



Psychometric Properties of a Polish Version of the Parental Stress Index III (PSI III)

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Abstract

The Parenting Stress Index (PSI) has been translated into multiple languages. The aim of the present study was to develop a Polish version of the PSI III. A total sample size of 678 parents (308 parents of children with ASD, 59 parents of children with Down syndrome, 65 parents of deaf children, 34 parents of children with other developmental disorders, and 212 parents without developmental disabilities) participated in the study. The Polish version of the PSI III was characterized by: (1) good internal consistency, (2) a three-factor structure, including Parent domain, Child domain, and the children's and parents' difficulties in adapting to the external demands resulting from the children's developmental disorder, and (3) negative correlations between parental stress and parental well-being. Implications for the research and clinical practice are discussed.

Keywords Parenting stress · The parenting stress index III · Psychometric properties

Introduction

Parenting stress, defined as “aversive psychological reaction to the demands of being a parent” (Deater-Deckard 1998, p. 315) is a multidimensional construct that includes cognitive, affective, and behavioural aspects of parents' and children's functioning, as well as the parent-child interactions (Abidin 1995). The greater the demands of being a parent and the more scarce the resources for doing it effectively, the more severe is the parenting stress (Deater-Deckard and Scarr 1996). Parenting stress is supposed to have a large number of negative consequences. Parents who report more parental stress frequently declare troubles with parental sensitivity (Pereira et al. 2012; Pelchat et al. 2003), less positive parents-

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child interactions (Magill-Evans & Harrison 2001), more conflict situations and interactions among family members (Deater-Deckard and Scarr 1996; Larson and Almeida 1999; Webster-Stratton 1990), various forms of child neglect and abuse (Guterman et al. 2009) and even intra-family violence (Mash and Johnston 1990; Mikolajczak et al. 2018; Prinz 2016; Rodriguez and Green 1997). Additionally, parents who report more parenting stress may potentially declare the tendency to experience lower psychological well-being, lower positive affect and higher negative affect, as well as more anxiety and depression symptoms (Davis and Carter 2008; Leigh and Milgrom 2008; Marshall et al. 2018; Pottie and Ingram 2008; Rezendes and Scarpa 2011).

Compared to the families of typically developing children, the parenting stress is higher among parents of children with disabilities, for example, parents of children with autism spectrum disorders (ASD; e.g., Hayes and Watson 2013; Huang et al. 2014; Soltanifar et al. 2015; Wang et al. 2013), intellectual disability (Richman et al. 2009), or deafness (Asberg et al. 2008). Still, a deeper understanding of the underlying mechanisms and the specifics of parenting stress among parents of children with disabilities presents a challenge, made even the more important by the fact that better understanding of this mechanism would enable more efficient ways of supporting affected families.

One of the most commonly used instruments for measuring parental stress is the Parenting Stress Index (PSI Abidin 1983). It is a self-report scale for parents of children up to 12 years of age, which can be used to study various groups of parents: those raising children with developmental difficulties, a chronic disease or disability, as well as typically developing children. The first version of the scale was the PSI (Abidin 1983), followed by PSI II (Abidin 1986), PSI III (Abidin 1995), and PSI IV (Abidin 2012). PSI offers a comprehensive and multidimensional assessment of parenting stress that can be useful in developing individual programmes for prevention stress in at-risk families as well as providing therapeutic support to families already experiencing powerful stress.

The instrument has been translated into multiple languages, including Arabic (Dardas & Ahmad 2014), Chinese (Yeh et al. 2001), French (Touchèque et al. 2016), German (Hofecker Fallahpour et al. 2009), Italian (Guarino et al. 2008), Lithuanian (Perminas and Viduoliene 2013), and Spanish (Solis and Abidin 1991). Out of all PSI versions, for many years the PSI III was the only available measure for parental stress evaluation in Poland. Thus, it is especially important to develop the knowledge about psychometric properties of the Polish version of the PSI III. Both PSI III (Abidin 1995) and PSI IV (Abidin 2012) versions include the same number of items, domains, and scales. The PSI IV (Abidin 2012) includes improved cultural sensitivity of item language, increased internal consistency of scales, enhanced factor loading of items on scales, the addition of age-based norms at the domain and subscale level, the addition of *t* scores to enhance interpretation, and a new normative sample that includes fathers.

Availability of such measure would be of tremendous utility in research and clinical practice. This paper introduces the most commonly used Polish adaptation of the PSI III and its psychometric properties: (1) internal consistency reliability, (2) factor structure, and (3) validity, including differences in stress levels between the groups of parents of children with ASD, intellectual disability, deaf children, and parents of

typically developing children; as well as the relationships between scores in the PSI III scales and other instruments measuring parental well-being.

The Current Study

The main aim of the present study was to evaluate the psychometric properties of the Polish version of the PSI III (Abidin 1995). It is the gold standard in psychometric studies to check the psychometric properties of the adapted measure before it may be widely used in research and clinical practice. More specific objectives were to evaluate internal consistency, convergent and discriminant validity, and factor structure of the Polish version of the PSI III. We conducted comprehensive analyses of the level of parental stress and well-being in a diverse group of parents with children with developmental disabilities and parents of typically developing children to answer for these questions. Based on previous studies we expected that:

- (1) The Polish version of the PSI III would present high internal consistency,
- (2) Parents of children with developmental disabilities would declare higher level of parental stress in comparison to parents of typically developing children,
- (3) Parents of children with ASD would report higher level of parental stress than parents of children with other developmental disabilities,
- (4) There would be a two-factor structure of the Polish version of the PSI III reflecting Child domain and Parent domain,
- (5) Higher parental stress would be associated with lower parents' well-being.

Method

Measures

Parental Stress Index III

Parental Stress Index III (PSI III, Abidin 1995) consists of 120 items which reflects three subscales: Child domain (47 items), Parent domain (54 items), and Life Stress Scale (19 items). The description of the instrument's structure and its subscales is provided in Table 1.

For the Child and Parent domains, caregivers responded on a 5-point Likert scale (from 1 meaning "Absolutely disagree" to 5 meaning "Absolutely agree"), while in the case of the Life Stress Scale, a dichotomous scale was used (*Yes* or *No*). The Total Stress measure can also be calculated as the sum of points scored in the Child and Parent domains. Higher scores indicate higher levels of parenting stress experienced by the participant.

