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Psychometric Properties of the Bangla Version of Multidimensional Scale of Perceived Social Support*

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The Bangla version of the Multidimensional Scale of Perceived Social Support (MSPSS–B) is a popular psychological assessment tool in Bangladesh. It has largely been used to measure perceived social support of Bangladeshi people. In spite of its popularity, it had not gone through an extensive validation procedure yet. Even its psychometric properties were not tested before, except for the test-retest reliability. This cross-sectional study aimed to examine the psychometric properties of MSPSS–B through a questionnaire survey among 812 adult Bangladeshi people. The MSPSS–B revealed a three-factor structure through exploratory factor analysis (EFA) on the first split sample (n = 403), explaining 71.64% of the total variance. Acceptable goodness of fit indices (χ^2/df = 4.293, p = .000, GFI = .920, CFI = .926, TLI = .904, SRMR = .063, and RMSEA = .078) in the MSPSS–B were obtained through confirmatory factor analysis (CFA) on the second split sample (n = 409). The three-factor structure of the MSPSS-B was the same as the original English MSPSS. Acceptable internal item consistencies, significant test-retest reliabilities, reliabilities between two scale versions, convergent and discriminant validities, and measurement invariance between two gender groups were also established in the MSPSS-B through different statistical analyses. Thus, the MSPSS–B with its three factors can be used as a valid and reliable measure to assess the perceived social support of Bangladeshi people.

Keywords: MSPSS, EFA, CFA, EFA, reliability, validity, Bangladesh

Highlights:

- MSPSS, a popular assessment tool over the world, was adapted and validated in Bangladesh.
- Both EFA and CFA supported the three-factor structure of MSPSS–B.
- Good psychometric properties of the MSPSS-B were established on the Bangladeshi data.

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Nowadays, the term *social support* has gained more popularity in the research area of stress, coping, health, and well-being. Psychologists, more specifically health and clinical psychologists, and sociologists show pronounced interest in studying various research topics related to social support. This term has widely been established over decades of scientific research all over the world. It depends on the structure and composition of an individual's social network and helps us better understand the interplay between social relationships, health and well-being. Its availability enhances people's personal care, well-being, and happiness (Litwin & Landau, 2000). It can be defined as 'the information, material aid, emotional relief, and self-reliance that people get from interpersonal relationships' (Revenson & Gibofsky, 1995), or as 'the perceived comfort, caring, esteem, and help a person receives from other people or groups' (Gentry & Kobasa, 1984). It can also be defined as 'the amount of assistance one gets through interactions with others' (Lakey & Cohen, 2000; Peplau, 1985). A person can get it from different sources such as his/her spouse, family members, friends, lover, co-workers, neighbors, social organizations/ institutions, significant members in the society, etc. It is a multidimensional latent construct that depends on an individual's social and socialization processes, political and social environment, and personal values (Ekback et al., 2013; Guan et al., 2015; Ng et al., 2010; Stewart, Umar, Tomenson, & Creed, 2014).The term *perceived social support* refers to how much an individual feels secure and companionable in their social environment (Bozo et al., 2009). It is the subjective evaluation of supporting exchanges (Krause, 2001, p. 273), or acts as a buffer between stressful events and physical or psychological symptoms (Cohen & McKay, 1984, as cited in Zimet et al., 1988, p. 35), or how individuals perceive friends, family members and others as sources available to provide material, psychological and overall supports during times of need (Ioannou et al., 2019, p. 2). It is developed throughout the life span and can help people against their health-related stressors (Uchino et al., 1999). It can be explained by different aspects such as supporting actions, social cognition, and relationships (Lakey & Cohen, 2000).

Multidimensional Scale of Perceived Social Support (MSPSS)

The MSPSS, one of the most widely used psychological tools for measuring an individual's perceived social support (Bagherian-Sararoudi et al., 2013; Ekback et al., 2013; Guan et al., 2013; Hamza et al., 2012; Hannan et al., 2016, Ng et al., 2010), was developed by Zimet and his associates (Zimet et al., 1988). It is a brief self-report measure, consisting of 12 items with three subscales, namely the family (items 3, 4, 8, and 11), friends (items 6, 7, 9, and 12), and significant others (items 1, 2, 5, and 10). Each subscale consists of 4 items and addresses a different source of social support. It is a 7-point Likert type scale, ranging from 1 (*very strongly disagree*) to 7 (*very strongly agree*). It independently reports three subscale scores and one full scale score. It has no negative items or reverse scores, so the total score on the scale is obtained

by summing all 12 items. The possible score range of the original English MSPSS is 12–84,with higher scores indicating more social supports perceived by an individual. Dahlem et al. (1991) tested the psychometric properties of the original English MSPSS (Zimet et al., 1988) and suggested three social support levels for this scale in terms of its total score ranges: a) a total score ranging from 69–84 indicates a high perceived social support level, b) a total score ranging from 49–68 indicates a moderate one, and c) a total score ranging from 12–48 indicates a low perceived social support level. The original English MSPSS was validated using various normative data sources, including American undergraduate students (Zimet et al., 1988) and European adolescents (Zimet et al., 1990).

