

Urdu translation and validation of shorter version of Positive Affect and Negative Affect Schedule (PANAS) on Pakistani bank employees

Noreen Akhter

Abstract

Objective: To translate, adapt and validate shorter version of positive affect and negative affect scale on Pakistani corporate employees.

Methods: This cross-sectional study was conducted in the twin cities of Islamabad and Rawalpindi from October 2014 to December 2015. The study was completed into two independent parts. In part one, the scale was translated by forward translation. Then it was pilot-tested and administered on customer services employees from commercial banks and the telecommunication sector. Data of the pilot study was analysed by using exploratory factor analysis to extract the initial factor of positive affect and negative affect scale. Part two comprised the main study. Commercial bank employees were included in the sample using convenient sampling technique. Data of the main study was analysed using confirmatory factor analysis in order to establish construct validity of positive affect and negative affect scale.

Results: There were 145 participants in the first part of the study and 495 in the second. Results of confirmatory factor analysis confirmed the two-factor structure of positive affect and negative affect scale suggesting that the scale has two distinct domains, i.e. positive affect and negative affect.

Conclusion: The shorter version of positive affect and negative affect scale was found to be a valid and reliable measure.

Keywords: PANAS, Positive affect, Negative affect, exploratory factor analysis, Confirmatory factor analysis. (JPMA 67: 1517; 2017)

Introduction

Recently, research in organisational psychology emphasised the importance of emotions, specifically the positive ones. Previously, researchers were more interested in negative affective state of the employees on productivity. Modern researches have provided the evidence that positive emotions also occur frequently during an adverse event.¹ This is aligned with the developing field of positive psychology and its implication organisational psychology. Keeping the importance of emotions on work behaviour it is important to assess both positive and negative affective states simultaneously. Though, not much work has been done in this regards, specifically in organisational settings, to assess the emotions in workplace settings. However, interest is still growing.² There is a dire need to have a valid instrument in order to assess the positive and negative emotions in non-clinical sample in normal workplace settings which should combine positive and negative aspects of work. Positive affect and negative affect scale (PANAS), originally developed by Watson et

al.,³ is one of the most widely self-report measures to study the affective state. PANAS measures affect in two broad dimensions, i.e. negative affect (NA) and positivity affect (PA). Both the dimensions are said to be independent constructs which might result in low and high levels.³ Since its development, PANAS has been widely used in clinical and non-clinical settings.⁴ It is widely applied on youngsters, adults and children. Although being relatively brief, the PANAS might be considered as lengthy when used in combination of other assessments. This could result in response fatigue or even in dropout from the sample. Therefore, many short forms of PANAS have been proposed Mackinnon et al.,⁵ including PANAS international version⁶ and another for children.⁷ Due to its wide applicability, PANAS has been translated, adapted and validated into several other languages, such as German,⁸ Turkish,⁹ Spanish,¹⁰ Hindi,¹¹ etc. In some cases, research in other cultural settings indicated lack of validated translation of PANAS into other languages, such as Chinese, Japanese and Urdu.

Some researchers claimed bipolar model of affect suggesting that negative affect and positive affect are two poles of one dimensions.¹² This framework suggests that affective (co)activation (i.e., mixed emotions) allows people to experience PA and NA simultaneously as if they

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Centre for Counselling and Career Advisory (C3A), National University of Sciences and Technology (NUST), Islamabad.

Correspondence: Email: nrnakhter@yahoo.com

were independent.¹³ The bipolar model has been opposed by researchers who support the bivariate model of affect¹⁴ wherein PA and NA represent two separate dimensions. However, there is disagreement regarding the independence of these factors. Watson et al.³ proposed that the PANAS is a pure measure of the independent constructs of PA and NA, as suggested by the weak and negative intercorrelation found among the factors. This orthogonal two-factor structure was found using data-driven exploratory factor analysis (EFA), but has been difficult to reproduce using theory-driven confirmatory factor analysis (CFA). Other researchers^{4,15-17} have supported an oblique model in which PA and NA are separate and distinct, but also moderately associated. The present research also tried to provide further information about the factor structure of PANAS in a Pakistani sample by establishing its psychometrics properties.

Keeping in view the wide applicability of PANAS, literature suggests that there is a lack of validated translations of PANAS.¹⁸ The PANAS is translated into various languages and is used in different areas of psychology.^{3,17,19} However, there are still some controversies regarding its structure. The current study was planned to translate and adapt the PANAS shorter version in Urdu language and to validate the Urdu versions through EFA and CFA.