By permission of the Publisher (PAR), the PSI III was translated into Polish by Ewa Pisula (a psychologist fluent in English, with experience in adapting psychological instruments). The Polish language version was developed on the principle of preserving as far as possible the original content of items, using similar grammatical structures of questions and difficulty of terms. A blind back translation was done and the consistency

Table 1 Specific characteristics of the PSI III scales and subscales

Domain	Subscale	Description of subscale	Number of items	
Child – child's behaviors and their evaluation by the parent	Distractibility/ Hyperactivity	Children's overactivity, restlessness, distractibility, short attention span, doesn't seem to listen, failure to finish things they started, and difficulty concentrating on homework assignments	9	
	Adaptability	Child's inability to adjust to changes in his or her environment	11	
	Reinforces Parent	The parents' experience of interactions with his or her child as positively reinforcing.	6	
	Demandingness	The parents' experience of the children's as placing many demands upon him or her	9	
	Mood	Child's negative emotional functioning (e.g., depressivity, sadness, tendency to cry, and a lack of happiness)	5	
	Acceptability	The child possesses characteristics that do not match the expectations the parent had for they children	7	
	Parent – parental characteristics and family context that play an important role in fulfilling the parental role	Competence	Asses the extent to which the parents feel competent in parenting role	13
		Isolation	The parent's feeling of being isolated from they support systems	6
		Attachment	Assess the parents' sense of closeness with the child	7
		Health	Assess the extent to which parents' health status contributes to overall parenting stress	5
Role Restriction		The parents' sense of restrictions associated with the parental role	7	
Life Stress Scale	Depression	Parent's negative emotional functioning (e.g., depressivity, sadness, and guilt)	9	
	Spouse	Parents' perception of the lack of the support of the other parent in the area of child management	7	
	–	The experiencing by family of life stressors in the last time	19	

of the original version with the translation was checked by a native speaker, as recommended by the International Test Commission (ITC) (Hambelton 1994). Minor corrections included changes to individual phrases. The final version was approved by the Publisher.

Mental Health Continuum Short Form and Personal Well-Being Questionnaire

Two measures of psychological well-being were also used in this study: the Mental Health Continuum Short Form (MHC-SF; Keyes 2009; adapted by Karaś et al. 2014) and the Personal Well-Being questionnaire (PWB; Ryff 1989 adapted by Ciecuch 2010).

MHC-SF consists of 14 questions. The Polish version of the questionnaire has good reliability and validity (Karaś et al. 2014). Respondents are asked to rate their feelings in the past month on a 6-point Likert scale (never, once or twice a month, about once a week, two or three times a week, almost every day, every day). Higher scores reflect higher level of positive mental health status. The scale is made up of three subscales: Psychological, Emotional, and Social positive mental health status.

PWB includes 84 questions. The Polish version of the instrument is characterized by good reliability and validity (Ciecuch 2010). Participants respond to each statement on a 6-point Likert scale (from 1 “strongly agree to 6 “strongly disagree”). Higher scores indicate higher level of psychological well-being. The scale consists of six subscales: Self-Acceptance, Positive Relations with Others, Autonomy, Environmental Mastery, Purpose in Life, and Personal Growth.

Participants

A total of 678 individuals took part in the study, of whom 308 were parents of children with ASD, 59 were parents of children with Down syndrome, 65 were parents of deaf children, 34 were parents of children with other developmental and intellectual disabilities (including cerebral palsy, genetic disorders such as Willi-Prader Syndrome, Angelman syndrome, and Rett syndrome), and 212 were parents of typically developing children (comparison group). The majority of participants were mothers. The mean age of the children ranged from 1 to 12 years old. All participants were White/Caucasian. Detailed information about the study sample is provided in Table 2.

Procedure

Participants were contacted via diagnostic and therapeutic centres for children with developmental disabilities, as well as through kindergartens and schools across Poland. The heads of those institutions were asked for permission to put up written notes at the premises which informed about the purpose and design of the study. People expressing interest in participation were provided with full written information about the study, including its anonymous nature, the right to withdraw at any time, and uses of data. The parents who were still interested to participate in the study were given a set of questionnaires and a demographics survey to fill in at home, which they returned in a sealed envelope to the contact person in a given educational or therapeutic center. The procedure was approved by the Scientific Research Ethics Committee of the Faculty of Psychology of the University of Warsaw.

Table 2 Characteristics of the study samples

Participants information	Autism spectrum disorder	Down syndrome	Deafness	Other disorders	Control group
<i>N</i>	308	59	65	34	212
Parents' gender <i>n</i> (%):					
Females	243 (78%)	51 (87%)	64 (99%)	27 (79%)	172 (81%)
Males	58 (18%)	6 (10%)	1 (1%)	5 (15%)	40 (19%)
Missing data	7 (4%)	2 (3%)	–	2 (6%)	–
Childs' gender <i>n</i> (%):					
Females	54 (17%)	23 (39%)	30 (46%)	11 (32%)	95 (45%)
Males	253 (82%)	36 (61%)	32 (49%)	22 (65%)	98 (46%)
Missing data	1 (1%)	–	3 (5%)	1 (3%)	19 (9%)
Participants' age in years <i>M</i> (<i>SD</i>):					
Mothers' mean age	35,33 (5,93)	37,46 (6,78)	33,22 (4,91)	36,03 (7,06)	32,86 (5,65)
Fathers' mean age	37,69 (6,75)	39,61 (6,50)	35,60 (5,16)	40,82 (15,64)	35,54 (7,42)
Childs' mean age	6,33 (2,85)	5,97 (3,40)	3,04 (1,70)	6,79 (2,77)	5,04 (2,99)
Mothers' education level <i>n</i> (%):					
Primary/Basic Vocational	13 (4%)	5 (9%)	1 (1%)	1 (3%)	16 (8%)
Secondary/with Exit Exam	120 (39%)	13 (22%)	24 (37%)	12 (35%)	64 (30%)
Bachelor's Degree	36 (12%)	6 (10%)	5 (8%)	1 (3%)	30 (14%)
Higher	126 (41%)	31 (52%)	35 (54%)	13 (38%)	93 (44%)
Missing data	13 (4%)	4 (7%)	–	7 (21%)	9 (4%)
Fathers' education level <i>n</i> (%):					
Primary/Basic Vocational	54 (18%)	13 (22%)	14 (22%)	6 (17%)	16 (8%)
Secondary/with Exit Exam	123 (40%)	19 (33%)	29 (44%)	10 (29%)	90 (42%)
Bachelor's Degree	17 (5%)	3 (5%)	3 (5%)	3 (9%)	22 (10%)
Higher	101 (33%)	19 (32%)	19 (29%)	6 (18%)	69 (33%)
Missing data	13 (4%)	5 (8%)	–	9 (27%)	15 (7%)
Number of children in family <i>n</i> (%):					
1	124 (40%)	15 (25%)	29 (44%)	12 (35%)	102 (48%)
2	141 (45%)	29 (49%)	21 (32%)	14 (41%)	88 (42%)
3	27 (8%)	6 (10%)	13 (20%)	5 (15%)	14 (6%)
4	12 (4%)	4 (7%)	0 (0%)	2 (6%)	4 (2%)
5	2 (1%)	3 (5%)	1 (2%)	0 (0%)	0 (0%)
6	0 (0%)	1 (2%)	1 (2%)	0 (0%)	0 (0%)
7	1 (1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
8	0 (0%)	1 (2%)	0 (0%)	0 (0%)	0 (0%)
Missing data	1 (1%)	0 (0%)	0 (0%)	1 (3%)	4 (2%)

