ISSN: 2617-2976

Journal of Interdisciplinary Academic Research

Volume: 1 Issue: 1
Published: 12 July 2018

Featured Article:

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Journal of Interdisciplinary Academic Research (JIAR) ISSN: 2617-2976 Volume 1 Issue 1
DOI: https://doi.org/10.32476/70afe04c-80b7-439b-8b02-3e7881c78ee1
Published: 12 July 2018

A Preliminary Investigation of the factorial validity of the Four-Dimensional Symptom Questionnaire (4DSQ) in the Zimbabwean working population

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Published: 12 July 2018

Abstract

The purpose of this study was to investigate the factorial validity of the 4DSQ in a Zimbabwean working population. The 4DSQ is a recently developed measure of distress, depression, anxiety and somatisation developed by Terluin (1996). An online survey was administered through survey monkey to employees on the database of a local consulting firm. A convenient sample (N=819) provided the data set for this analysis. The Cronbach's α for the 4DSQ ranged from .89 to .96 based on the whole sample. The sample was randomly split into two samples; test sample (N=410) and holdout sample (409). The data on the test sample was subjected to exploratory factor analysis yielding 4 factors. When subjected to confirmatory factor analysis 3 factors fitted the data better than the 4 factor model. The three factors in the new scale are depression, anxiety and somatisation excluding the distress factor. The 3 factor scale was then validated on holdout sample and it was replicated. The Cronbach's α for the 3 factor scale ranged from .78 to .96. Results are discussed in relation to the Zimbabwean context.

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1 Introduction

This study was carried to investigate the factorial validity of the Four-Dimensional Symptom Questionnaire (4DSQ) in the Zimbabwean working population. The 4DSQ has been validated in European samples demonstrating good psychometric properties among working populations. In Africa and in Zimbabwe in particular there is limited availability of validated measures of psychological wellbeing among the working population facing huge economic, political and social problems impacting on their general wellbeing. The economic depression in Zimbabwe has been going on for more than a decade, thereby impacting on the psychological wellbeing of the people. The major psychological symptoms associated with economic depression are distress, depression, anxiety and somatisation.

The above symptoms form the four scales of the 4DSQ. It a self-report measure of psychological wellbeing with its use initially targeted at clinical samples from primary care settings. The instrument was extended to the working population where its psychometric properties have been demonstrated to be good (Terluin et al., 2004). The present study sought to do a preliminary investigation of the factorial validity of the 4DSQ in an African cultural setting (Zimbabwe) particularly beset by enormous economic and social problems that have been going for more than a decade.

2 Methods

Participants

The 4DSQ questionnaire was loaded onto the survey monkey platform to enable participants to complete the questionnaire online. Participants were invited to participate in the study with clear instructions that there will be maximum confidentiality and they were free not to participate if they felt so before, during and after the completion of the questionnaire. They were also told that the purpose of the research was to assess psychological wellbeing. A total of 1097 participants completed the questionnaire from a list of 3017 employees on data base of a consulting firm. The return rate was 36.4 percent. Of these 278 were removed due to incomplete data on the scale questions representing an effective return rate of 27.1%. The participants age ranged from 22 to 76 years with a mean age of 37.9 years (SD=8.4).

3 Measurement

The English version of the 4 DSQ was used in this study. The instrument measures distress, depression, anxiety and somatisation. According to Terluin et al. (2004) distress is the generalised response to a stressor and the attendant coping effort for normal psychological functioning. The depression scale measures symptoms that are typical of clinical depression often characterised by suicidal ideation and loss of pleasure (anhedonia). The anxiety scale represents symptoms characteristic of clinical anxiety such as panic attacks, phobic anxiety and avoidance behaviour as defined by the American Psychiatric Association (1994), Terluin et al. (2004). The last dimension, somatisation, represents bodily stress responses which may be benign or severe depending on their frequency and severity.

