

Psychometric Properties of the Bangla Version Operational Police Stress Questionnaire

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The Operational Police Stress Questionnaire (PSQ-Op) was developed by McCreary & Thompson. This study aimed to translate the instrument into Bangla and validate it according to Bangladeshi Culture. Exploratory factor analysis (EFA) of the data from 160 participants (who provided complete responses) identified four factor structures for PSQ-Op with 19 items. The four factors for PSQ-Op namely 'Excessive workload and risk', 'Social affairs and image', 'Feelings of all time work and social blame' and 'Physical and interpersonal problems' together explained 56.94% of the total variance. This study was novel in the sense that previous study has not identified any factor structure for this instrument. The PSQ-Op showed good internal consistency (Cronbach's $\alpha = .89$ for PSQ-Op; $.71 - .85$ for its factors), strong translation and convergent validity. Thus, the Bangla version PSQ-Op appears to be a valid and reliable instrument for using it for research purpose in the country.

Keywords: Psychometric properties, Bangla version, Operational police stress

Police is a service organization having the highest responsibility to maintain order and peace in any country by reducing criminal activities in the society. In addition, they are responsible to control the traffic system of some countries.

Policing is considered as one of the most stressful occupations, exposing staff to occupational, organizational, and personal stressors (Anshel, 2000). Work-place stress has received a great deal of attention in psycho-social research (Cooper, Dewe, & O'Driscoll, 2001). Significant research findings have documented that prolonged stress has negative effects on individual health (Mohren et al., 2003; Ursin & Eriksen, 2004) as well as on employees' attitudes towards the organization (Cropanzano, Rupp, & Byrne, 2003). Gershon (2000) concurred that working under continuously stressful conditions leads to the dissatisfaction and exhaustion of police officers.

One of the most highly stressful jobs in Bangladesh is policing. However, research on police stress is rarely done in the country but a number of studies in other cultures have

explored the types of stressors associated with policing. For example, Symonds (1970) postulated two major sources of police stress: the nature of police work (i.e., duty-related stressors) and the nature of police organizations (i.e., organizational stressors).

A stress can be said operational in the sense that the stressors are associated with doing the job (McCreary & Thompson, 2006; Symonds, 1970). Operational stress is broadly defined as arising from the inherent aspects of police work. Operational stressors are faced daily by law enforcement officers as part of the job. Exposure to traumatic events; murder, assaults, shootings (Violanti & Paton, 1999); dealing with crime victims and perpetrators, and also the criminal justice system; and requirement of shift work are cited as operational stressors inherent in policing (Ellison, 2004).

Operational stressors, or inherent stressors, in police is a broad concept which also includes boredom, the continual exposure to citizens and their complaints, the use of force, and the sense of working under the strong possibility of violence, dangerous events, and death. These

all factors are psychologically and physically harmful to anyone's wellbeing (Dowler & Arai, 2008). In addition to inherent police stressors such as role conflict, exposure to critical and potentially dangerous incidents, and working conditions that range from excessive overload and excitement to boring routine, dealing with the criminal justice system and courts and the media attention on law enforcement have gained importance as source of stress for law enforcement officers (Finn & Tomz, 1998). For measuring such a broad concept standardized measures have been developed in western countries such as Canada. However, in Bangladesh there is no such measure. Since the police are the main agents to make the country safe which has become an important debating issue in Bangladesh, so it is very important to study the stress related to work or operational police stress of Bangladeshi police. For this purpose, a psychometrically sound (i.e. reliable, valid and objective) Bangla version measure of operational police stress is essential. If such a measure can be developed within the sociocultural context of Bangladesh, it will be very helpful to achieve both the theoretical and practical purposes. The new measure can be used for research purposes. Thus the present study attempted to validate Operational Police Stress Questionnaire (PSQ-Op).