Data Analysis

First, the PSI III reliability was assessed by determining internal consistency through the Cronbach's alpha coefficient among all the items of the instrument.

Second, confirmatory and exploratory factor analyses were performed. Exploratory factor analyses were conducted on scales and items with principal axis factoring by Oblimin rotation with Keiser's normalization to examine the structure of the Polish version of the PSI III. Third, convergent and discriminant validity of the Polish version of the PSI III was examined by determining (1) whether the scales of the Polish version of the PSI III differentiate parents with higher level of parenting stress from those with lower level of parenting stress cluster analyses irrespective of the children's diagnoses were conducted in this study, (2) the differences in mean scores of the parental stress between parents of children with ASD, parents of children with Down syndrome, parents of deaf children, parents of children with other developmental disorders, and parents of typically developing children through analysis of co-variance (ANCOVA) with demographic characteristics such as children's gender, parents' gender, mean age of parents, mean age of children, parents' education, and number of children in family as co-variates. If there was a significant difference, post hoc group comparison analysis with Bonferroni's correction for the number of comparisons was applied, (3) the magnitude of the relationship of parental stress with parental positive mental health status and personal well-being through Pearson's correlations, and (4) whether the results are not influenced by identical circumstances and all of the scales do not create one factor the exploratory factor analysis with principal axis factoring by Oblimin rotation with Keiser's normalization was performed on PSI III, MHC-SF, and PWB scales. To avoid Type I error, a Bonferroni correction was applied. Therefore, the p level was set at 0.01 for all analyses. The PSI III was developed for use in heterogeneous populations. Thus, in most cases, the analyses were performed on all samples combined. More specifically, (1) internal reliability was conducted on all samples combined (parents of children with ASD, parents of children with Down syndrome, parents of deaf children, parents of children with other developmental disorders, and parents of typically developing children), (2) confirmatory and exploratory factor analyses were also performed on all these samples combined, and (3) construct validity assessments for the association between parental stress and parental positive mental-health status were performed on all samples combined (parents of children with ASD, parents of children with Down syndrome, parents of deaf children, parents of children with other developmental disorders, and parents of typically developing children) and for the relationship between parental stress and personal well-being were conducted on the two samples combined (parents of deaf children and parents of Down syndrome children).

Results

Internal Reliability of the PSI III

In order to evaluate the reliability of the PSI III Polish version, Cronbach's α coefficients were calculated for 120 items based on the combined results from all groups (see Table 3).

Cronbach's α values were: (1) $\alpha = .94$ for Child domain (ranging from $\alpha = .72$ for Distractibility/Hyperactivity to $\alpha = .86$ for Adaptability), (2) $\alpha = .94$ for Parent domain (ranging from $\alpha = .58$ for Health to $\alpha = .84$ for Role Restriction), and (3) $\alpha = .97$ for Total Stress.

Table 3 Internal consistency coefficients of the PSI III (all samples combined)

PSI III domains and scales	α
Child domain	.94
Distractibility/Hyperactivity	.72
Reinforces Parent	.78
Mood	.74
Acceptability	.80
Adaptability	.86
Demandingness	.85
Parent domain	.94
Competence	.83
Attachment	.69
Role Restriction	.84
Depression	.82
Spouse	.80
Isolation	.70
Health	.58
Total stress	.97

Higher-Order Factors of Parental Stress Dimensions: Factor Analysis of the Polish PSI III Scales and Items

Confirmatory factor analysis was performed on the Polish PSI III scale scores, as was done in the original English language version of the PSI III (see Abidin 1995). The model did not fit the data well. Thus, exploratory factor analysis was performed on the Polish PSI III items and scale scores.

The results of exploratory factor analysis conducted on the Polish PSI III scale scores are presented in Table 4.

The results of the factor analysis suggest a three-factor structure of the PSI III Polish version. The first factor reflected the dimension of stress associated with parent's characteristics and consisted of the following scales: Spouse, Depression, Competence, Role Restriction, and Isolation. The second factor represented the dimension of stress linked mainly to the child's characteristics and consisted of the following scales: Mood, Distractibility/Hyperactivity, Attachment, Health, and Reinforces Parent. The third dimension described the stress resulting from the child's and parent's difficulties in adapting to the external demands associated with the child's developmental problems, and included the following scales: Acceptability, Adaptability, and Demandingness. The first factor was negatively correlated with the second and third factors.

To better understand the three-factor solution of the Polish version of the PSI III, we conducted additional exploratory factor analyses based on items. The results of exploratory factor analysis performed on the Polish PSI III items are presented in Table 5.

The results of the factor analysis again indicate a three-factor structure of the PSI III Polish version. The first factor reflected the dimension of stress associated with parent's characteristics and included only items which were originally attributed to Parent

Table 4 Factor loadings of the PSI III scales obtained in exploratory factor analysis (all samples combined)

PSI III Scales	Factor 1	Factor 2	Factor 3
Spouse	.79		
Depression	.78		
Competence	.67		
Role Restriction	.66		
Isolation	.66		
Mood		-.87	
Distractibility/Hyperactivity		-.84	
Attachment		-.84	
Health		-.82	
Reinforces Parent		-.74	
Acceptability			-.78
Adaptability			-.75
Demandingness			-.70

domain (Abidin 1995). The second factor represented the dimension of stress associated with child's characteristics and included only items which were originally attributed to Child domain (Abidin 1995). The third dimension described the stress resulting from the child's and parent's difficulties in adapting to the external demands associated with the child's developmental problems and included items which were originally attributed to Parent and Child domains (Abidin 1995). Additionally, for 32 items factor loading were below .40 which means that these items do not adequately evaluate parental stress. The first factor was negatively correlated with the third factor and positively linked with the second factor.