Subjects and Methods

This cross-sectional study was conducted in the twin cities of Islamabad and Rawalpindi.

In the current study, shorter version of PANAS originally developed by Kercher, K.5 was used. It consists of 10 items measuring positive affect and negative affect. Participants are asked to rate on a five-point scale the extent to which they experienced each mood state: (1) very slightly or not at all, (2) a little, (3) moderately, (4) quite a bit, and (5) extremely.

The present research was conducted in two independent studies. Study 1 was conducted with the aim of translation and adaptation of PANAS short version in

Table-1: Factor loadings for Exploratory Factor Analysis with varimax rotation Results of the PANAS (N=145).

Item no	Factor I	Factor II
	Negative Affect	Positive Affect
2	0.79	-0.18
6	0.81	0.004
1	0.75	-0.03
7	0.75	-0.06
9	0.63	-0.25
5	0.47	0.41
3	-0.03	0.84
8	-0.08	0.78
10	-0.18	0.69
4	-0.02	0.73
Eigen value	3.46	2.41
% Variance	26.66	22.1
Cumulative variance	48.94	
Kaiser-Meyer-Olkin Measure of Sampling		0.750
The Bartlett's test of Sphericity (Significance level)	554.22	<0.0001

PANAS: Positive affect and negative affect scale.

Urdu. Study 2 was conducted to provide the evidence of factor validity of translated PANAS. The present study was completed in 6 months. Data was collected from the commercial bank employees of Islamabad and Rawalpindi.

In study 1, forward translation method was opted to translate the original PANAS in Urdu. For this purpose, three bilingual translators were selected to conduct the initial translation of the scales. The translators had their master's degree in psychology and they were proficient in Urdu and English languages. They were given brief instructions about the translation of scale according to the prescribed criteria by Brislin.²⁰ First of all, initial translation was carried out according to these criteria: (1) translate the text without eliminating any item or word; (2) use comparatively simple language; and (3) maximise the content similarity. With the help of these instructions, translators separately translated the scales. After the initial translation, a committee was formed to evaluate

Table-2: Item-to-total correlation for the Positivity Affect scale of PANAS (N=145).

Sr no	Item no	M	SD	Item-to-total Correlation	Corrected Item-to- total correlation
1	3	3.65	1.10	0.82***	0.66
2	4	3.77	1.15	.75***	0.55
3	8	3.80	1.13	0.82***	0.67
4	10	3.62	1.09	0.76***	0.57

**p<.01

PANAS: Positive affect and negative affect scale

M: Mean

SD: Standard deviation.

Table-3: Item-to- total correlation of Negative Affect Scale of PANAS (N=145).

Srno	Item no	M	SD	Item-to-total correlation	Corrected Item-to-total Correlation
1	1	2.32	1.04	0.66***	0.47
2	2	2.11	1.05	0.79***	0.65
3	6	2.33	1.06	0.71***	0.53
4	7	2.59	1.14	0.73***	0.54
5	9	2.13	1.13	0.75***	0.58

**p<.01

PANAS: Positive affect and negative affect scale

M: Mean

SD: Standard deviation.

Table-4: Inter-subscale correlation and Alpha Reliabilities of PANAS (N=145).

Sub-scales	PA	NA
PA	---	----
NA	-0.22**	-----
No of items	4	5
α	0.80	0.83

**p<.01

PANAS: Positive affect and negative affect scale

PA: Positivity affect

NA: Negative affect.

Table-5: Factor loadings for confirmatory Factor Analysis of Shorter Urdu Version of PANAS (N=495).

Item no	Factor I Negative Affect	Factor II Positive Affect
1	0.61	
2	0.78	
6	0.53	
7	0.55	
9	0.80	
3		0.77
4		0.62
5		0.34
8		0.77
10		0.67

PANAS: Positive affect and negative affect scale.

and select the best translation in Urdu. This committee, consisting of four psychologists, was independent of the bilingual translator. The committee members, who were not exposed to the questionnaire before, discussed each item in terms of its length, comprehension and content. The primary emphasis was on checking whether these translated items conveyed the same meaning as that of the original scales and also to select the best translated items. Finally, the Urdu translated items were arranged in the same order as given in the original version.