Method

Sample:

Through convenient sampling technique, 210 police officers were taken as the sample for the study. Among them 160 (Male=145, Female=5, & Unknown=10) police officers provided complete responses to the questionnaire which is used in this study. The rate of complete response was 76.19%. The age of the police officers ranged from 19 to 58 years with mean = 33.48 and SD = 8.06. The monthly income of the participants ranged from Taka 5,000.00 to 50,000.00 with mean =19,756.64 and SD = 10548.34. The job duration ranged from 1 to 22 years with mean = 6.78 and SD = 7.11. The proportions of the married and unmarried respondents were 57.5% and 38.8% respectively. The marital status of 3.8% participants was unknown. Among the

participants 22.5% were Constable, 3.1% were Nayek, 18.1% were Assistant sub-inspector (ASI), 48.1% were Sub-inspector (SI), 6.3% were Inspector and 1.9% were SP.

Measures

The Operational Police Stress Questionnaire (PSQ-Op): It was developed to measure operational stress of police officers (McCreary & Thompson, 2006). It is a 20-item measure to be rated on a 7-point Likert type scale ranging from 1 (No stress at all) to 7 (A lot of stress). The PSQ-Op is highly reliable; the Cronbach's α for the PSQ-Op was found to be .93. The corrected item-total correlations for the PSQ-Op ranged from .50 to .70. High levels of content validity and convergent validity were reported for the PSQ-Op (Taylor & Bennel, 2010). The correlation between the Stress and Frequency ratings on the PSQ-Op was .67. The correlations show that the stress and frequency ratings of operational stressors shared 45% of their variance (determined by the use). These findings indicate that the stress ratings and frequency ratings are inter-correlated (McCreary & Thompson, 2006).

Procedures:

Translating the PSQ-Op into Bangla: The PSQ-Op items were first translated into Bangla. It was then given to six judges including two experts in Bangla, two experts in English and two experts in Psychology/Psychometrics. Although, their native language was Bangla, but being teachers of University or college they had a very good command over English. Their task was to judge the accuracy of translation and relevance/suitability of each item for measuring operational stress of police officers in the socio-cultural context of Bangladesh. Each expert independently rated the translation using a 2-point scale (0=Not correct, 1=correct) and the relevance of each item using another 2-point scale (0=Not relevant, 1=Relevant). Following their evaluation, accuracy of the translation was examined by calculating for each item the Accuracy Index (AI=Number of Rating 1/Number of experts; - (Karim & Nigar, 2014)). The item yielding an AI of 1 (AI=6/6) was considered to be correctly and reliably translated. All the six experts rated 17 items

translation at 1, the AI for each of them becoming 1. The remaining 3 items yielded an AI of less than 1. The expert suggested some corrections to the clarity, wording and organization of these items. By reviewing those items in the light of their comments and suggestions the accuracy of translation was ensured. The relevance/suitability of the items in Bangladeshi culture was examined by calculating each item on the Relevance Index ($RI = \text{Number of Rating at 1} / \text{Number of Experts}$; - (Karim & Nigar, 2014)). The item yielding an RI of 1 or .67 ($RI = 6/6$ or $4/6$) was considered to be relevant or suitable. All the six experts rated the relevance of each item at 1, the RI for them becoming 1. There after the Bangla version PSQ-Op was finalized to administer on the selected participants.

Data acquisition:

Standard data collection procedures were followed in this study. At first, permission from the Dhaka Metropolitan Police (D.M.P) commissioner was taken. Then, this permission letter was shown to the Officer in Charge (OC) of the police stations. For taking consent he or she was briefed about the general purpose of the study and requested to cooperate with the researcher. The OC was also informed that the investigation is purely academic and their responses to the questionnaire would be kept confidential. In conducting the study, the police officers in different ranks were contacted in person. Then the measure was administered to them requesting to respond to the questionnaire during free time. Prior to answering the questions, police officers were requested to go through the standard instructions given on the questionnaire. They were also asked to record their socio-demographic information (e.g. age, sex, rank, educational qualification, marital status, socio-economic status, etc.). Thus, data collection from all the participants was completed in 3 months.