Over the world, the MSPSS has been translated, adapted and validated across languages, for example, Urdu (Akhtar et al., 2010), Malawi (Stewart et al., 2014), Chinese (Wang et al., 2017), Korean (Park et al., 2012), Spanish (Cobb & Xie, 2015), Japanese (Iwasa et al., 2007), French (Denis et al., 2015), Thai (Wongpakaran et al., 2011), Swedish (Ekback et al., 2013), and Tamil (Guan et al., 2013).The original English MSPSS was a psychometrically sound instrument as it had good internal item consistencies, test-retest reliability and construct validity (Zimet et al., 1988).The internal reliability, factorial validity and subscale validity of the MSPSS were further validated by Zimet and his associates using three different subject groups (Zimet et al., 1990). A factorial validity confirmed a three-factor structure of the original English MSPSS (Zimet et al. 1990). Internal reliability of the scale was found to be good across groups. A good internal consistency reliability, good test-retest reliability, a fairly stable three-factor structure and a good validity structure were found in the MSPSS across languages (Akhtar et al., 2010; Cobb & Xie, 2015; Denis et al., 2015; Ekback et al., 2013; Guan et al., 2013; Iwasa et al., 2007; Park et al., 2012; Wang et al., 2017).

The original English MSPSS allowed a three-factor structure with high internal consistency ($\alpha = .88$), temporal stability ($\alpha = .85$, after 3 months from first administration) and moderate construct validity (Zimet et al., 1988). By performing a factor structure, Zimet et al. (1988) identified each subscale (family, friends, significant others) as an independent factor in the MSPSS. A confirmation study was performed by Dahlem et al. (1991). The authors found good internal consistency reliability between scale items and a confirmed three-factor structure of the MSPSS. Psychometric properties of the MSPSS were investigated among 222 African–American adolescents (Canty-Mitchell & Zimet, 2000). High internal consistency reliability, discriminant validity and a three-factor structure of the MSPSS were found in their study. A strong internal consistency and test-retest reliability, subscale validity and factor analysis were found to be better among older adults (Stanley et al., 1998). Good psychometric properties (e.g., reliability, validity, and factorial stability) were found in the Thai version of the MSPSS (Wongpakaran et al., 2011). Adequate internal consistency reliability, construct validity and a three-factor structure of the MSPSS were confirmed among 290 Mexican American adolescents (Edwards,

2004). High internal consistency reliabilities were found in the full scale as well as in the three subscales of the Malawi MSPSS. Similar results were also found in the Japanese MSPSS. In addition, both of the Japanese and Malawi versions of the MSPSS established a three-factor structure, a same structural pattern of the original English MSPSS (Iwasa et al., 2007; Stewart et al., 2014).

A systematic review of the psychometric properties of the cross-cultural translations and adaptations of the MSPSS was carried out by Dambi et al. (2018). The authors reviewed 72 articles on the original English MSPSS in 22 languages. Though the MSPSS had been validated and accepted across cultures, its psychometric properties were not found to be good across all cultures. Among 22 language translations considered by Dambi et al. 16 were not rigorously translated (only backward-forward translation, poor reconciliation of translations, no pretesting). Internal item-consistencies were reported in all 72 studies and most of the studies attained a Cronbach alpha of at least .70. A confirmatory factor analysis was performed in only nine studies. There was poor evidence for structural, criterion and construct validities of the MSPSS. Instead of three, a single-factor structure of the MSPSS was produced in some validation studies in Asia, for example, Pakistan (Akhtar et al., 2010; Saleem et al., 2013), Thailand (Wongpakaran & Wongpakaran, 2012), and Turkey (Kuscu et al., 2009). This means that the respondents from these countries could not differentiate between supports provided by their families, friends and significant others as postulated by the developers of the original English MSPSS.

Rationale of the Study

The Bangla version of the MSPSS (Shimul, 2007) is used in Bangladesh over the last 12 years. It is one of the best psychological measures to measure peoples' perceived social support. Though the scale has widely been used in Bangladesh, it's psychometric properties have not been reported in scientific literature, except for the test-retest reliability. No published data are available on its internal consistency, factor structure, criterion, convergent and discriminant validities. This limitation clearly indicates that it did not go through any extensive validation process. For this reason, the present study will try to assess a more extensive array of psychometric properties relevant to the MSPSS–B such as reliability between two scale versions, internal consistency reliability, test-retest reliability, EFA, CFA, different validity measures (e.g., construct, convergent, discriminant), and invariance analysis.

Study Goal

The goal of the present study was to assess the psychometric properties of the Bangla version of the Multidimensional Scale of Perceived Social Support (MSPSS–B).