The translated version of PANAS comprised 10 items, including items measuring positive affect and negative affect.

Initially, the tryout was carried out on bank employees to identify any comprehension problem, and to check the cultural relevance of the translated items. The results of tryout indicated the Urdu version of PANAS was suitable on a Pakistani sample (Annexure).

The final form of the Urdu version of emotional labour scale was administered on 175 customer services employees from banks and telecommunication. However, only 145(82.9%) cases were valid for the analysis as the rest of the cases were excluded due to incomplete data.

Psychometric properties of translated version of PANAS were established by using EFA, alpha coefficient and

Table-6: Model Fit Statistics of confirmatory factor analysis for Urdu Version of PANAS (N=495).

	χ^2	df	P	GFI	Fit Indices				Fit/no fit	
					TLI	CFI	NFI	RMSEA	RMR	
Initial Model (10 items)	166.6	34	0.000	0.94	0.88	0.91	0.89	0.089	0.075	Not fit
Refined Model (9 items)	64.82	24	0.000	0.97	0.95	0.97	0.95	0.06	0.043	Fit

GFI: Goodness of fit index

CFI: Comparative fit index

RMSEA: Root Mean Square Error of Approximation

TLI: Tucker-Lewis Index

PANAS: Positive affect and negative affect scale

RMR: Root Mean Square Residuals.

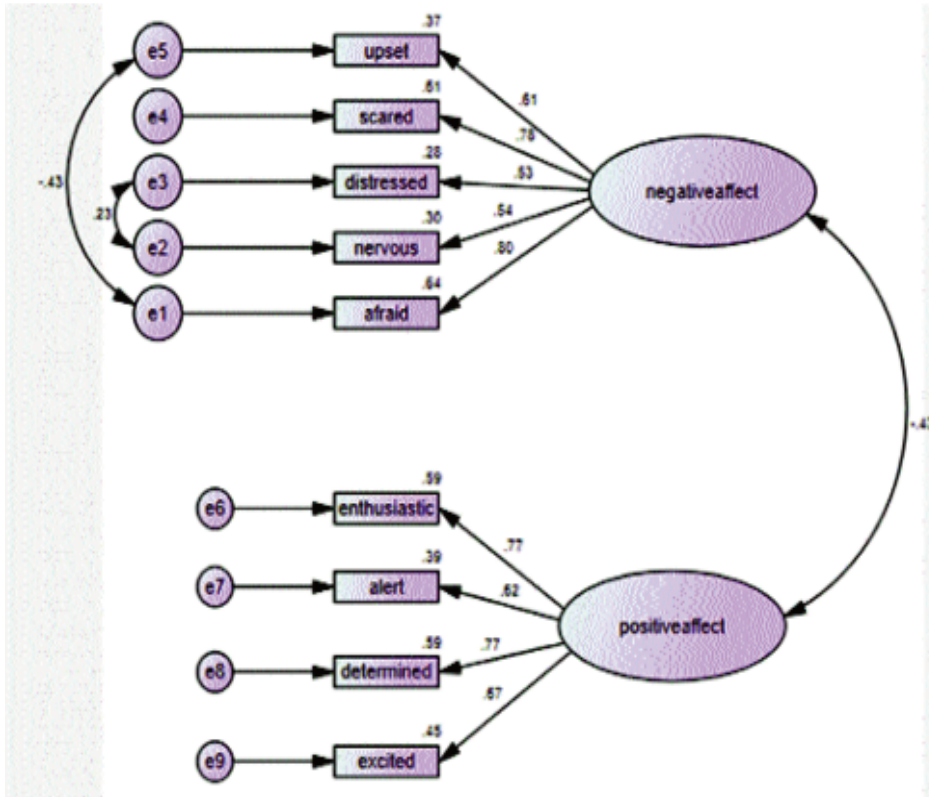


Figure: Measurement model of Shorter Urdu version of PANAS (9 items).