The Distress dimension has 16 items, Depression (6 items), Anxiety (12 items) and Somatisation (16 items) making a total of 50 items. Unlike the original scoring in the Terluin et al. (2004) study, the items were scored on a 5 point response scale with 'no' = 1, 'sometimes' = 2, 'regularly' = 3, 'often' = 4, and 'very often or constantly' = 5.

4 Analysis

Descriptives

As in the Terluin et al. (2004) study, the whole sample (N=819) was used to calculate the score means and standard deviations for the 4DSQ scales. Age associated variance of the 4DSQ scales was computed by squaring the Pearson r. Gender, education and position associated variance with 4DSQ scales was computed by squaring Eta (η^2) correlation coefficients.

Reliability

Cronbach's α measure of internal consistency was used to calculate the reliability of the 4DSQ scales.

Factorial structure

Unlike in the Terluin et al. (2004) study, the aim of the present study was to determine the factorial validity of the whole 4DSQ scale in the Zimbabwean working population that has long been subjected to severe and chronic distress. The focus was on the factorial validity of the four scales that comprise the 4DSQ, the correlations between them and their stability in a cross-validation sample.

To determine the factorial structure of the 4DSQ an exploratory factor analysis (EFA) was conducted on the randomly selected test sample as previously discussed. Principal components with varimax rotation was used to extract the factors that were set to four in line with the theoretical model. Using Amos software program (Arbuckle, 1997) a confirmatory factor analysis was carried out on the test sample to establish the model fit of the 4 DSQ factor structure. As in the Terluin et al. (2004) study, the 4 factor model was compared to one factor model assuming

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Table 1: Mean Scores and standard deviations (SD) of the 4DSQ Scales of employees (N=819), and the variance of the 4DSQ scores explained by demographic variables; squared Pearson coefficients R^2, and squared Eta coefficients η^2

				Age	Gender	Education	Level
Scale	Range	Mean	SD	R^2	η^2	η^2	η^2
Distress		1.826	.802	.031	.025	.004	.011
Depression		1.416	.714	.028	.005	.003	.028
Anxiety		1.429	.627	.021	.004	.007	.013
Somatisation		1.613	.541	.008	.038	.006	.006

all items loaded on one general psychological wellbeing factor. Using modification indices provided in the Amos software, adjustments were made to move the model close to or above minimum thresholds fit indices. The following goodnessof–fit indices were used to evaluate the models: χ^2 goodness-of-fit statistic, the Root Mean Square Error of Approximation (RMSEA), the Goodness-of–Fit Index (GFI), the Adjusted Goodness-of–Fit Index (AGFI), the Normed Fit Index (NFI), the Tucker Lewis Index (TLI), the Comparative Fit Index (CFI), (Joreskog and Sorbon, 1986). Significant χ^2 values indicate poor model fit. This measure is sensitive to sample size. As the sample size increase so is the probability of rejecting the hypothesised model (Bentler, 1990). The recommended RMSEA value should be below .80. It is suggested that GFI, TLI, NFI and CFI should be above .90 and AGFI be higher than .80.

5 Results

Descriptives

In Table 1, are mean scores together with their standard deviations for all the 4DSQ scales for 819 employees surveyed. For the four demographic variables; gender, age, education and level, none accounted for more than 4% of the variation in the scale dimensions. Skewness tended to be asymmetrical; Somatization (1.6), Distress (1.7), Depression (2.7), Anxiety (2.5). The above values exceed one and this indicate the distributions are non-normal.

6 Reliability and Dimension Inter-Correlations

The reliabilities of the scale dimensions are shown in the first column of Table 2. The internal consistency of the scales are all above the .70 cut-off point (Nunnally and Bernstein, 1994). The highest inter correlation is between distress and depression (r=.84), followed by distress and anxiety .at (r=.81), depression and anxiety(r=.72). These three intercorrelations are above the .70 cut off point (Nunnally, 1970). The lowest inter correlation is between depression and somatisation(r=.52). The high correlation between distress and depression could be an indication of multicollinearity. Tabachinick and Fidell (2007) suggest that high bivariate correlations above .80 are indicative of problems of multicollinearity.