Methods

Sample

Participants of this study were 812 adult residents of Bangladesh, who were conveniently sampled with their age ranging from 21–70 years (M = 42.09, SD = 14.17). In addition, apart from the total sample (n = 812), 50 participants were participated in the study separately to help to know the scale's translation reliability. Moreover, 100 participants from the total sample (n = 812) were participated in the study again to help to know the scale's test-retest reliability. The participants who were interested to participate the study second time were selected in the retest part of the study. A Mahalanobis test was used to identify possible outliers, but none were found. In order to perform EFA and CFA with different data sets, the total sample was divided into two subsamples. Although sample sizes were different regarding two subsamples, however, their differences were not significant through different statistical tests (Table 1). Distributions on the sample on key variables are presented in Table 1.

Table 1
Socio-demographic Characteristics of Participants

Variable		Whole sample (N = 812)	Subsample 1 (n = 403)	Subsample 2 (n = 409)	Differences between subsamples		
					χ^2	*df*	*p*
GEN	Male	381 (46.9)	190 (47.1)	191 (46.7)	.016	1	.898
	Female	431 (53.1)	213 (52.9)	218 (53.3)			
RES	Rural	224 (27.6)	106 (26.6)	118 (29.3)	.757	2	.685
	Suburban	300 (36.9)	153 (38.3)	147 (36.5)			
	Urban	278 (34.9)	140 (35.1)	138 (34.2)			
EDU	Elementary	107 (13.2)	48 (12.4)	59 (15.0)	1.66	6	.948
	Jr. high sch.	198 (24.4)	101 (26.2)	97 (24.5)			
	High sch.	247 (30.4)	125 (32.4)	122 (31.0)			
	Vocational	30 (3.7)	16 (4.1)	14 (3.6)			
	Undergrad	131 (16.1)	64 (16.6)	67 (17.0)			
	Graduation	36 (4.4)	18 (4.7)	18 (4.6)			
	Others	31 (3.8)	14 (3.6)	17 (4.3)			
Age M(SD)		42.09 (14.17)	41.59 (14.37)	42.58 (13.99)	t =.58	800	.563

Note. GEN = Gender; RES = Residence; EDU = Education.

Instruments

Two psychological assessment tools that measure perceived social support and a personal information form were used in the study.

The Bangla version of the Multidimensional Scale of Perceived Social Support (MSPSS–B)

The original English MSPSS (Zimet et al., 1988) was translated into Bangla by Shimul (2007). The translation process of the MSPSS–B was standard as it followed the guidelines by International Test Commission (2001). Like the original MSPSS, the Bangla version is a self-report measure of perceived social support of individuals, consisting of 12 items with three

different social support sources (e.g., family, friends and significant others). It uses a 7-point Likert type scale, ranging from 1 (*not at all appropriate*) to 7 (*very appropriate*). A significant test-retest reliability (r = .648, p < .01) of the MSPSS–B was obtained by the author of the original adaptation (Shimul, 2007).However the MSPSS–B had not gone through any more extensive validation process before performing the present study, so aside from the test-retest reliability there was not data on other psychometric properties.

The Bangla version of the Social Support Scale (SSS–B)

The Bangla version of the SSS (Shimul & Islam, 2006) was used in this study to assess the convergent validity of the MSPSS–B. It was adapted from the original scale of the Personal Support System Survey (Pearson, 1979). The original scale was used in a survey form. The SSS–B consists of 12 items, in which each item has two measures two dimensions: the level of social support importance (perceived social support) and the level of social support satisfaction (received social support). It is a 5-point Likert type scale, ranging from 1 to 5.The possible responses on indicators of the Importance dimension range from *very important* (1) to *not at all important* (5),while the possible responses to indicators of the Satisfaction dimension range from *completely satisfied* (1) to *completely unsatisfied* (5). A lower level of the scale's total score indicates greater satisfaction and importance. The test retest reliability of the SSS–B over a two-week period (Satisfaction, r = .77, Importance, r = .87) was found to be significant at .05 levels (Shimul & Islam, 2006).

Personal Information Form (PIF)

A PIF was provided along with the two social support questionnaires to collect data on socio-demographic variables such as age, gender, place of residence, and educational status.

Procedure

At first, participants were provided an 'informed consent form' that made clarification about the present research. By the informed consent form, participants were informed about the actual research purpose, research confidentiality and ethics, risks and benefits, and their freedom in the study. All of the participants signed the written 'informed consent form' before performing the study. The overall conduction procedure of the study was facilitated by trained individuals with a Master's degree in Psychology.

After getting the 'informed consent form' from participants, a set of questionnaire along with a standard instruction and a PIF were then provided each participant individually. In the instruction part, participants were instructed to read each item in the questionnaire carefully and express their opinion by putting a tick mark (√) on one of the five answer alternatives. In addition, participants were instructed about the term 'significant others' used in the scale items. The significant people would be considered to be persons who are neither their family members nor their friends. Participants' responses in the study were collected in two ways. The first way was the direct collection of the responses, in which the participants responded their answers in front of the research facilitator and the research facilitator collected their responses immediately. Maximum numbers of responses were collected in this way. The second way was the indirect way, the postal way, in which the participants responded their answers from their home settings and sent their responses to the researcher through postal mails. The participants who were participated the study in this way were provided a return envelope so that they can return their responses with the highest confidentiality. Finally, all of the participants participated in the study were warmly thanked for their cooperation.