Data analyses:

Each participant's responses to the test items were scored according to the scoring principles of the PSQ-Op. Fifty participants left a few PSQ-Op items with missing responses and

were therefore excluded from further processing. Data for the remaining 160 participants were fed into computer for factor analysis. The number of participants in this study was about 8 times the number of PSQ-Op items/variables (20). Thus, the sample size required for factor analysis was satisfied. However, before carrying out factor analysis we examined the response distributions of all PSQ-Op items and estimated their internal consistency by investigating inter-item correlations and item- total correlations. Then we analyzed the data in Exploratory factor analysis (EFA), a method widely used to uncover the underlying structure of a relatively large set of variables (e.g., Gratz & Roemer, 2004; Hawi, 2013; Korkeila et al., 2010; Muris, 2001; Widyanto et al., 2011; Widyanto & McMurrin, 2004). We also examined the translation validity of the scale and the reliability by estimating internal consistency (Cronbach α) of the full test and subtests as well.

Results

Factor Structure of PSQ-Op

Item analysis

Response distribution of the PSQ-Op items indicated that none of these variables/items were excessively skewed or kurtotic. Thus, no item was excluded on the basis of the item response distribution (Kendall & Stuart, 1958; Karim & Nigar, 2014). However, the obtained inter-item correlation matrix (R-matrix, not shown) contained 2 negative values and out of 190 inter-item correlation coefficients 174 were significant ($p \leq .01$; $p \leq .05$). The inter-item correlation ranged from $-.09$ to $.55$. All the item-total correlations were significant ($p \leq .01$) and ranged from $.34$ to $.69$ with a mean of $.57$. In order to disregard the two negative inter-item correlations, 1 item (Item 6) was excluded from the original scale. Thus 19 items were rest for factor analysis. The correlation matrix for 19 items is given in Table 1.

Table 1. Correlation matrix for the 19-item PSQ-Op

Item	1	2	3	4	5	7	8	9	10	11	12	13	14	15	16	17	18	19	20	psq-Op-total
1	1																			
2	.33**	1																		
3	.22**	.53**	1																	
4	.31**	.37**	.50**	1																
5	.25**	.35**	.44**	.46**	1															
7	.21**	.30**	.26**	.30**	.21**	1														
8	.21**	.41**	.34**	.47**	.36**	.32**	1													
9	.31**	.36**	.40**	.41**	.37**	.32**	.39**	1												
10	.33**	.29**	.15*	.24**	.19**	.33**	.35**	.42**	1											
11	.25**	.36**	.32**	.30**	.32**	.53**	.40**	.35**	.47**	1										
12	.28**	.50**	.46**	.47**	.48**	.36**	.35**	.41**	.28**	.51**	1									
13	.12	.21**	.13	.17*	.25**	.36**	.17*	.26**	.25**	.34**	.42**	1								
14	.19**	.24**	.19**	.19**	.35**	.38**	.25**	.25**	.30**	.34**	.37**	.55**	1							
15	.28**	.16*	.01	.13*	.09	.45**	.18**	.21**	.28**	.39**	.29**	.35**	.41**	1						
16	.36**	.14*	.08	.21**	.20**	.50**	.14*	.33**	.36**	.32**	.30**	.31**	.29**	.51**	1					
17	.22**	.24**	.14*	.18**	.26**	.43**	.24**	.18**	.40**	.43**	.29**	.25**	.32**	.31**	.44**	1				
18	.12	.17*	.05	.21**	.14*	.36**	.19**	.28**	.32**	.33**	.12	.18**	.29**	.34**	.27**	.26**	1			
19	.42**	.31**	.17*	.27**	.33**	.20**	.35**	.47**	.39**	.27**	.41**	.29**	.25**	.40**	.37**	.31**	.32**	1		
20	.26**	.33**	.22**	.33**	.37**	.12	.37**	.22**	.43**	.20**	.36**	.15*	.32**	.20**	.24**	.41**	.19**	.47**	1	
psq-Op-total	.50**	.61**	.52**	.59**	.59**	.62**	.59**	.62**	.60**	.66**	.69**	.53**	.61**	.54**	.57**	.56**	.45**	.61**	.56**	1

* p≤ 0.05, (one-tailed) ** p≤0.01, (one-tailed).