Table 2: Scale Reliability and Dimension Inter-Correlations of the 4DSQ (N=819), Cronbach's alpha and Correlation coefficients (Pearson r)

	α	r			
	Scale	Dis	Dep	Anx	Som
Distress	.96	-			
Depression	.90	.84	-		
Anxiety	.93	.81	.72	-	
Somatisation	.89	.68	.52	.64	-

***Som** = Somatization, **Dep** = Depression, **Anx** = Anxiety, **Dis** = Distress*

7 Factorial Structure of the 4DSQ

The data was subjected to exploratory factor an analysis. The KMO test of sampling adequacy was .96 and the Bartlett's test of Sphericity was significant at 0.001 enabling us to proceed with the factor analysis. The results of the of the exploratory factor analysis are shown in Table 3. Four factors emerged that accounted for 57.9% of the variance with factors labelled Depression, Somatisation, Distress and Anxiety loading 43, 6.6, 4.8 and 3.5 per cent respectively. Sixty-six per cent (33 items) loaded onto their respective scales with factor loadings greater than 0.5. Ten items loading greater than 0.5 went on to load on different scales with 7 Distress items (29, 31, 32, 36, 37, 38, and 47) loading onto the Depression scale and three Anxiety items (18, 21 and 27) loading onto the Distress scale. Considering that there are six Depression items on the original scale the loading of an additional 7 Distress items with factor loadings greater than 0.5 on the Depression scale indicates very substantial common variance between the two scales. Items that loaded below the 0.5 factor loading cut-off were not included in further analysis.

Confirmatory factor analysis was carried out on the pattern matrix of the EFA and the results are shown in Table 4. The

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Table 3: Four Dimensional Symptom Questionnaire (4 DSQ): Items, scales, frequencies of scores (N=410), factor loadings from an exploratory factor analysis