Validity

Cluster Analyses

The results of cluster analysis of the parents with higher level of parenting stress and parents with lower level of parenting stress based on PSI III irrespective of the children's diagnoses are presented on Fig. 1.

It was found that parents who report more stress declare greater parental stress associated with: (1) Child domain scales such as Distractibility/Hyperactivity, Reinforces Parent, Mood, Acceptability, Adaptability, and Demandingness, (2) Parent domain scales such as Competence, Attachment, Role Restriction, Depression, Spouse, Isolation, Health, and (3) Life stress scale in comparison to parents who report less stress.

Group Differences

The general results of analysis of covariances conducted on the Polish version of the PSI III accounting for demographic characteristics are presented in Table 6.

Table 5 Factor loadings of the PSI III items obtained in exploratory factor analysis (all samples combined)

PSI III Items	Factor 1	Factor 2	Factor 3
93	.62		
91	.61		
87	.61		
88	.60		
86	.58		
92	.57		
73	.57		
85	.56		
72	.56		
74	.56		
75	.55		
84	.55		
80	.55		
78	.53		
69	.53		
70	.52		
96	.51		
94	.50		
77	.49		
100	.49		
71	.48		
89	.46		
68	.45		
82	.41		
81	.41		
25		.76	
22		.67	
23		.67	
26		.65	
50		.58	
48		.58	
4		.58	
44		.57	
3		.56	
32		.55	
20		.51	
31		.49	.45
9		.48	
34		.45	.43
24		.45	
35		.40	
27			.70
19			.67

Table 5 (continued)

PSI III Items	Factor 1	Factor 2	Factor 3
61			.66
13			.65
12			.65
8			.62
66			.60
63			.60
40			.58
51			.57
54			.57
38			.56
37			.56
53			.56
42			.55
36			.55
10			.51
58			.51
11			.50
39			.50
57			.49
33			.48
79			.47
17		.41	.44
43			.43
14			.41
56			.41
47			.40
67			
15			
28			
55			
52			
6			
18			
16			
98			
64			
62			
41			
95			
65			
49			
45			
46			
5			

Table 5 (continued)

PSI III Items	Factor 1	Factor 2	Factor 3
99			
21			
1			
7			
30			
90			
83			
97			
76			
101			
29			
60			
2			
59			

The findings suggest that there were significant differences in the level of parental stress between examined groups.

Table 7 shows descriptive statistics and group differences in the PSI III scores accounted for demographic characteristics.

There were statistically significant group differences in all PSI III subscales. Parents of children with developmental disorders scored higher than parents of typically developing children in the Child domain (mainly in Distractibility/

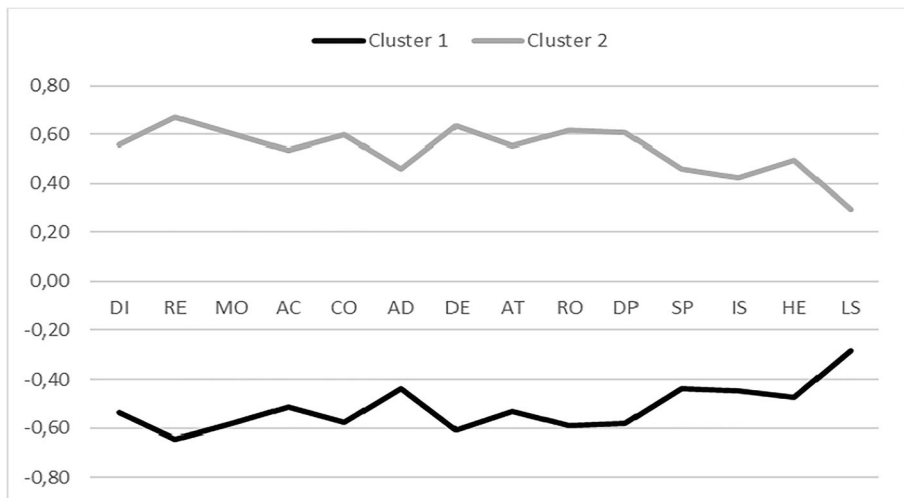


Fig. 1 Cluster analyses of the parents with higher level of parenting stress and parents with lower level of parenting stress based on PSI III irrespective of the children’s diagnoses. Note: Child domain scales: DI – Distractibility/Hyperactivity, RE – Reinforces Parent, MO – Mood, AC – Acceptability, AD – Adaptability, DE – Demandingness. Parent domain scales: CO – Competence, AT – Attachment, RO – Role Restriction, DP – Depression, SP – Spouse, IS – Isolation, HE – Health. Life stress domain: LS – Life Stress

Table 6 The general results of analysis of covariances conducted on the PSI III accounting for demographic characteristics

PSI III Scales	Type III sum of squares	Mean square	<i>F</i>	Partial η^2
Child domain	158,931.85	39,732.96	83.17*	.38
Distractibility/Hyperactivity	4786.01	1196.50	48.44*	.26
Reinforces Parent	1599.22	399.80	25.11*	.16
Mood	1822.31	455.58	38.30*	.22
Acceptability	3590.54	897.64	37.41*	.22
Adaptability	8718.29	2179.57	45.48*	.25
Demandingness	9906.30	2476.58	77.71*	.36
Parent domain	87,166.42	21,791.61	29.22*	.18
Competence	5843.69	1460.92	27.07*	.17
Attachment	1160.22	290.06	15.35*	.10
Role Restriction	2708.37	677.09	25.95*	.16
Depression	2546.66	636.67	18.20*	.12
Spouse	1417.27	354.32	11.03*	.08
Isolation	820.11	205.03	9.72*	.07
Health	455.74	113.94	10.10*	.07
Life stress	5503.28	1375.82	5.20*	.04
Total stress	480,207.97	120,051.99	62.04*	.31

F – the results of analysis of covariances (ANCOVA), *df*= 4; * *p* < .001

Hyperactivity, Acceptability, and Demandingness subscales), Parent domain (mainly in Competence and Role Restriction subscales), and Total Stress. In addition, higher scores in the Child domain (mainly through Distractibility/Hyperactivity, Reinforces Parent, Adaptability, and Demandingness subscales) in the group of parents of children with ASD than in all of the remaining groups has also been noticed.

Parental Stress and Well-Being

Table 8 presents Pearson's correlation coefficients of the relationships between parental stress with positive mental health status and personal well-being.