The figures in the Table 1 indicate that out of 181 inter-item correlations 172 are significant (p≤.01; p≤.05), which range from .13 to .55. All the item-total correlations are significant (p≤.01) and range from .45 to .69 with a mean of .58.

Factor analysis

First, measures of sampling adequacy were carried out on the 19-item PSQ-Op in order to examine whether data were suitable for factor analysis. The determinant of the R-matrix was 0.001 (>0.00001, Field, 2005), indicating that there was no multi-co-linearity (very highly

correlated variables) or singularity (perfectly correlated variables) problem. The Kaiser–Meyer–Olkin (KMO) measure indicated a value of 0.85, which exceeded the recommended value of .60 (Kaiser, 1970) and Bartlett’s test of sphericity indicated a value of 1148.09 (p < 0.001). All this together supports the factorability of the R- matrix. Data for the 19 PSQ-Op items were therefore subjected to exploratory factor analysis (EFA). Method of principal component (PC) with varimax rotation was used, which identified four factors.

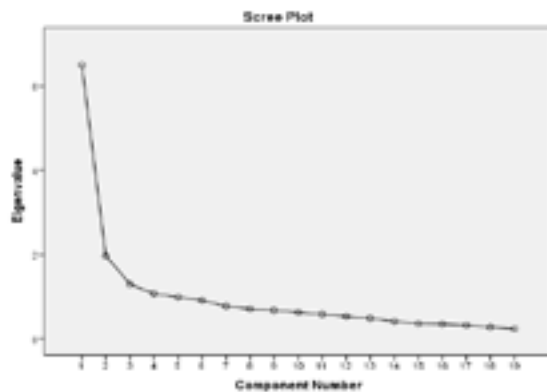


Figure 1. The scree plot generated in EFA for 19 items

This finding is consistent with the scree plot (Figure 1, Cattell, 1966). Here it can be seen that there is a clear break after the 4th component which leads us to retain the four components. These four factors, which were rotated to the position of maximum orthogonality in eight iterations, explained together 56.94% of the total variance (Table 2).

Table 2 shows that Factor 1 accounts for 18.66% of the variance, Factor 2 accounts for

15.97% of the variance, Factor 3 accounts for 12.98% of the variance, and Factor 4 accounts for 10.33% of the variance. Before labeling the factors we identified three pairs of cross-loadings between the factors. Specifically, item 11 was cross-loaded on Factor 1 and Factor 2 with the loadings of .45 and .60, respectively; item 12 was cross-loaded on Factor 1 and Factor 4 with the loadings of .61 and .47, respectively; and item 10 was cross-loaded on Factor 2 and Factor 3 with the loadings of .50 and .48, respectively. We grouped item 12 under Factor 1, the factor of its greater loadings and best the conceptual fit; and item 11 under Factor 1, and item 10 under factor 3 the factor of its smaller loading but, best the conceptual fit. Thus Factor 1 comprises of items 2, 3, 4, 5, 8, 9, 11 and 12, which we termed as 'Excessive workload and risk', Factor 2 comprises of items 7, 15, 16, 17, and 18, which we termed as 'Social affairs and image', Factor 3 comprises of items 1, 10, 19, and 20, which we termed as 'Feelings of all time work and social blame', and Factor 4 comprises of items 13, and 14, which we termed as 'Physical and interpersonal problems'.

