

Development of an Indigenous Psychological Flexibility Scale (PFS) for Parents of Children with ASD

Dr. Maria Mazhar

drmmazhar.buic@bahria.edu.pk

Department of Professional Psychology, Bahria University Islamabad

Dr. Noreena Kausar

noreena.kausar@uog.edu.pk

Department of Psychology, University of Gujrat, Pakistan

Corresponding Author: * Dr. Maria Mazhar drmmazhar.buic@bahria.edu.pk

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ABSTRACT

The purpose of the study was to develop an indigenous Psychological Flexibility Scale in Urdu for parents of children with ASD, as well as to establish the psychometric properties of the indigenous Psychological Flexibility Scales. The study had two phases: In Phase 1, an indigenous Psychological Flexibility Scale was developed, and in Phase 2, the scale's psychometric qualities were established. Items were generated through semi-structured interviews with parents of children with ASD. After expert evaluation, 48 items were pilot tested on 30 parents. Purposive sampling was used to recruit 400 participants for the field investigation. The EFA was limited to a five-factor structure with 39 components. A 32-item scale with a Cronbach alpha of 0.96 was produced by the CFA. Test-retest reliability, divergent validity, and convergent validity results show that the scale is a valid and reliable way to measure psychological flexibility in parents of children with ASD. The findings have implications for clinical and counselling practice.

Keywords: Psychological Flexibility Scale, Parents, ASD, Pakistan, Urdu

INTRODUCTION

Autism Spectrum Disorder is one of the developmental disorder which generally needs continuous supervision and support from parents and professional. Deficits in communication, social interaction and behavioral patterns are prominent in the disorder (APA, 2013). There has been a concerning increase in both the prevalence and incidence of autism spectrum disorder (ASD) over the last several decades, with roughly 1 in every 54 births globally being diagnosed with ASD. It is now estimated that ASD strikes 1/110 newborn children (CDC, 2020). The research has shown that the prevalence rate of ASD among Pakistani children is 1:89 (Khalid et al., 2020). Parents of a child suffering from ASD are psychologically highly susceptible to stress, reported by Kausar et al. (2019). Concerns over managing their child's behaviour, interacting with and accessing the health-care system, finding suitable educational opportunities, and dealing with stigma and a dearth of family support are issues that parents of children with ASD face. Due to all these adversities parents who are in distress due to stress, depression and anxiety are more psychologically affected (Kausar et al., 2019; Tran, 2020; Dieleman et al., 2018). Some parents, however, are psychologically flexible and can transcend all problems more adeptly, and sustain higher levels of well-being (Gur & Reich, 2023). The ability to use good parenting behaviours and endure a healthy relationship with kids and be open to having negative thoughts, beliefs, and urges associated with a child's adjustment is called psychological flexibility in parenting (Burke & Moore, 2015). The previous research has also shown that parents who exhibit high psychological flexibility have high level of acceptance, nonjudgmental, and their control over their children's inflexibility (Daks et al., 2020;

Beeckman et al., 2019). Most of previous research findings showed a positive link between psychological flexibility and increased psychological wellbeing and life satisfaction (Daks & Rogge, 2020; Marshall & Brockman, 2016; Kashdan & Rottenberg, 2010).

According to earlier research, while there were numerous measures for assessing psychological adaptability in parents, the vast majority of them were created with Western culture in mind. To the best of the researchers' knowledge, only one psychological flexibility measure has been created specifically for Pakistani university students (Chaudhary & Rafiq, 2020). In terms of parenting, the measurements were mostly created for parents in other nations who have children with hearing loss, cancer, chronic pain, or anxiety. However, at the time of this investigation, no measuring tools for parental psychological flexibility in parents of children with ASD, specifically in Pakistan, were available in the literature. An indigenous Psychological Flexibility Scale that parents of children with ASD might use is desperately needed, given the research already in circulation. Therefore, by creating an indigenous Psychological Flexibility Scale, this study bridges the gaps in the literature. For parents having ASD children in the Pakistani cultural context, the Psychological Flexibility Scale would offer a valid and trustworthy indicator of psychological flexibility.

METHODOLOGY

Phase-I: Development of Psychological Flexibility Scale (PSF)

During first part, items were generated based on the interviews conducted with the parents in study-I. In second step, the expert evaluation was done. In third step, pilot testing was conducted followed by field administration of initial items on participants for EFA and CFA.

Step-I Generation of Item Pool

The item pool was created from the themes explored during parent interviews. Using an inductive approach, a pool of 55 items was generated from the five themes.