Parental stress was inversely associated with positive mental health status and well-being. More specifically, Child domain dimension (through Distractibility/Hyperactivity, Adaptability, and Demandingness scales) was inversely linked to emotional psychological positive mental health outcomes. It has also been found that many dimensions of Parent domain (especially Role Restriction and Health scales) were inversely associated with emotional, social, and psychological positive mental health outcomes. Furthermore, many dimensions of Child domain (mainly Reinforces Parent scale), Parent domain (especially Competence, Role Restriction, and Depression scales), and Total Stress were inversely related to all aspects of well-being including Autonomy, Environmental mastery, Personal growth, Positive social relations, Purpose in life, and Self-acceptance.

Table 7 Comparisons among parents of children with autism spectrum disorder, Down syndrome, deafness, other disorders, and control group on the Polish PSI III using group comparison accounting for demographic characteristics

PSI scales	ASD (1)		Down syndrome (2)		Deafness (3)		Other disorders (4)		Control group (5)		Group comparison
	M	SE	M	SE	M	SE	M	SE	M	SE	
Child domain	141.39	1.41	125.14	3.17	109.53	2.91	124.19	4.24	101.67	1.73	1 > 2, 3, 4, 5**;
Distractibility/Hyperactivity	29.67	.32	27.92	.72	25.45	.66	25.98	.96	22.66	.39	1 > 3**;
Reinforces Parent	14.54	.26	11.96	.58	11.08	.53	12.04	.77	10.70	.32	1 > 2, 3, 5**;
Mood	15.23	.22	12.14	.50	11.67	.46	12.67	.67	11.14	.27	1 > 2, 3, 5**;
Acceptability	19.01	.32	19.02	.71	12.24	.65	18.14	.95	13.32	.39	1 > 3, 5**;
Adaptability	34.76	.45	29.83	1.00	26.82	.92	30.20	1.34	25.59	.55	1 > 2, 3, 5**;
Demandingness	28.18	.36	24.27	.82	20.26	.75	25.16	1.10	18.27	.45	1 > 2, 3, 5**;
Parent domain	151.67	1.76	142.64	3.95	131.48	3.63	138.96	5.30	121.79	2.16	1 > 3, 5**;
Competence	35.14	.47	32.44	1.06	29.24	.98	32.42	1.43	27.49	.58	1 > 3, 5**;
Attachment	17.64	.28	16.59	.63	14.62	.58	15.41	.84	14.36	.34	1 > 3, 5**;
Role Restriction	21.99	.33	19.60	.74	19.41	.68	19.67	.99	16.65	.40	1 > 3, 5**;
Depression	24.14	.38	24.93	.86	22.03	.79	23.01	1.15	19.26	.47	1, 2 > 5**;
Spouse	20.91	.37	19.62	.82	18.18	.75	19.27	1.10	17.11	.45	1 > 5**;
Isolation	17.29	.30	16.13	.67	15.44	.61	15.93	.89	14.38	.36	1 > 5**;
Health	14.57	.22	13.33	.49	12.57	.45	13.25	.65	12.55	.27	1 > 5**;
Life stress	13.50	1.05	19.13	2.36	14.09	2.16	21.33	3.16	9.53	1.29	2 > 5*
Total stress	293.06	2.83	267.78	6.37	241.01	5.85	263.16	8.53	223.45	3.48	1 > 2, 3**;

M – mean; SE – standard error; * $p < .01$, ** $p < .001$

Table 8 Pearson's Correlations of Parental Stress with positive mental health status and well-being (all samples combined)

PSI III. MHC. & PWB scales	Positive mental health status							Well-being			
	Total score	Emotional	Social	Psychological	Autonomy	Environmental Mastery	Personal growth	Positive social relations	Purpose in life	Self-acceptance	
Child domain	-.15	-.18*	-.08	-.17	-.18	-.32*	-.17	-.27*	-.21	-.39*	
Distractibility/Hyperactivity	-.20*	-.18*	-.18*	-.19*	-.14	-.32*	-.20	-.20	-.15	-.230	
Reinforces Parent	.01	-.03	.07	-.03	-.27*	-.25	-.23	-.28*	-.30*	-.37*	
Mood	-.06	-.11	.01	-.08	-.20	-.26*	-.13	-.16	-.24	-.29*	
Acceptability	.00	-.03	.03	-.01	.02	-.19	-.06	-.21	-.07	-.24	
Adaptability	-.18*	-.22*	-.10	-.19*	-.15	-.17	-.14	-.24	-.17	-.31*	
Demandingness	-.22*	-.24*	-.13	-.23*	-.15	-.26*	-.05	-.16	-.12	-.36*	
Parent domain	-.07	-.05	-.06	-.07	-.12	-.23	-.12	-.14	-.22	-.25	
Competence	-.16	-.16	-.07	-.21*	-.28*	-.46*	-.22	-.29*	-.32*	-.48*	
Attachment	.05	.03	.13	-.03	-.29*	-.37*	.01	-.25	-.39*	-.37*	
Role Restriction	-.25*	-.27*	-.20*	-.22*	-.32*	-.55*	-.27*	-.50*	-.39*	-.55*	
Depression	-.11	-.09	-.05	-.14	-.28*	-.52*	-.21	-.35*	-.28*	-.47*	
Spouse	-.11	-.12	-.05	-.13	-.19	-.43*	-.23	-.27*	-.37*	-.36*	
Isolation	-.14	-.16	-.04	-.19*	-.17	-.32*	-.28*	-.55*	-.29*	-.49*	
Health	-.25*	-.29*	-.14	-.27*	-.27*	-.27*	-.18	-.23	-.21	-.33*	
Total stress	-.17*	-.19*	-.08	-.20*	-.31*	-.55*	-.26*	-.43*	-.39*	-.58*	

n ranged from *n* = 102 to *n* = 237. * *p* < .01 (two-tailed)

Exploratory Factor Analyses

The results of exploratory factor analysis conducted on the Polish PSI III, MHC-SF, and PWB scale scores are presented in Table 9.