Results

Item Analysis

The corrected item-total correlations of the scale items were in the range of .381 to .640 (Table 2). All 12 items of the original MSPSS were retained in the MSPSS–B, as they all had acceptable corrected item-total correlations (above the value of .199).Two correlational relationships were calculated between MSPSS–B items. One was the inter-item correlation, in which each item on the scale was positively correlated with the other (Table 3). The other correlation was calculated between individual item scores and their corresponding factor scores. Each individual item was highly and positively correlated with its factor score and was significantly and positively correlated with the other items measuring the same construct (Table 4).

Table 2
Item-Total Statistics of the MSPSS–B (N = 812)

Scale item	Corrected item-total correlation	Cronbach's alpha if item deleted
1. There is a special person who is around when I am in need.	.533	.850
2. There is a special person with whom I can share my joys and sorrows.	.610	.844
3. My family really tries to help me.	.549	.849
4. I get the emotional help and support I need from my family.	.640	.844
5. I have a special person who is a real source of comfort to me.	.573	.847
6. My friends really try to help me.	.507	.851
7. I can count on my friends when things go wrong.	.381	.860
8. I can talk about my problems with my family.	.577	.847
9. I have friends with whom I can share my joys and sorrows.	.503	.852
10. There is a special person in my life who cares about my feelings.	.614	.844
11. My family is willing to help me make decisions.	.597	.846
12. I can talk about my problems with my friends.	.445	.857

Table 3
Correlations among the MSPSS-B Items (N = 812)

	Item-1	Item-2	Item-3	Item-4	Item-5	Item-6	Item-7	Item-8	Item-9	Item-10	Item-11	Item-12
Item-1	1											
Item-2	.668**	1										
Item-3	.356**	.429**	1									
Item-4	.415**	.507**	.723**	1								
Item-5	.538**	.577**	.294**	.400**	1							
Item-6	.111**	.154**	.282**	.231**	.212**	1						
Item-7	.047	.068	.087*	.110**	.183**	.669**	1					
Item-8	.390**	.352**	.475**	.639**	.367**	.270**	.146**	1				
Item-9	.136**	.213**	.229**	.288**	.149**	.614**	.559**	.274**	1			
Item10	.572**	.630**	.359**	.383**	.633**	.245**	.132**	.383**	.262**	1		
Item-11	.396**	.470**	.566**	.627**	.480**	.177**	.164**	.575**	.242**	.393**	1	
Item-12	.129**	.181**	.179**	.247**	.152**	.533**	.489**	.266**	.534**	.234**	.181**	1

**Correlation is significant at .01 levels; *Correlation is significant at .05 levels.

Table 4
Correlations between MSPSS-B's Individual Item Score and Subscale Score (N = 812)

Scale item	Subscales		
	FAM	FRI	SOT
1. There is a special person who is around when I am in need. (SOT)	.466**	.129**	.833**
2. There is a special person with whom I can share my joys and sorrows. (SOT)	.523**	.189**	.857**
3. My family really tries to help me. (FAM)	.818**	.235**	.829**
4. I get the emotional help and support I need from my family. (FAM)	.889**	.268**	.508**
5. I have a special person who is a real source of comfort to me. (SOT)	.461**	.211**	.816**
6. My friends really try to help me. (FRI)	.288**	.849**	.214**
7. I can count on my friends when things go wrong. (FRI)	.153**	.823**	.127**
8. I can talk about my problems with my family. (FAM)	.813**	.292**	.446**
9. I have friends with whom I can share my joys and sorrows. (FRI)	.309**	.824**	.227**
10. There is a special person in my life who cares about my feelings. (SOT)	.454**	.266**	.845**
11. My family is willing to help me make decisions. (FAM)	.827**	.233**	.518**
12. I can talk about my problems with my friends. (FRI)	.262**	.789**	.207**

Note. FAM = Family; FRI = Friends; SOT = Significant Others.
**Correlation is significant at .01 levels.

Exploratory Factor Analysis (EFA)

To assess whether the present data are appropriate to perform EFA, a sampling adequacy test, namely the KMO (Kaiser-Meyer-Olkin) was performed. The observed KMO value of .832 was greater than the recommended KMO value of .600 (Tabachnick & Fidell, 2013), indicating that the present data was adequate for the factor analysis. The Bartlett's test of sphericity (χ^2 = 2699.06, df = 66, $p < .01$) was also calculated, indicating the suitability of factor analysis in the present sample. Shared variance by commonalities (ranging from .431 to .721) indicated that the factor analysis can be carried out with the MSPSS–B data.