لوگ اپنی زندگی میں مختلف قسم کے جذبات محسوس کرتے ہیں۔ آپ مندرجہ ذیل جذبات کس حد تک محسوس کرتے ہیں۔ برائے مہربانی ہر سوال کے لیے صرف ایک جواب کی نشاندہی کیجیے جو آپ کے جذبات کی صحیح عکاسی کرتا ہو۔

نمبر شمار	بیانات	کبھی نہیں	بہت کم	درمیانہ	کسی حد تک	بہت زیادہ
1-	پریشان حال۔					
2-	ڈرا ہوا۔					
3-	پُر جوش۔					
4-	چوکنا/ ہوشیار۔					
5-	متاثر کن۔					
6-	تکلیف دے حالت میں۔					
7-	بے چین/ مضطرب۔					
8-	پُر عزیمت۔					
9-	خوفزدہ۔					
10-	جوشیلا۔					

Appendix: Urdu version of short version of positive affect and negative affect scale (PANAS).

item-to-total correlation. SPSS version 21 was used to conduct EFA. The sample size was accurate according to the criteria prescribed by Kline²¹ and David Garson²² suggesting that anything greater than 100 is good sample size for EFA.

Maximum likelihood method was used to extract the factors of short version of PANAS. Orthogonal rotation was used to rotate factors as guided by theory. The factor analysis was executed on 10 items. The value of Kynurenine 3-monooxygenase (KMO) was 0.750 suggesting the sample appropriateness of factor analysis. Furthermore, the Bartlett's test was also significant at 0.000 level, indicating the presence of correlation among items.

Results of factor analysis extracted two factors of PANAS. Items having loading less than .4 were removed as recommended by Hair et al.²³ All items have loadings greater than .4 except item no 5 (inspired). It was equally loaded on both positive affect and negative affect. Total variance explained by these two factors is 48.94%. Interpretation of factors was easy because of the clear loadings of items in their relevant factors.

To further support the results of EFA, item-to-total correlation were separately run on both positive and negative affective sub-scales. For positive affect scale it ranged from 0.82 to 0.67.

All five items of positive affect scales were significantly correlated with the total scores. However, corrected item-total correlation for item 5 is low, i.e. 0.231 but still this item can be retained. It recommended that

all of the five items were individually contributing to the measurement of one domain, i.e. positive affect (Table-2).

Each item had significant and positive correlation with the total score of negative affect. It was further supported by the corrected item-total correlation of these items (Table-3).

The relationship between positive and negative affective states showed that both were significantly negatively correlated, which was according to the underlying theory (Table-4).

In study 2, an independent sample of 600 commercial bank employees were contacted to be a part of this study. The sample was selected by using convenient purposive sampling technique. However, in the main analysis only 495(82.5%) cases were valid which was considered for final analysis. Those employees were selected who have direct contact with customers and at least 14 years of education and six-month job experience.

To provide further evidence of validity of translated PANAS. CFA was conducted by using Amos software. The sample size was accurate as suggested by Shah and Goldstein²⁴ suggesting that a "typical" sample size in structural equation modelling (SEM) is about 200 which may be adequate for analysing a CFA model.

All items have factor loadings >0.4 , except item no. 5 which had factor loading of 0.34. The same item showed the low factor loading in initial findings of EFA. However, this item was retained to test it on a bigger sample of main study. Based on the initial criteria only those items were retained having item loadings >0.40 . However, model fit statistics showed the poor model fit which suggested certain modification in model through modification indices for a good model fit.

The present research selected different fit indices: for example the chi-square test, Joreskog and Sorbom's²⁵ goodness-of-fit index (GFI), Bentler's²⁶ comparative fit index (CFI), Bentler and Bonett's,²⁷ normed fit index (NFI), and root mean square error of approximation (RMSEA) with lower and higher limits of the 90% confidence interval (CI). The criteria selected for evaluating model fit are multiple indicators. Chi-square ratio is extremely sensitive in small differences and, therefore, misleading in large samples. It is recommended that chi-square statistics should be regarded as goodness or badness of model fit in that large value of chi-square correspond to poor model fit and small value shows good model fit. Hu and Bentler²⁸ suggested that value of CFI and Tucker-Lewis index (TLI) above 0.95 and RMSEA values less than 0.06 represent an acceptable fit. Browne

and Cudeck²⁹ argue that because theoretical models approximate reality, the null hypothesis for any measurement -structural equation model (that is, conventional chi-square test that the data for the model perfectly) was rare to be true. RMSEA values of 0.05 or less indicate a very close fit between the sample and the theoretical model, accounting for degrees of freedom. Values less than .08 reflect reasonably good fitting models as suggested by Browne and Cudeck.²⁹ The RMSEA is generally considered as one of the most informative fit indices³⁰ Cut-off values for RMSEA (<0.06) and CFA (>0.95) have been recommended.