The results of the factor analysis suggest a six-factor structure of the Polish version of the PSI III, MHC-SF, and PWB. The first factor consisted of the PSI III (Attachment and Health), and PWB (Autonomy, Environmental Mastery, Positive Relations with Others, Purpose in Life, and Self-acceptance) scales. The second factor consisted only of the PSI III scales (Reinforces Parent, Mood, Acceptability, Adaptability, and Competence). The third factor consisted of the PSI III (Competence and Isolation), and MHC-SF (Emotional, Social, and Psychological) scales. The fourth factor consisted only of the PSI III scales (Role Restriction, Spouse, and Life Stress). The fifth factor consisted only of the PSI III scales (Demandingness and Depression). The sixth factor consisted of the PSI III (Attachment and

Table 9 Factor Loadings of the PSI III, MHC-SF, and PWB scales Obtained in Exploratory Factor Analysis (all samples combined)

PSI III, MHC-SF, and PWB scales	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
PSI III						
Distractibility/Hyperactivity					.84	
Reinforces Parent		.89				
Mood		.90				
Acceptability		.82				
Adaptability		.77				
Demandingness					.58	
Competence		.45	-.48			
Attachment	.63					-.53
Role Restriction				.61		
Depression					.48	
Spouse				.77		.41
Isolation			-.69			
Health	.40					
Life Stress				.83		
MHC-SF						
Emotional			.81			
Social			.83			
Psychological			.97			
PWB						
Autonomy	-.93					
Environmental Mastery	-.78					
Personal Growth						-.80
Positive Relations with Others	-.56					-.40
Purpose in Life	-.83					
Self-acceptance	-.72					

Spouse), and PWB (Personal Growth and Positive Relations with Others) scales. These results suggest that parental stress, parental mental health status, and parental well-being were not influenced by identical circumstances.

Discussion

The results of the study confirmed the satisfactory reliability of the Polish version of the PSI III. Internal consistency coefficients for this version were: $\alpha = .94$ for the Child domain (from $\alpha = .72$ to $\alpha = .86$ for the individual subscales), $\alpha = .94$ for the Parent domain (from $\alpha = .58$ to $\alpha = .84$, for individual subscales), and $\alpha = .97$ for Total Stress. These findings are consistent with internal consistency of the original version of the PSI III, for which the internal consistency coefficients were $\alpha = .90$ and $\alpha = .91$ for Child domain in normative sample and validity sample, respectively (ranged from $\alpha = .59$ to $\alpha = .83$ for the individual subscales), $\alpha = .93$ and $\alpha = .92$ for the Parent domain in normative sample and validity sample respectively (ranged $\alpha = .57$ to $\alpha = .84$ for the individual subscales), and $\alpha = .95$ i $\alpha = .95$ for Total Stress in normative sample and validity sample, respectively. The original version of the PS III showed high 1 to 3 months test-retest reliability. Correlation coefficients between the first and second set of scores were $r = .63$ for the Child Domain, $r = .91$ for the Parent Domain, and $r = .96$ for the Total Stress score (Abidin 1995). To sum up, the study demonstrated that the Polish version of the PSI III is characterised by moderate to high internal consistency (depending on subscale), similarly to the original version of the measure.

Exploratory factor analysis showed that the three factors solution determined the PSI III Polish version. The first factor reflected stress associated with the Parent domain, and included the following subscales: Spouse, Depression, Competence, Role Restriction, and Isolation. The second factor represented stress linked mainly to the Child domain, and consisted of such subscales, as: Mood, Distractibility/Hyperactivity, Attachment, Health, and Reinforces Parent. The third dimension primarily reflected stress resulting from the child's and parent's difficulties in adapting to the external demands associated with the child's developmental problems, and included the following scales: Acceptability, Adaptability, and Demandingness. These results are largely consistent with results of the PSI III original version (Abidin 1995) which identified the Parent domain and Child domain. Similarly to the Polish version, the Parent domain in the original version of the PSI III included Spouse, Depression, Competence, Role Restriction, and Isolation scales and additionally consisted of Health and Attachment scales. The Child domain included the Mood Distractibility/ Hyperactivity, and Reinforces Parent (the same as in the Polish version), and additionally Adaptability, Demandingness, and Acceptability scales, that in the Polish version together formed the third factor. The principal difference between the original and the Polish version of the PSI III involved the third factor identified in the latter, concerned mostly with family's relationships with external environment: the child's adaptation and acceptance of the child's difference by the parent, as well as the burdens experienced by the parent in connection with raising the child. Our findings may suggest that in the Polish context, parenting stress to a large degree is caused by the child's and parent's problems in accommodating the external demands resulting from the child's developmental

difficulties. This is probably associated with definitely insufficient support for the families raising children with developmental problems, which falls far short of meeting those families' needs (e.g., Płatos et al. 2016; Rajner and Wroniszewski 2000). The reports of more factors than in the original version of the PSI are consistent with the results obtained by other authors. Solis and Abidin (1991) assessed the psychometric properties of the Spanish version of the PSI on a group of 233 mothers. Factor analysis revealed a better fit of data to the three factors solution (Child domain, Parent domain, and Child Parent-Interaction) than to the expected two-factor model (Child domain and Parent domain). Whiteside-Mansell et al. (2007) assessed the psychometric properties of the PSI-SF (Abidin 1990) on a large sample of 1122 parents of children aged 7, 15, and 25 months. In all three age groups, factor analyses demonstrated a better fit of data to the five factors: General Distress, Parenting Demands Distress, Parent-Child Dysfunctional Interaction, Perception of Child, and the single item in which the parent rates his or her own parenting was treated as a separate factor, rather than to the expected two factors solution (Parenting Demands Distress and Parent-Child Dysfunctional Interaction). These findings indicate the need for continued analysis of the structure of the PSI, which could bring interesting information about the differences in the construct structure of parenting stress depending on the child's age (as in the paper by Whiteside-Mansell et al. 2007) or socio-cultural conditions (as in the comparison of the results from the present study with information about the structure of the original version of the PSI III).

The study confirmed the good validity of the Polish version of the PSI III. The results on parental stress, parental mental health status, and parental well-being were not influenced by identical circumstances and all of the scales did not create one factor. The Polish version of the PSI III differentiate parents who cope better from those who cope less cluster analyses irrespective of the children's diagnoses were conducted in this study. Additionally, parents of children with disability declared higher levels of stress than parents of typically developing children. These findings are in accordance with the results of other research (Asberg et al. 2008; Richman et al. 2009). In addition, the level of stress in the Child domain in the present study was higher in parents of children with ASD than in other study groups. This is also in accordance with the previous empirical findings which have shown that the level of stress is particularly elevated in parents of children with ASD (e.g., Hayes and Watson 2013; Huang et al. 2014; Soltanifar et al. 2015; Wang et al. 2013). High level of parental stress was reported also in studies conducted in Poland (e.g., Pisula 2007; Dąbrowska and Pisula 2010; Pisula and Porębowicz-Dörsmann 2017).

