through three factors, namely *parent-child dysfunctional interaction*, *parental distress*, and *difficult child*. Perz-Padilla, Menendez, and Lozano (2015) with the results of the tests on the validity and reliability of *parenting stress index short form* were able to reveal mothers' stress and difficulties in parenting their children. Based on the findings of this study, psychometric properties of parenting stress construct can be applied in different population with different demographic factors, and the consistency of the construct is represented by three aspects i.e. parent aspect, child aspect, and parent-child interaction aspect.

This study aimed to develop a parenting stress scale based on the Indonesian context. Evaluation of the psychometric properties were conducted by the testing the validity and reliability constructs using EFA and CFA. Widhiarso (2013) revealed that there are two psychometric properties in item analysis: internal consistency and unidimensionality, greatly used as the ground for selecting items. Unidimensionality is a requirement for analyzing reliability and validity construct.

EFA results met the requirements of KMO and Bartlett's test, indicating that the parenting stress construct consists of three factors: parent, child, and parent-child interaction. This goes in line with the parenting stress theory by Abidin (1995), which suggests the following domains: 1) *parent domain*, 2) *child domain*, and 3) *parent-child interaction domain*. The parent domain is the aspect of parenting stress coming from the parents themselves. It is related to the issue of their parenthood. It has six indicators, namely *depression* (i.e., feeling depressed, stressed, anxious, guilty), *restriction of role* (i.e., feeling outpowered by the child's needs and demands), *sense of competence* (i.e., feeling unable to take care of the child), *social isolation* (i.e., feeling isolated socially, having no social support), *relationship with spouse* (having no support from spouse), and *parental health* (experiencing health disorder due to parenting stress). The child domain is the aspect of parenting stress that comes from the child's behavior and it is related to the child's attributes i.e., *adaptability* (being able or unable to adapt with the environment), *demandingness* (child's requests and demands for help in every activity), *mood* (child's negative emotions), and *distractibility* (child's difficulty in following and obeying orders). Parent-child interaction domain is

the aspect of parenting stress that comes from the relationship between parent and child and it is closely related to the degree of conflict and dysfunction in their interaction. It has three indicators i.e., *attachment* (parent has less affection with child), *acceptability* (parent is less able to accept child's condition due to not fitting their expectation), and *reinforces parent* (parent feeling no having positive reinforce from their child).

Next, the CFA results showed that the proposed items supporting the parenting stress construct were proven to measure one factor (unidimensional), meaning that the parent aspect consists of seven items, child aspect consists of four items, and parent-child interaction aspect consists of two items. The entire items measure parenting stress construct with the highest *factor loading*  $>0.6$ . Hair et al. (2014) confirmed that evaluation on the value of factor loading has the *standardized factor loading*  $> 0.50$  or  $> 0.70$ . The thirteen items representing parenting stress construct are approved by Ferdinand (2000) that the items used in unidimensional measurement estimates one construct.

The construct validity test consists of convergence validity and discriminant validity (Hair et al, 2014). The results of this study proved that the convergence validity and construct reliability had good values. A construct is said to have good convergence validity if 1) the *standardized factor loading*  $>0.50$  or  $>.70$ , 2) the value of *average variance extracted*  $< 0.5$ , and 3) the construct reliability  $> 0.7$  (Hair et al., 2014). These three conditions of the convergence validity had met the conditions of every aspect of parenting stress construct.

Validity testing of the parenting stress scale proves that it has good convergent validity as well as construct reliability. For the discriminant validity, empirically the

parent aspect and child aspect, and child aspect and parent-child interaction aspect were considered to have no resemblance, but the parent aspect and parent-child interaction aspect had a low value of discriminant validity, meaning that several items from both aspects were still considered to have similarities. The reliability test results based on Cronbach's alpha showed that the parenting stress measurement tool has a satisfactory level of reliability, i.e.  $\alpha = 0.823$  with a total item correlation  $\geq 0.3$  of 21 items and  $\leq 0.3$  of five items. This could be interpreted that this parenting stress scale can be used to collect research data and show adequacy in expressing parenting stress.

## Conclusion

This study developed a parenting stress scale based on the Indonesian context, starting from the item creation, content validity testing, trial, and psychometric property test. The measurement tool was proven to be valid and reliable based on all the psychometric testings: content validity, Cronbach's alpha reliability, unidimensionality, construct validity, convergent validity, and discriminant validity

## Suggestion

The parent and parent-child interaction aspect showed a low discriminant validity, indicating that the items within those aspects shared similar concepts. Therefore, improving a measuring instrument can be recommended, and this parenting stress construct still requires further development. It can involve more heterogeneous subjects, for example, mothers of children with other special needs such as attention deficit hyperactivity disorder, intellectual developmental disorder, and down

syndrome. Thus, it is expected that the measurement tool also has more items with high factor loading and better discriminant validity values.

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