Table 2. Rotated factor matrix for a reduced set of PSQ-Op items

PSQ-Op items		Factor loadings			
		F1	F2	F3	F4
Item 02	Working alone at night	.67			
Item 03	Over-time demands	.82			
Item 04	Risk of being injured on the job	.71			
Item 05	Work related activities on days off (e.g. court, community events)	.59			
Item 08	Not enough time available to spend with friends and family	.59			
Item 09	Paperwork	.54			
Item 11	Finding time to stay in good physical condition	.45	(.60)		
Item 12	Fatigue (e.g. shift work, over-time)	.61			(.47)
Item 07	Managing your social life outside of work		.75		
Item 15	Making friends outside the job		.63		
Item 16	Upholding a "higher image" in public		.64		
Item 17	Negative comments from the public		.48		
Item 18	Limitations to your social life (e.g. who your friends are, where you socialize)		.61		

Item 1	Shift work				.53
Item 10	Eating healthy at work	(.50)			.48
Item 19	Feeling like you are always on the job				.73
Item 20	Friends/ Family feel the effects of the stigma associated with your job				.75
Item 13	Occupation-related health issues (e.g. back pain)				.79
Item 14	Lack of understanding from family and friends about your work				.75
Eigen value		6.50	1.97	1.29	1.10
Variance explained		18.66%	15.97%	11.98%	10.33%
Cronbach α		.85	.76	.71	.71

Note. N=160

Factor loadings < .40 were suppressed.

Items corresponding to the parenthesized loadings did not conceptually fit with the corresponding factors

Extraction method: principle component analysis

Rotation method: varimax with Kaiser Normalization

Validity

Translation validity

Translation validity of the measure was examined in two ways as given below.

Content validity

The content validity of the PSQ-Op was assessed in the present study. The Accuracy Index (AI) and Relevance Index (RI) were set as the criteria. The values of both AI and RI revealed that the measure has content validity:- (see method section).

Face validity

To measure the translation validity six questions were added with a 2-point Likert type scale. The questions included whether the questionnaire was readable, logical, clear, comprehensive, and answerable and also whether the style & format of the questions were acceptable? By inspecting response it was found that 95.6%, 92.5%, 88.8%, 86.9%, 66.3%, and 94.4%. of the respondents identify the questionnaire as readable, logical, clear, comprehensive, answerable and appropriate in style and formatting. Thus, these result revealed the face validity of PSQ-Op.

Convergent Validity

Convergent validity of the Bangla version PSQ-Op was determined by calculating inter-factor correlations and the Factor-total correlations. These are shown below in Table 3.

Table 3. Correlation matrix for four PSQ-Op factors and the PSQ-Op

PSQ-Op/ its factors	F1	F2	F3	F4	PSQ- Op
F1	1				
F2	.50**	1			
F3	.32**	.37**	1		
F4	.37**	.31**	.37**	1	
PSQ-Op	.79**	.75**	.71**	.66**	1

Note: F1= Excessive workload and risk, F2= Social affairs and image, F3= Feelings of all time work and social blame,

F4= Physical and interpersonal problems, * p≤ 0.05, (one-tailed) ** p≤0.01, (one-tailed)

The table 3 dictates that the inter-factor correlations (Pearson's r) were all significant and ranged from .31 to .50. The strongest correlation (r=.50) was found between F1 (Excessive workload and risk) and F2 (Social affairs and image) and the weakest (r=.31) between F2

(Social affairs and image) and F4 (Physical and interpersonal problems). All the PSQ-Op factors also significantly correlated with the full PSQ-Op, with the coefficients ranging from .66 to .79. The full PSQ-Op had strongest correlation ($r=.79$) with F1 (Excessive workload and risk) and the weakest ($r=.66$) with F4 (Physical and interpersonal problems). Since there are no negative or non-significant inter-item correlations observed so it can be argued that the Bangla version PSQ-Op has convergent validity.