An EFA was performed with subsample 1 (n = 403) by using principal axis factoring with the direct obilimin rotation method. Based on eigenvalues, a three-factor structure was found in the MSPSS–B. Factors whose eigenvalues were greater than 1 were considered in the EFA. A scree plot showed a clear three-factor structure of the MSPSS–B (Figure 1). The three-factor structure of the MSPSS–B explained 71.64% of the total variance, in which factor 1, factor 2, and factor 3 explained 42.30%, 19.05%, and 10.29% variance respectively (Table 5). Similar to the original scale's factor structure, the MSPSS–B extracted twelve items into three factors. The three-factor structure of the MSPSS–B had shown the loadings of 4 items (item 1, 2, 5, and 8) on factor 1 (significant others), 4 items (item 6, 7, 9, and 12) on factor 2 (friends), and 4 items (item 3, 4, 8, and 11) on factor 3 (family). Items under each factor had adequate factor loading, ranging from .660 to .957 (Table 5).

Figure 1
Scree plot presenting factors based on eigenvalues

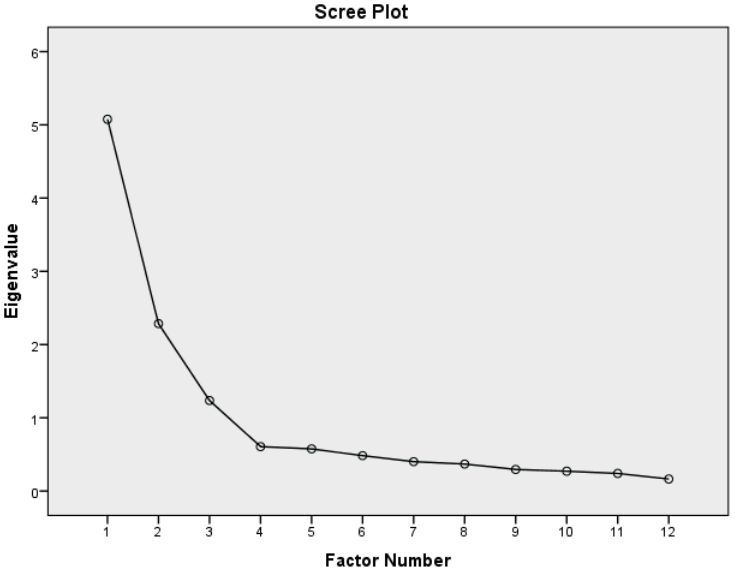

Table 5
Three-Factor Structure of MSPSS-B through Exploratory Factor Analysis (Subsample 1, n = 403)

Scale item	Com.	F1	F2	F3	*M*	*SD*
2. There is a special person with whom I can share my joys and sorrows. (SOT)	.666	**.853**	-.049	-.035	3.86	1.21
10. There is a special person in my life who cares about my feelings. (SOT)	.585	**.845**	.087	.091	3.72	1.21
1. There is a special person who is around when I am in need. (SOT)	.532	**.735**	-.071	-.046	3.91	1.25
5. I have a special person who is a real source of comfort to me. (SOT)	.563	**.697**	.046	-.059	3.78	1.18
6. My friends really try to help me. (FRI)	.621	.001	**.834**	-.023	3.45	1.12
7. I can count on my friends when things go wrong. (FRI)	.557	-.053	**.818**	.079	2.93	1.18
9. I have friends with whom I can share my joys and sorrows. (FRI)	.550	.051	**.753**	-.057	3.30	1.19
12. I can talk about my problems with my friends. (FRI)	.431	.030	**.660**	-.049	3.32	1.25
4. I get the emotional help and support I need from my family. (FAM)	.721	-.040	-.028	**.957**	4.22	.95
3. My family really tries to help me. (FAM)	.629	-.027	.038	**.771**	4.29	.95
11. My family is willing to help me make decisions. (FAM)	.574	.109	-.028	**.709**	4.09	.98
8. I can talk about my problems with my family. (FAM)	.531	.006	.041	**.699**	4.06	.99
Eigenvalues in each factor		5.08	2.29	1.24		
Variance explained by each factor (%)		42.30	19.05	10.29		
Total variance explained by factors (%)		71.64				

Note. Extraction Method: Principal Axis Factoring; Rotation Method: Direct Oblimin with Kaiser Normalization. F = Factor; Com = Communalities.

Confirmatory Factor Analysis (CFA)

A CFA was performed with the subsample 2 (n = 409) to test a goodness of fit of the three-factor structure of the MSPSS–B. Adequacy of model fit was assessed by multiple fit indices such as Chi-square (χ^2), ratio of Chi-square and DF (χ^2/df), Goodness of Fit Index (GFI), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Standard Root Mean Square Residuals (SRMR), and Root Mean Square Error of Approximation (RMSEA). The cutoff values were considered for model fit indices: $\chi^2/df \leq 5$, GFI $\geq$ .90, CFI $\geq$ .90, TLI $\geq$ .90, and SRMR and RMSEA $\leq$ .08 (Hu & Bentler, 1999; Schermelleh-Engel, Moosbrugger, & Muller, 2003). An acceptable model fit summary was estimated in the three-factor CFA model of the MSPSS–B (Table 6). The CFA model showed significant standardized regression estimates (betas) for all 12 items of the MSPSS–B (Figure 2).Thus, the CFA model confirmed twelve items for the MSPSS–B under three independent factors.