There are few implications for the research and clinical practice. First, the results of this study suggest that intervention aimed at decreasing the level of parental stress in families of children with developmental disabilities should be developed. Second, the intervention should be specific to developmental disorder taking a large number of differences among families of children with developmental disabilities. Three, future studies should be concentrated on searching specific protective and risk factors for elevated level of parental stress in families of children with concrete developmental disability. Fourth, researches and clinicians working with Polish families may find it useful to score the Polish version of the PSI III based on a three-factor solution. Fifth, future studies are needed on the specificity of third factor which reflects the children's and parents' difficulties in adapting to the external demands resulting from the

children's developmental disorder. Sixth, future studies are needed about cultural differences in the feasibility of some items.

Some of the limitations of our study should be mentioned. The test-retest reliability of the Polish version of the PSI III has not been evaluated. The study enrolled mostly parents of pre-schoolers and school children. And since the challenges of parenting change over time, subsequent studies should assess the psychometric properties of the Polish version of the PSI III in the group of parents of infants and toddlers. The cross-sectional design of the data collection we employed prevented us from drawing conclusions about causation. Furthermore, our data represents a single measurement of parents' stress and two measurements of well-being. Considering these facts and the size of parent groups analysed in the study, the Polish adaptation of the instrument requires further empirical research. Despite these limitations the information learned from the study suggests that the tested version of the PSI III may be a promising instrument for measuring parenting stress in the Polish population.

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Compliance with Ethical Standards

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

Conflict of Interest The authors declare that they have no conflict of interest to disclose.

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References

- Abidin, R. R. (1983). Parenting stress index (First Ed.). Pediatric Psychologists Press.
- Abidin, R. R. (1986). Parenting stress index (Second Ed.). Pediatric Psychologists Press.
- Abidin, R. R. (1990). Parenting stress index/short form. Psychological Assessment Resources.
- Abidin, R. R. (1995). Parenting stress index: Professional manual (Third Ed.). Psychological Assessment Resources.
- Abidin, R. R. (2012). Parenting stress index (Fourth Ed.). Psychological Assessment Resources.
- Asberg, K. K., Vogel, J. J., & Bowers, C. A. (2008). Exploring correlates and predictors of stress in parents of children who are deaf: Implications of perceived social support and mode of communication. *Journal of Child and Family Studies*, 17, 486–499. <https://doi.org/10.1007/s10826-007-9169-7>.
- Cieciuch, J. (2010). Scales of psychological well-being of C. Ryff – Polish Version. Preliminary results. Maszynopis niepublikowany.

- Dąbrowska, A., & Pisula, E. (2010). Parenting stress and coping styles in mothers and fathers of pre-school children with autism and down syndrome. *Journal of Intellectual Disability Research*, *54*, 266–280. <https://doi.org/10.1111/j.1365-2788.2010.01258.x>.
- Dardas, L. A., & Ahmad, M. M. (2014). Psychometric properties of the parenting stress index with parents of children with autistic disorder. *Journal of Intellectual Disability Research*, *58*, 560–571. <https://doi.org/10.1111/jir.12053>.
- Davis, N. O., & Carter, A. S. (2008). Parenting stress in mothers and fathers of toddlers with autism spectrum disorders: Associations with child characteristics. *Journal of Autism and Developmental Disorders*, *38*, 1278–1291. <https://doi.org/10.1007/s10803-007-0512-z>.
- Deater-Deckard, K. (1998). Parenting stress and child adjustment: Some old hypotheses and new questions. *Clinical Psychology: Science and Practice*, *5*, 314–332. <https://doi.org/10.1111/j.1468-2850.1998.tb00152.x>.
- Deater-Deckard, K., & Scarr, S. (1996). Parenting stress among dual-earner mothers and fathers: Are there gender differences? *Journal of Family Psychology*, *10*, 45–59. <https://doi.org/10.1037/0893-3200.10.1.45>.
- Guarino, A., Di Blasio, P., D'Alessio, M., Camisasca, E., & Serantoni, M. (2008). *Parenting stress index short form: Adattamento italiano*. Firenze: Giunti, Organizzazioni Speciali.
- Guterman, N. B., Lee, S. J., Taylor, C. A., & Rathouz, P. J. (2009). Parental perceptions of neighborhood processes, stress, personal control, and risk for physical child abuse and neglect. *Child Abuse & Neglect*, *33*, 897–906. <https://doi.org/10.1016/j.chiabu.2009.09.008>.
- Hambelton, R. K. (1994). Guidelines for adapting educational and psychological tests: A progress report. *European Journal of Psychological Assessment*, *10*, 229–244.
- Hayes, S. A., & Watson, S. L. (2013). The impact of parenting stress: A meta-analysis of studies comparing the experience of parenting stress in parents of children with and without autism Spectrum disorder. *Journal of Autism and Developmental Disorders*, *43*, 629–642. <https://doi.org/10.1007/s10803-012-1604-y>.
- Hofecker Fallahpour, M., Benkert, T. N., Riecher-Rössler, A., & Stieglitz, R. D. (2009). Parenthood and parenting stress: Psychometric testing of the parenting stress index (PSI) in a German sample. *Psychotherapie, Psychosomatik, Medizinische Psychologie*, *59*, 224–233. <https://doi.org/10.1055/s-2008-1067436>.
- Huang, C. Y., Yen, H. C., Tseng, M. H., Tung, L. C., Chen, Y. D., & Chen, K. L. (2014). Impacts of autistic behaviors, emotional and behavioral problems on parenting stress in caregivers of children with autism. *Journal of Autism and Developmental Disorders*, *44*, 1383–1390. <https://doi.org/10.1007/s10803-013-2000-y>.
- Karaś, D., Ciecuch, J., & Keyes, C. L. M. (2014). The polish adaptation of the mental health continuum-short form (MHC-SF). *Personality and Individual Differences*, *69*, 104–109. <https://doi.org/10.1016/j.paid.2014.05.011>.
- Keyes, C. L. M. (2009). Atlanta: *Brief description of the mental health continuum short form (MHC-SF)*. Available: <http://www.sociology.emory.edu/ckeye>
- Larson, R., & Almeida, D. (1999). Emotional transmission in the daily lives of families. *Journal of Marriage and Family*, *61*, 5–20. <https://doi.org/10.2307/353879>.
- Leigh, B., & Milgrom, J. (2008). Risk factors for antenatal depression, postnatal depression and parenting stress. *BMC Psychiatry*, *8*(24), 1–11. <https://doi.org/10.1186/1471-244X-8-24>.
- Magill-Evans, J., & Harrison, M. J. (2001). Parent-child interactions, parenting stress, and developmental outcomes at 4 years. *Children's Health Care*, *30*, 135–150. https://doi.org/10.1207/S15326888CHC3002_4.
- Marshall, B., Kollia, B., Wagner, V., & Yablonsky, D. (2018). Identifying depression in parents of children with autism spectrum disorder: Recommendations for professional practice. *Journal of Psychosocial Nursing and Mental Health Services*, *56*, 23–27. <https://doi.org/10.3928/02793695-20171128-02>.
- Mash, E. J., & Johnston, C. (1990). Determinants of parenting stress: Illustrations from families of hyperactive children and families of physically abused children. *Journal of Clinical Child Psychology*, *19*, 313–328. https://doi.org/10.1207/s15374424jccp1904_3.
- Mikolajczak, M., Brianda, M. E., Avalosse, H., & Roskam, I. (2018). Consequences of parental burnout: Its specific effect on child neglect and violence. *Child Abuse & Neglect*, *80*, 134–145. <https://doi.org/10.1016/j.chiabu.2018.03.025>.
- Pelchat, D., Bisson, J., Bois, C., & Saucier, J. F. (2003). The effects of early relational antecedents and other factors on the parental sensitivity of mothers and fathers. *Infant and Child Development*, *12*, 27–51. <https://doi.org/10.1002/icd.335>.