Step-II Content Validity

After first draft of 55 items, content validity was determined by expert (5- PhD in Psychology) from University of Gujrat. An expert review aims to obtain expert judgments regarding the content of each item, specifically whether the item accurately assesses the parents' psychological flexibility about their child with ASD. The raters were requested to score each item on a three-point Likert scale (1 = not necessary, 2 = useful, but not needed, 3 = needed). The experts also discussed Words and Products: Ambiguity and Inaptness. The CVR was calculated using the formula (Cohen et al., 2013)

$$CVR = ne - (N/2) / N/2$$

In this formula, "n" stands for the total number of experts in the panel, whereas "n" indicates the number of experts who believe an item is necessary. The degree of consensus among experts regarding the importance of each item on the scale is ascertained with the aid of the CVR calculation.

Table 1: Content Validity Ratio of Items

Item No.	Items	CVR Range
41	1,2,3,6,7,8,9,10,11,12,13,15,18,19,20,21,23,24,25,29,30,31,32,34,37,38,39,40,42,44,45,46,47,48,49,50,51,52,53,54,55	1
07	4,5,17,27,35,36,43	0.6
07	14,16,22,26,28,33,41	0.2

The CVR for 55 items as determined by experts was displayed in Table 1. According to Ayre and Scally (2014) and Roebianto et al. (2023), the crucial CVR range is -1 to +1. There were 48 items left for the pilot test.

Step-III-Pilot Study

Following content validity, 48 items were used for pilot testing. Thirty parents with children with ASD (15 mothers and 15 fathers) participated in the pilot study. Participants were chosen via purposive sampling from City Gujrat in Punjab, Pakistan. The participants were between the ages of 25 and 60. The pilot study included parents without any disabilities who had only one child with ASD. First, during their monthly visits, parents of children with ASD in clinical settings or special education classrooms were contacted. Following a description of the pilot study's objectives, their signed agreement to participate was obtained. The first form, which contained 48 PFS items, was then provided to the participants in order to assess their comprehension of each item. The findings of the pilot test showed improved internal consistency, as shown by the Cronbach's Alpha value of .96 (Cortina, 1993; Taber, 2018).

Step-IV- Field Administration

The initial form of PFS was used to examine the scale's structure. Purposive sampling was used to select 400 parents from five different Pakistani cities (Gujranwala, Gujrat, Lalamusa, Kharian & Jhelum) for field administration. The following tests were run: exploratory factor analysis (EFA), confirmatory factor analysis (CFA), and internal consistency.

Exploratory Factor Analysis

Sample

Purposive sampling was used to select 205 participants (102 fathers & 103 mothers) who had children with autism. The parents' ages ranged from 25 to 60. The study did not include participants who had more than one child with special needs, children with multiple disabilities, or children with unidentified severity.

Measures

a) Demographic Form: It contained details about the family structure, number of children with and without special needs, parents' gender, age, education, and occupation, as well as the residential area and monthly family income. The variables also included the child's gender, age, birth order, and level of ASD severity.

b) Psychological Flexibility Scale: There were forty-eight items. Respondents must use a 5-point Likert scale, with 1 denoting "strongly disagree" and 5 denoting "strongly agree."

Procedure

Participants were contacted after receiving approval from the administration of special education institutes and clinical settings. They were invited to the school or institute where their children were enrolled, following a schedule established by the school/clinic administration. Each parent was given an overview of the study's objectives. Following their consent, the first form of PSF was administered. Parents were asked to respond to each statement honestly, depending on their genuine emotions, behaviors, and ideas. Data were collected either individually or in groups. Each administration of the questionnaire lasted approximately 10-15 minutes on average.

RESULTS

Sampling adequacy test was used before performing the EFA. The Kaiser-Meyer Olkin (KMO) measure of sampling adequacy for pilot tested items (48 items) of the Psychological Flexibility Scale indicated that these variables were .85, showing the range of being meritorious (.85>.80; Kaiser, 1970). Bartlett's test of sphericity yielded an X² value of 12612.873 ($p < .000$) indicating the suitability of data for EFA.

Table 2: Factor Loading on Psychological Flexibility Scale after Varimax Rotation (N=205)

Items	Factors				
	F1	F2	F3	F4	F5
16	.908				
21	.901				
23	.894				
22	.878				
14	.869				
15	.839				
17	.805				
18	.788				
20	.778				

40	.915	
41	.911	
43	.896	
39	.861	
42	.833	
45	.795	
48	.776	
46	.757	
44	.707	
47	.689	
11	.907	
5	.889	
10	.889	
3	.888	
6	.886	
9	.873	
13	.830	
2	.786	
8	.733	
30		.919
29		.916
33		.888
32		.876
25		.865
26		.860

28					.763
27					.745
35					.870
38					.862
37					.819
Eigen value	13.24	7.16	5.07	4.84	2.51

Table 2 showed that all the factors have reasonable numbers of items and have factor loadings between .6 to .9.