Figure 2
A three-factor CFA model of MSPSS–B

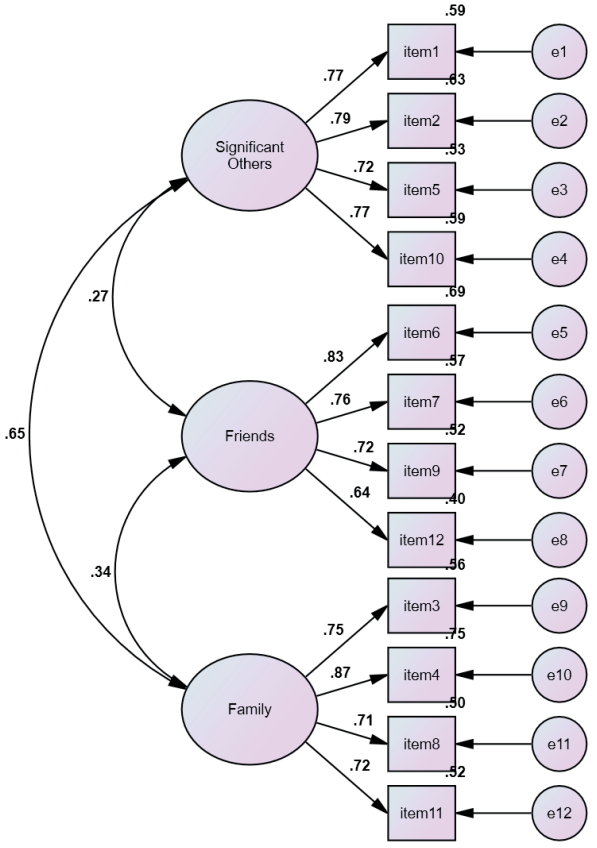

Table 6
Three Factor Model of MSPSS-B through Confirmatory Factor Analysis (Subsample 2, n = 409)

Model	*χ2*	*df*	*p*	*χ2/df*	GFI	CFI	TLI	SRMR	RMSEA[90% CI]
Three-factor	218.96	51	.000	4.293	.920	.926	.904	.063	.078 [.060–.091]

Reliability Analysis

Three types of reliabilities were assessed in the present study. The first type of reliability was assessed by calculating a correlation between the original English MSPSS with the Bangla MSPSS. Both versions of the MSPSS were administered to 50 respondents who were skilled in both English and Bangla languages (bilingual). In terms of the full as well as the subscales, a highly significant positive correlation was found between the two versions (Table 7). Thus, it can likely be said that the translated Bangla version scale was appropriately translated from its original scale. The second reliability measure was calculated in order to assess whether test results are consistent over time (i.e., a test-retest reliability measure). To perform the test-retest reliability, we went through two testing sessions. The first testing session (test) was conducted on 812 respondents. Of them, 100 respondents were selected for the second testing session (retest) over a two-week period. Regarding the full as well as the subscales, significant positive correlations were found between two scores (i.e., scores from two different testing sessions), indicates the temporal stability of the MSPSS–B over times (Table 7). Finally, a Cronbach alpha (α) reliability (i.e., internal consistency between the scale items) was calculated in the full scale as well as in the subscales. Good internal consistency reliabilities, ranging from .839 to .860, were obtained on the total scale score as well as on subscales (Table 7). Alpha greater than .800 indicates good internal consistency of scale items (George & Mallery, 2003; Nunnally & Bernstein, 1994) and the higher the Cronbach alpha the more reliable the generated scale is (Reynaldo & Santos, 1999).

Table 7
Different Reliability Measures of MSPSS–B

MSPSS–B	Internal item consistency (N = 812)	Test-retest reliability					Reliability between Scale's English and Bangla version (n = 50)
		Session I (N = 812)		Session II (n = 100)			
	α	*M*	*SD*	*M*	*SD*	*r*	*r*
FS	.860	3.75	.70	3.75	.75	.62**	.82**
FAM	.856	4.18	.79	4.26	.89	.54**	.57**
FRI	.837	3.27	.97	3.23	.99	.38**	.63**
SOT	.859	3.79	1.01	3.77	1.15	.46**	.48**

Note. FS = Full Scale; **Correlation is significant at .01 levels.

Convergent and Discriminant Validity

Validity, in general, refers to the strength of a scale or it is the measure what it is intended to measure. The validity of the MSPSS-B refers to the strength of this scale of measuring perceived social support of Bangladeshi people. Convergent and discriminant validities were assessed in the present study. To assess convergent validity, the MSPSS–B was administered along with the other standard Bangla social support measurement scale, namely the Social Support Scale (SSS–B; Shimul & Islam, 2006). A significant positive correlation (r = .279, p < .01) was found between the total score of MSPSS–B and the total score of SSS–B. Each subscale of the MSPSS–B was positively correlated with its other subscales. Similarly, each subscale of the SSS–B was positively correlated with its other subscales. In addition, the subscales of MSPSS–B were significantly positively correlated with the subscales of SSS–B (Table 8). These correlations established the convergent and discriminant validities of the MSPSS–B.