- Pereira, J., Vickers, K., Atkinson, L., Gonzalez, A., Wekerle, C., & Levitan, R. (2012). Parenting stress mediates between maternal maltreatment history and maternal sensitivity in a community sample. *Child Abuse & Neglect*, *36*, 433–437. <https://doi.org/10.1016/j.chiabu.2012.01.006>.
- Perminas, A., & Viduoliene, E. (2013). The Lithuanian version of the parenting stress index (PSI): A psychometric and validity investigation. *European Scientific Journal*, *9*, 66–80. <https://doi.org/10.19044/esj.2013.v9n20p%25p>.
- Pisula, E. (2007). A comparative study of stress profiles in mothers of children with autism and those of children with Down's syndrome. *Journal of Applied Research in Intellectual Disabilities*, *20*, 274–278. <https://doi.org/10.1111/j.1468-3148.2006.00342.x>.
- Pisula, E., & Porebowicz-Dörsmann, A. (2017). Family functioning, parenting stress and quality of life in mothers and fathers of polish children with high functioning autism or Asperger syndrome. *PLoS One*, *12*(10), e0186536. <https://doi.org/10.1371/journal.pone.0186536>.
- Platos, M., Gocłowska, K., Koper, M., Nadolska, A., Wojaczek, K., Woźniak-Rekucka, P., Zawisny, A., Kowalik, S., Pisula, E. (2016). Ogólnopolski spis autyzmu. Sytuacja młodzieży i dorosłych z autyzmem w Polsce. Warszawa: Stowarzyszenie Innowacji Społecznych „Mary i Max”.
- Pottie, C. G., & Ingram, K. M. (2008). Daily stress, coping, and well-being in parents of children with autism: A multilevel modeling approach. *Journal of Family Psychology*, *22*, 855–864. <https://doi.org/10.1037/a0013604>.
- Prinz, R. J. (2016). Parenting and family support within a broad child abuse prevention strategy: Child maltreatment prevention can benefit from public health strategies. *Child Abuse & Neglect*, *51*, 400–406. <https://doi.org/10.1016/j.chiabu.2015.10.015>.
- Rajner, A., & Wroniszewski, M. (2000). *Raport 2000 [Report 2000]*. Warszawa: „Synopsis”.
- Rezendes, D.L., & Scarpa, A. (2011). Associations between parental anxiety/depression and child behavior problems related to autism spectrum disorders: The roles of parenting stress and parenting self-efficacy. *Autism Research and Treatment*, *2011*, 1–10. Article ID 395190. <https://doi.org/10.1155/2011/395190>.
- Richman, D. M., Belmont, J. M., Kim, M., Slavin, C. B., & Hayner, A. K. (2009). Parenting stress in families of children with Cornelia de Lange syndrome and down syndrome. *Journal of Developmental and Physical Disabilities*, *21*, 537–553. <https://doi.org/10.1007/s10882-009-9156-6>.
- Rodriguez, C., & Green, A. (1997). Parenting stress and anger expression as predictors of child abuse potential. *Child Abuse and Neglect*, *21*, 367–377. [https://doi.org/10.1016/S0145-2134\(96\)00177-9](https://doi.org/10.1016/S0145-2134(96)00177-9).
- Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology*, *57*, 1069–1081. <https://doi.org/10.1037/0022-3514.57.6.1069>.
- Solis, M. L., & Abidin, R. R. (1991). The Spanish version of the parenting stress index: A psychometric study. *Journal of Clinical Child Psychology*, *20*, 372–378. https://doi.org/10.1207/s15374424jccp2004_5.
- Soltanifar, A., Akbarzadeh, A., Moharreri, F., Soltanifar, A., Ebrahimi, A., Mokhber, N., Minoocherhr, A., & Naqvi, S. S. A. (2015). Comparison of parental stress among mothers and fathers of children with autistic spectrum disorder in Iran. *Iranian Journal of Nursing and Midwifery Research*, *20*, 93–98.
- Touchèque, M., Etienne, A., Stassart, C., & Catale, C. (2016). Validation of the French version of the parenting stress index – Short form (fourth edition). *Journal of Community Psychology*, *44*, 419–425. <https://doi.org/10.1002/jcop.21778>.
- Wang, J., Hu, J., Wang, Y., Qin, X., Xia, W., Sun, C., Wu, L., & Wang, J. (2013). Parenting stress in Chinese mothers of children with autism spectrum disorders. *Social Psychiatry and Epidemiology*, *48*, 575–582. <https://doi.org/10.1007/s00127-012-0569-7>.
- Webster-Stratton, C. (1990). Stress: A potential disruptor of parent perceptions and family interactions. *Journal of Clinical Child Psychology*, *19*, 302–312. https://doi.org/10.1207/s15374424jccp1904_2.
- Whiteside-Mansell, L., Ayoub, C., McKelvey, L., Faldowski, R. A., Hart, A., & Shears, J. (2007). Parenting stress of low income parents of toddlers and preschoolers: Psychometric properties of a short form of the parenting stress index. *Parenting, Science and Practice*, *7*, 27–56. https://doi.org/10.1207/s15327922par0701_2.
- Yeh, C. H., Chen, M. L., Li, W., & Chuang, H. L. (2001). The Chinese version of the parenting stress index: A psychometric study. *Acta Paediatrica*, *90*, 1470–1477. <https://doi.org/10.1111/j.1651-2227.2001.tb01615>.