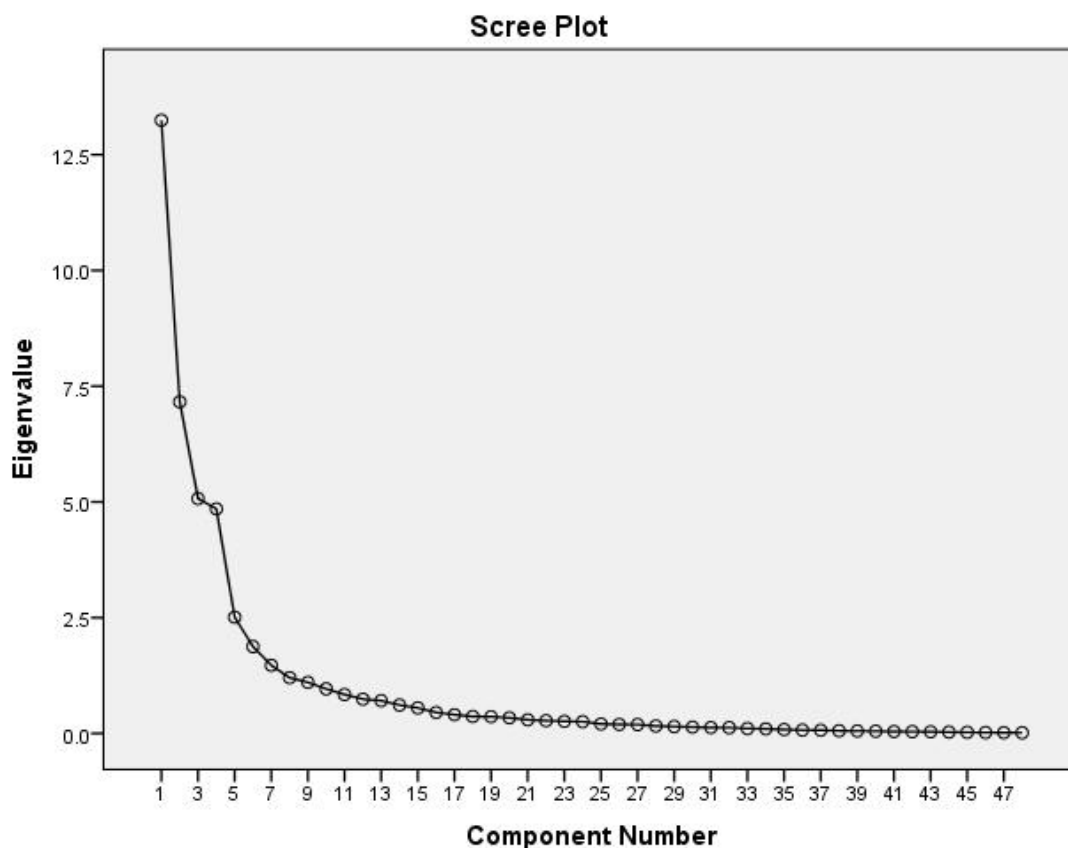


Figure 1-Scree Plot indicating Factor Solution of PFS

As shown in the picture above, exploratory factor analysis first discovered nine variables that accounted for 80.143% of the variance. Taking factor loading and theoretical significance into account, five well-defined factors accounted for 67.13% of variation.

EFA is used to estimate or eliminate factors and determine how many should be retained or rotated in an interpretable orientation (Floyd & Widaman, 1995, p. 287). EFA was carried out with Varimax rotation. The initial analysis yielded a 9-factor solution with Eigenvalue > 1.00 according to the Kaiser-Guttman criterion, explaining 80.14% of the variance. Factors 6, 7, 8, and 9 were removed from the analysis. Factor 6 consisted of items 4 and 24; Factor 7 had modest factor loadings for all goods; Factor 8 contained items 7 and 36; and Factor 9 included items 12 and 19. This decision was made because factors with fewer than three items are less robust and stable in factor analysis (Costello & Osborne, 2019; 2005; Dawis, 2000). Furthermore, two items (31 and 34) with low factor loading and item number one with low and dual loadings were eliminated. After doing an Exploratory Factor Analysis (EFA), five factors with 39 items were kept, with factor loadings ranging from .689 to .919. After evaluating the thematic comprehension of loaded items within each category, the researcher identified five factors: Acceptance, Resilience, Mindfulness, Adaptation, and Executive Functioning.