Table 8
Correlations between MSPSS–B and SSS–B (N = 812)

	MSPSS-B	FAM	FRN	MSPSS	SSS–B	SSIMP	SSSAT
MSPSS-B	1						
FAM	.791**	1					
FRN	.689**	.308**	1				
SOT	.803**	.568**	.236**	1			
SSS-B	.279**	.156**	.255**	.214**	1		
SSIMP	.239**	.143**	.214**	.181**	.939**	1	
SSSAT	.286**	.153**	.265**	.221**	.959**	.803**	1

Note. SSIMP = Social Support Importance; SSSAT = Social Support Satisfaction.
**Correlation is significant at .01 levels.

The convergent and discriminant validities of the MSPSS–B were also examined with the pattern matrix data by EFA (N = 812). The following statistics were performed to test the convergent and discriminant validities of the scale: Composite Reliability (CR), the Average Variance Extraction (AVE), Average Shared Variance (ASV), Maximum Shared Variance (MSV), and average factor loadings. The determining criteria were considered for the convergent validity: CR ≥ .70, AVE ≥ .50, and average factor loadings > .70; and for the discriminant validity: AVE > MSV and AVE > ASV (e.g., Fornell & Larcker, 1981; Hair et al., 2010; Hair et al., 2014). The convergent validity of the MSPSS–B was established as the CR values were greater than .70, the AVE values were greater than .50, and the average factor loadings were greater than .70 in each subscale. The discriminant validity of the MSPSS–B was established as the AVE values in each subscale were greater than the ASV and MSV values (Table 9).

Table 9
Convergent and Discriminant Validities with Pattern Matrix Data by EFA (N = 812)

	F1 (FAM)	F2 (FRI)	F3 (SOT)
Total factor loadings	3.072	2.996	3.002
Average factor loading	.768	.749	.750
Composite reliability (CR)	.773	.748	.765
Average variance extraction (AVE)	.590	.567	.582
Average shared variance (ASV)	.000	.000	.000
Maximum shared variance (MSV)	.071	.120	.346

Note. Convergent validity: CR > .70, AVE > .50, and average factor loading > .70 in each factor Discriminant validity: AVE > ASV and AVE > MSV in each factor.

Invariance Analysis

The MSPSS has widely been used on both gender sunder the assumption that it measures perceived social support equally in these two population groups. To test this assumption, a multi-group CFA was conducted to examine the equivalence of the scale across genders. A measurement invariance test with five comparison models (e.g., configural, measurement weights, measurement intercepts, measurement residuals, and structural covariances) was conducted in terms of gender. The fit indices such as Chi-square, CFI and RMSEA along with the invariance values of ΔCFI ≥ -.01 and ΔRMSEA ≥ .015 (Chen, 2007) were used for the comparison of the models. The configural model (M1) had adequate fit indices, indicated the same MSPSS–B structure into two gender groups. The four models (M2 through M5) demonstrated no meaningful decreases in the model fits (Table 10). Thus, the MSPSS–B was invariant across genders.

Table 10
Test of Measurement Invariance in MSPSS-B by Gender (N = 812)

Models	Model fit						Model comparison	
	χ^2	*df*	χ^2/df	CFI	RMSEA[90% CI]		ΔCFI	ΔRMSEA
M1	462.68	102	4.536	.927	.066 (.060–.072)			
M2	468.51	111	4.221	.928	.063 (.057–.069)	M2-M1	.001	-.003
M3	474.99	123	3.862	.929	.059 (.054–.065)	M3-M2	.001	-.004
M4	502.64	135	3.723	.926	.058 (.053–.063)	M4-M3	-.003	-.001
M5	504.24	138	3.654	.926	.057 (.052–.063)	M5-M4	.000	-.001

Note. M1 = Configural; M2 = Measurements weight; M3 = Measurement intercepts; M4 = Measurement residuals; M5 = Structural covariances.

Discussion

The present study aimed to assess the psychometric properties of the MSPSS–B among the Bangladeshi population. Results revealed a three-factor structure of the MSPSS–B that was consistent with the original MSPSS study (Zimet et al., 1988) as well as with the other studies conducted on the factor structure of the MSPSS across languages (Canty-Mitchell & Zimet, 2000;

Dahlem et al., 1991; Edwards, 2004; Iwasa et al., 2007; Stewart et at., 2014; Wongpakaran et al., 2011; Zimet et al., 1990). Three dominant factors explaining 71.64% of the total variance, were taken into consideration in deciding the factor structure of the MSPSS–B. This result was consistent with the past finding of Stanley et al. (1998), in which the authors found 78.8% variance explained by the three-factor structure of the MSPSS. Items extracted in each factor of the MSPSS–B were similar to the items extracted in each factor of the original MSPSS (Dahlem et al., 1991; Edwards, 2004; Iwasa et al., 2007; Zimet et al., 1988). Multiple fit indices using CFA indicated a good fit of the three-factor model of the MSPSS–B among Bangladeshi people. The three-factor CFA model was supported by acceptable values of GFI, CFI, TLI, SRMR, and RMSEA. Model fit indices of the MSPSS–B were in line with the past studies (e.g., Hu & Bentler, 1999; Schermelleh-Engel et al., 2003). Since we found a good fit index in the three-factor CFA model, we did not make any modified CFA model against the original three-factor CFA model.