The results of initial model of CFA showed little poor fit with ($\chi^2=166.6$ (df=34), $p<0.05$, CFI= 0.909, and RMSEA= 0.089. All the items have loadings greater than .4, except item no. 5 having factor loading of 0.34. The item no. 5 was also problematic in the results of EFA in study 1. However, it was maintained for the main study to check it on a bigger sample. Based on the basic criteria,²³ the item no. five was removed from the main scale, leaving total 9 items in the scale. After removing the item no. 5, model fit indices were improved but not within acceptable range. Therefore, the model was revised with the help of modification indices. Some of the co-error variance were allowed which resulted in significantly improved fit of data, i.e. $\chi^2=64.8$ (df=24), $p<0.05$; RMSEA=0.059; CFI=0.970; GFI=0.971. Refined CFA model suggested that factor loadings of the remaining 9 items varied from 0.53 to 0.80 (Table-6).

There was a significant correlation between positive affect and negative affect which was -0.34^{**} . Alpha reliabilities of the scale ranged from 0.80 for positive affect (4 items) and 0.78 for negative affect (5 items).

Discussion

The objective of the current research was to assess the applicability of shorter PANAS among Pakistani sample. This aim was achieved through translating and adapting the shorter versions of PANAS in Urdu language. PANAS have been widely used in Pakistani researches on different samples such as clinical, and non-clinical, etc., but its shorter version have not been used much so it is important to understand the internal structure by establishing the validity on the local samples. For the purpose, the present study was conducted in two independent parts. Part 1 was comprised of translation, adaptation and initial validation of shorter version PANAS. Data of study 1 was analysed by exploratory factor analysis with varimax rotation as suggested by the theory (Watson et al.³¹ 1988). Results of EFA replicated the findings by Kercher⁵ proposing a two-factor solution of

shorter version of PANAS which is positive affect and negative affect. These findings were also in accordance with the original structure proposed by Watson et al.³ These factors explained 48.94% variance in the main construct. All of the items were loaded on their respective factors having factor loading greater than .4 except item no 5 (inspired) which actually measures the positive affect. Item no. 5 was equally loading on positive and negative affect. However, this item was retained in the scale for further analysis in study 2. The results of EFA were further supported by the item total correlations and which suggested that scale is internally consistent. The translated version of PANAS achieved satisfactory alpha level, i.e. 0.80 for positive affective and 0.83 for negative affect. However, to provide further evidence of validity, study 2 was carried out with the objective of establishing construct validity on the Pakistani corporate employees. The main objective of that study was to test the initial factor structure of PANAS extracted through EFA via CFA using Amos software. For this purpose, the Urdu version of PANAS was administered on a sample of 495 commercial bank employees. The initial model of CFA of PANAS was in accordance with the output of EFA suggesting that the item no. 5 (inspired) has poor loading. Model fit indices of CFA suggested a little miss fit and suggested some modifications. However, item no. 5 was now dropped from the original scale, leaving 9 items. After deleting the item no. 5 from main analysis, model achieved the satisfactory fit indices.

The results of the present study confirmed the two correlated factors of PANAS which emerged from EFA and confirmed through CFA was similar to the model obtained by Crawford & Henry.⁴ The present study found two co-related factors, which have emerged in other investigations, even when they have used different type of samples and time-frame directions.¹⁷ It would be valuable to investigate the circumstances in which the present factor structure is replicated in future research.

The current study has also limitations that not only must be noted but also should be addressed by further researches.

The first concern is related to the translation and adaptation of the item no. 5 (inspired) which might not be reflected better in this translated version of PANAS. Future researchers should address this problem by examining the item in detail and adapting.

The second concern is related to the generalisability of the findings. As in present research the findings can be generalised only to the corporate employees. These translated versions of PANAS should be used on samples

other than corporate employees in order to increase its generalisability.

Conclusion

Both positive affect and negative affect are core dimensions of affect. A structure with two correlated factors of the PANAS emerged from our sample. In this model, the amount of variance shared by positive affect and negative affect was small. It would be valuable to conduct further research into the invariance of the PANAS factor structure among other sample. Additionally, experimental studies and multifactor level analyses addressing whether the correlation between positive affect and negative affect varies depending on current levels of stress would be of interest.

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