Confirmatory Factor Analysis (CFA)

On factors retained after EFA with 39 items, CFA was run on data of 195 participants by using the AMOS. The purpose of CFA was to measure the model, factor structure, and determination of dimensionality of initial form of PFS.

Sample

For the CFA, 195 participants were selected from Gujranwala, Gujrat, Lalmusa, Kharian, and Jhelum, including 98 mothers and 97 fathers of boys and girls with ASD symptoms ranging from mild to severe. The criteria for inclusion and removal were the same as those used in the EFA dataset.

Measures

Demographic Form: The same demographic data as in the EFA was collected.

Final list of PFS: Participants were given 39 PFS items with a 5-point response pattern (1 being strongly disagree and 5 being strongly agree).

Procedure

Parents' permission to participate was sought after being approved by the special education school and clinic management. After that, parents were contacted in accordance with the timetable that the authorities had provided. After being informed of the purpose of the study, participants provided signed consent. The respondents were given verbal instructions on how to complete the questionnaire. The PFS took about ten to fifteen minutes to finish.

RESULTS

Since the CFI value was less than the permissible standard of .9, the CFA findings first indicated that the model did not fit the data well (chi-square = 1141.830, df = 692, CFI = .889, RMSEA = .058, GFI = .775). With a focus on covariance and regression weights, modification indices were investigated in order to enhance the model. Items 9, 10, 11, 13, 28, 39, and 44 were eliminated because they had significant regression weights and were problematic. To enhance fit, covariances were added. An outstanding model fit was found by performing a second CFA on the remaining 32 items (chi-square = 672.692, df = 448, CFI = .932, RMSEA = .051, GFI = .831). With 32 items, the final model validated five criteria.

Hu and Bentler (1999) defined an appropriate fit as having a CFI between .90 and .95 and an RMSEA close to .06 (Kim et al., 2016). Although the GFI did not exceed 0.9, it did surpass 0.8, meeting the acceptable criterion proposed by Baumgartner and Homburg (1995) and Doll et al. (1994).

Table 3: Model Fit Summary of Confirmatory Factor Analysis (N=195)

Indexes	Chi-Square	Df	CFI	RMSEA	GFI	TLI
Model-1	1141.830	692	.897	.058	.775	.889
Model-2	672.692	448	.932	.051	.831	.925

Table 3 illustrated two models that were run to confirm structure. The model-2 has CFI value of .932, indicates a strong model fit in comparison to model 1.

Phase II: Establishment of Psychometric Properties

Convergent and Divergent Validity

The convergent and divergent validity of a newly developed PFS were tested using a sample of 150 parents (75 mothers and 75 fathers) of children with ASD from special education schools and institutions in Gujranwala, Gujrat, Lalmusa, Kharian, and Jhelum. The participants were between the ages of 25 and 60. These parents' children, who ranged in age from 7 to 18, had ASD. Parents whose children had co-occurring symptoms or who had many children with ASD were not included in the study. Furthermore, the study excluded parents who had mental or physical health issues.

Measures

The following measures were employed to demonstrate PFS's convergent and divergent validity:

- a) **Subjective Happiness Scale (SHS; Lepper & Lyubomirsky, 1999):** SHS was used to measure the convergent validity which had 4 items which had good test-retest reliability and excellent internal consistency (.90)
- b) **Satisfaction with Life Scale (SWL; Pavot&Diener, 2013):** included five items and had strong test-retest reliability (.80) and internal reliability (.89).
- c) **Parental Perceived Stress Scale (PPSS; Kausar et al., 2019)** utilized to determine the PFS's divergent validity ratings. With 32 items and a high alpha reliability (.95), it demonstrated convergent and divergent validity with $r=.29^{**}$ and $r=-.04$, respectively.

Procedure

After taking the permission from heads and principals of special education schools, institutes, and clinical settings, parents were approached who gave their verbal consent over the phone. Following instructions, data from groups of 10 to 15 participants was gathered in two parts. Convergent-validity questionnaires were distributed to the parents in the first half. After a 25-minute pause, parents were given the identical instructions on surveys to test for divergent validity. Both surveys took five to ten minutes on average to complete.