Reliability

Internal consistency

The inter-item correlation matrix of PSQ-Op (Table 1) indicated that the items measured the same construct. The reliability of the Bangla version PSQ-Op was further examined by calculating internal consistency. The coefficients of Cronbach's α (standardized) for the Bangla version PSQ-Op was .89. The coefficients for the 'Excessive workload and risk, 'Social affairs and image' 'Feelings of all time work and social blame, 'Physical and interpersonal problems, dimensions were .85, .76, .71, and .71, respectively (Table 2).

Discussion

This study was designed to investigate the psychometric properties of the Bangla version PSQ-Op. Analysis of data in EFA demonstrated a four factor model for the PSQ-Op comprising 19 items (1 item dropped; Table 2). Factor 1 (8 items) measures excessive workload and risk (e.g., working alone at night, over-time demands, risk of being injured on the job etc), Factor 2 (5 items) measures social affairs and image (e.g., managing your social life outside of work, making friends outside the job, upholding a "higher image" in public etc), Factor 3 (4 items) measures feelings of all time work and social blame (e.g., shift work, eating healthy at work, feeling like you are always on the job etc), and Factor 4 (2 items) measures physical and interpersonal problems (occupation related health issues, lack of understanding from family and friends). These factors together accounted for 56.94% of the total variance, their individual contributions ranging from 10.33% to 18.66% (Table 2). The factors showed good to high

internal consistency (Cronbach's $\alpha = .71$ to .85; Table 2), the first one being most reliable as indicated by its highest coefficient (Cronbach's $\alpha = .85$). As shown in Table 3, all the factors were significantly correlated with the whole PSQ-Op ($r = .66$ to .79, $p < .01$). The moderate inter-correlations of the factors ($r = .31$ to .50, $p < .01$) support the representation of the factors as unique, distinguishable components.

One item (item 6; Traumatic events (e.g. MVA, domestics, death, injury)) of the original scale was dropped through item analysis. This item was proved not to be valid in Bangladeshi culture. These findings are novel in the sense that the past studies have not yet examined factor structure of this measure. Thus, the measure is very consistent with the original PSQ-Op. This leads to the assumption that operational police stress is stable across cultures.

One interesting aspect of this study is that it examined the translation validity and convergent validity of the PSQ-Op. Translation validity was assessed through content validity and face validity. Content validity was assessed by Accuracy Index (AI) and Relevance Index (RI). Face validity was assessed by asking the participant six questions on a 2-point scale: yes-no. These questions include whether the questionnaire was readable, logical, clear, comprehensive, and answerable and also whether the style and format of the questions were acceptable. The percentages of 'yes' responses to these questions indicate PSQ-Op's face validity. Convergent validity of the Bangla version PSQ-Op was further examined by estimating inter-factor correlations and the factor-total correlations (Table 3). Thus, the measure has both translation and convergent validity. The coefficients of Cronbach's α were calculated for measuring the internal consistency. Cronbach's α (standardized) for the Bangla version PSQ-Op and its factors indicate it's good to high internal consistency/ reliability (Table 2).

Conclusion

This study gives us a valid tool, the Bangla version PSQ-Op, to be useful to investigate the operational police stress in Bangladeshi police and its impact on police performance. Research

using this tool can help us to design stress management strategies in police and aid the policy makers and administrators in prevention, diagnosis and treatment of operational police stress. For example, policy makers and administrators can take appropriate measures to train the counselors, set up counseling centers and offer treatment at counseling centers, clinics, and hospitals. All this together will help maintain good mental health among police of the country. As with many other studies, this study suffers from a number of limitations, suggesting scope for future studies. The first limitation is the reliance on a small sample size. However, the minimum sample required for factor analysis was satisfied here but for future studies larger samples can confirm the factor structure and other psychometric properties of the PSQ-Op in Bangladeshi culture. A second limitation is the use of police officers from Dhaka city only. Such a sample of convenience facilitates the early phase of a test construction, but, generalizing results to other police officers may not be warranted. Despite these limitations, the present findings can serve as a base of further research on operational police stress in Bangladesh.

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