The translated Bangla MSPSS was significantly positively correlated with the original English MSPSS indicating that both versions measure the same constructs. Items of the MSPSS–B had good internal consistencies. The total MSPSS-B scale as well as its subscales had good Cronbach alphas (greater than 0.80), in comparison to the Cronbach alphas suggested by the researchers (George & Mallery, 2003; Nunnally & Bernstein, 1994).This result was in accordance with the past findings (e.g., Canty-Mitchell & Zimet, 2000; Iwasa et al., 2007; Stanley et al., 1998; Zimet et al., 1988). The scale's test-retest reliability over a two-week period was found to be good, which was consistent with the existing findings (e.g., Akhtar et al., 2010; Cobb & Xie, 2015; Denis et al., 2105; Ekback et al., 2013; Guan et al., 2013; Iwasa et al., 2007; Park et al., 2012; Wang et al., 2017; Wongpakaran et al., 2011; Zimet et al., 1988). Significant inter-construct correlations and correlations between the MSPSS–B and the SSS–B were found indicating scale's convergent validity. Discriminant validity of the scale was also established. These validity results support past findings (e.g., Canty-Mitchell & Zimet, 2000; Guan et al., 2013; Iwasa et al., 2007; Park et al., 2012; Stanley et al., 1998; Wang et al., 2017; Wongpakaran et al., 2011).

Our search of the literature yielded no studies examining the psychometric properties of the MSPSS–B in Bangladesh. As a consequence, this study was an attempt to assess all of the important psychometric properties of the MSPSS–B that contribute to the statistical adequacy of the scale. The structure of the MSPSS–B indicated three distinct factors with adequate statistical analyses.

Limitations and Future Directives

Some limitations of the present study should be addressed. The present study solely relied on a self-report measure of perceived social support and did not apply any other type of measure. Future studies might address this issue. Instead of a probability sampling method, the present study followed a non-probabilistic convenience sampling method that constrained the study's

power. The demographic characteristics were not controlled perfectly in the study, so substantial deviations from population parameters were observed in some demographics (e.g., deviations in the sample's age). Against the above-mentioned limitations, a large sample size and high response rates give credit to the findings of the present study. A notable strength of the study was that it applied multiple validation procedures.

Conclusions

The findings of the current study demonstrated a stable three-factor structure of the MSPSS–B, which was consistent with most of the previous studies on it. Findings also supported validity of the scale by providing evidence of different types of reliabilities and validities. We recommend the MSPSS–B as a reliable and a valid psychological tool and its use to measure perceived social support among Bangladeshi people.

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Psihometrijske karakteristike Bangla verzije Multidimenzionalne skale opažene socijalne podrške

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Bangla verzija Multidimenzionalne skale opažene socijalne podrške (eng. Multidimensional Scale of Perceived Social Support; MSPSS–B) je popularna psihološka mera u Bangladešu. Naširoko je korišćena za merenje opažene socijalne podrške Bangladešana. Uprkos njenoj popularnosti, skala nije do sada prošla ozbiljniju validacionu proceduru. Sem procene test-retest pouzdanosti, u literaturi nema drugih podataka o njenim psihometrijskim svojstvima. U ovoj transverzalnoj studiji, cilj nam je bio da ispitamo psihometrijska svojstva skale MSPSS–B na uzorku od 812 odraslih stanovnika Bangladeša. Na prvoj polovini uzorka (n = 403) eksplorativnom faktorskom analizom su identifikovana tri faktora koji zajedno objašnjavaju 71.64% ukupne varijanse. Prihvatljive vrednosti indeksa fita ($\chi 2/df$ = 4.293, p = .000, GFI = .920, CFI = .926, TLI = .904, SRMR = .063, and RMSEA = .078) su dobijene primenom konfirmativne faktorske analize na drugoj polovini uzroka (n = 409). Trofaktorska struktura skale MSPSS–B odgovara trofaktorskom rešenju originalne engleske verzije MSPSS. Prihvatljive vrednosti mera pouzdanosti interne konzistencije, test-retest pouzdanosti i pouzdanosti alternativnih formi, konvergentna i diskriminativna validnost i merna invarijantnost skale MSPSS–B su takođe ispitane primenom različitih statističkih analiza. Shodno tome, MSPSS–B sa svoja tri faktora se može smatrati pouzdanom i validnom merom za procenu opažene socijalne podrške u Bangladešu.

Ključne reči: MSPSS, EFA, CFA, EFA, pouzdanost, validnost, Bangladeš

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