Results

By comparing PFS scores to those of the Urdu versions of the SHS (Lepper & Lyubomirsky, 1999) and Satisfaction with Life Scale (Diener & Pavot, 2013), the convergent validity of PFS was demonstrated. By demonstrating a statistically significant association between PFS and Subjective Happiness Scale scores ($r=.62^{**}$, $p=.00$), the findings demonstrated convergent validity. Similarly, there was a substantial relationship ($r=.64^{**}$, $p=.00$) between PFS scores and Satisfaction with Life Scale scores. The findings provided further evidence for the divergent validity of PFS, with a no significant relationship between PFS and self-disclosure level ($r=-.14$, $p=.08$) between PFS and the original parental stress scale, thus demonstrating evidence of discriminant validity.

Test-Retest Reliability

The test-retest reliability of the PFS was tested twice on the same ($N = 150$) population with a week's interval (Shahzadi et al., 2023). The results demonstrated satisfactory test-retest reliability for the total score with consistent correlation between the 2 scores ($r = .83^{**}$, $p < .01$).

DISCUSSION

The present research was conducted for the construction of the Indigenous Psychological Flexibility Scale for parents of children with ASD. The key objective of this study was to create a culturally sensitive PFS to measure the psychological flexibility in parents of children with ASD. For an indigenous approach, the item pool construction indicates that the items were grounded in the phenomenological experiences of parents related to psychological flexibility.

The content of the items came from themes common to Pakistani parents. In addition, the items' content validity was also evaluated for Pakistani culture by 5 experts. The new PFS is unlike those used previously to assess psychological flexibility in parents raising a child with ASD. The goal of determining the psychometric properties of newly developed scale was also achieved. The results indicating a good internal reliability, test-retest reliability, and content validity for PFS. Environmental elements, such as noise and room temperature, as well as subjective criteria, such as participants' overall health, were adjusted for test-retest reliability. The scale's test-retest reliability was 0.83, indicating good reliability, since Madan and Kensinger (2017) define a coefficient value above .7 as satisfactory and a coefficient value above .8 as very good. According to Churchill (1979), reliabilities greater than 0.70 are appropriate.

Content-wise, the findings validated the factor structure. Furthermore, the findings are compatible with Burke and Moore's (2015) established Parental Psychological Flexibility Scale, which contains three factors: acceptance, cognitive diffusion, and committed action. This research confirmed the factor acceptance of the current study. Kashdan and Rottenberg (2010) identified the ability to respond to changing settings as a critical component of psychological flexibility, which is consistent with our findings and supports the adaptability factor. Previous research has found a positive relationship between psychological flexibility and executive functioning, as well as emotional and self-regulation (Doorley et al., 2020). Yildirim and Aziz (2023) and Elliott et al. (2019) discovered a favorable link between psychological flexibility and resilience, lending credence to resilience as a component of the current scale.

PFS showed a statistically significant positive correlation with previously established similar measures, including the Urdu version of Urdu SHS (Lyubomirsky & Lepper, 1999) and SWLS (Pavot & Diener, 2013). The findings offered support for convergent validity. It suggests that parents with a higher level of psychological flexibility are happier and more satisfied in their lives than those with a lower level of

psychological flexibility. The findings are in line with Anastasi and Urbina's (1997) findings which indicating the establishment of convergent validity with a significant positive relationship between similar constructs/scales. However, the non-significant connection between PFS scores and the Parental Perceived Stress Scale (Kausar et al., 2019) confirms PFS' discriminating validity. According to Anastasi and Urbina (1997), discriminating validity is recognized when the dissimilar construct shows no significant relationship. It follows that parents who are highly psychologically flexible will experience less parenting stress.

STENGTH AND LIMITATION

The strength of this study is that it is the first study in Pakistan as per researcher knowledge that developed an indigenous scale for measures the parental psychological flexibility in parents of children with ASD in Pakistan. The second strength is its sample; parents of children with ASD were often hard to reach, but in recent studies, data from parents of children were obtained from several cities in Punjab, Pakistan. The current study's weakness is that the sample was drawn from only one region of Pakistan, therefore the results cannot be applied to all parents of children with ASD. Furthermore, the experiences of single parents and parents with multiple special needs children were also ignored.

CONCLUSION

It can be concluded that there was a dire need for an indigenous scale to assess psychological flexibility among parents of children with ASD. PFS is a reliable and valid scale to measure the psychological flexibility among parents of children with ASD in different settings. Further, the study highlighted the deficiencies of professional facilities, special education facilities, and social support. It indicated the need of training workshops for parents to increase their psychological flexibility. It also placed a strong emphasis on putting techniques into practice that may address the various social circumstances that affected the in order to improve their psychological flexibility.

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