			Frequencies			Factor Loadings			
No:	**Item**	**Scale**	**0(1)**	**1(2)**	**3(3,4,5)**	**Dep**	**Som**	**Dis**	**Anx**
	During the past week, did you suffer from;								
1	Dizziness or feeling light headed?	Som	39.5	36.8	23.7	0.13	0.44	0.34	0.26
2	Painful muscle?	Som	35.6	38.5	25.9	0.21	**0.61**	0.28	0.04
3	Fainting?	Som	98.3	1	0.7	0.07	0.38	−0.29	0.33
4	Neck paid?	Som	48	33.4	18.6	0.19	**0.69**	0.14	−0.04
5	Back pain?	Som	45.6	33.2	21.2	0.14	**0.64**	0.25	0.06
6	Excessive perspiration?	Som	63.2	25.1	11.7	0.05	0.41	0.14	0.35
7	Palpitations?	Som	77.8	17.8	4.4	0.15	**0.61**	−0.02	0.27
8	Headache?	Som	27.3	49.3	23.4	0.18	**0.52**	0.25	0.06
9	Bloated feeling in the abdomen?	Som	51.7	34.9	13.4	0.12	**0.59**	0.2	0.25
10	Blurred vision or spots in front of your eyes?	Som	53.9	32.9	13.2	0.16	**0.55**	0.2	0.18
11	Shortness of breath?	Som	75.9	20.5	3.6	0.06	**0.66**	0.02	0.4
12	Nausea or upset stomach?	Som	52.9	35.9	11.2	0.14	**0.56**	0.26	0.11
13	Pain in the abdomen or stomach area?	Som	60.2	30	9.8	−0.01	0.45	0.33	0.21
14	Tingling in the figures?	Som	72	21	7	0.15	**0.55**	0.08	0.26
15	Pressure or a tight feeling in the chest?	Som	65.9	24.4	9.7	0.22	**0.61**	0.21	0.14
16	Pain in the chest?	Som	69	22	9	0.15	**0.62**	0.19	0.21
17	Feeling down or depressed?	Dis	26.1	47.6	26.3	0.39	0.34	**0.67**	0.12
18	Sudden shock for now reason?	Anx	64.6	22	13.4	0.17	0.23	**0.58**	0.49
19	Worry?	Dis	22	43.9	34.1	0.27	0.27	**0.72**	0.2
20	Disturbed sleep?	Dis	32.4	40.5	27.1	0.29	0.4	**0.58**	0.1
21	Indefinable feelings or fear?	Anx	47.6	34.4	18	0.27	0.27	**0.66**	0.34
22	Listlessness?(lack of energy)	Dis	32.9	45.9	21.2	0.33	0.32	**0.64**	0.19
23	Trembling when with other people?	Anx	82	11.5	6.5	0.11	0.3	0.29	**0.64**
24	Anxiety of panic attacks?	Anx	69.8	21.5	8.7	0.3	0.28	0.43	0.47
	During the past week, did you feel:								
25	Tense?	Dis	40	40.7	19.3	0.37	0.3	**0.58**	0.18
26	Easily irritated?	Dis	36.3	39.3	24.4	0.33	0.29	**0.58**	0.19
27	Frightened?	Anx	63.7	24.9	11.4	0.31	0.24	**0.56**	0.46
28	That everything is meaningless	Dep	55.9	29.5	14.6	**0.63**	0.19	0.46	0.19
29	That you can't do anything anymore?	Dis	62	25.1	12.9	**0.69**	0.18	0.44	0.14
30	That life is not worthwhile?	Dep	77.1	14.1	8.8	**0.77**	0.19	0.25	0.24
31	That you can no longer take an interest in the people and things around you?	Dis	63.9	26.3	9.8	**0.72**	0.18	0.38	0.15
32	That you can't cope anymore?	Dis	62.4	23.4	14.2	**0.7**	0.2	0.42	0.2
33	That you would be better off if you were dead?	Dep	88	8.5	3.5	**0.76**	0.15	−0.08	0.24
34	That you can't enjoy anything anymore	Dep	73.2	18.36	8.44	**0.82**	0.17	0.25	0.21
35	That there is no escape from your situation?	Dep	72.7	16.8	10.5	**0.71**	0.14	0.32	0.22
36	That you can't face it anymore?	Dis	72.9	18.5	8.6	**0.77**	0.15	0.36	0.26

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Table 3: Continued from previous page

No:	Item	Scale	Frequencies			Factor Loadings			
			0(1)	1(2)	3(3,4,5)	Dep	Som	Dis	Anx
	During the past week did you								
37	No longer feel like doing anything?	Dis	65.1	24.6	10.3	**0.62**	0.19	0.45	0.29
38	Have difficulty in thinking clearly	Dis	54.1	34.6	11.3	**0.6**	0.25	0.43	0.26
39	Have difficulty in getting to sleep?	Dis	49.3	44.3	6.4	0.46	0.41	0.37	0.1
40	Have any fear of going out of the house?	Anx	87.8	7.8	4.4	0.35	0.1	0.15	0.61
	During the past week								
41	Did you easily become emotional?	Dis	42.2	40.7	17.1	0.34	0.3	**0.51**	0.34
42	Where you afraid of anything when there was really no need to be afraid?(for instance animals, heights, small rooms)	Anx	79	14.4	6.6	0.34	0.27	0.18	**0.68**
43	Where you afraid to travel on buses, trains or trams (street cars)?	Anx	85.4	8.3	6.3	0.17	0.29	0.12	**0.69**
44	Where you afraid of becoming embarrassed when with other people?	Anx	70	21.5	8.5	0.29	0.14	0.28	**0.65**
45	Did you ever feel as if you were being threatened by unknown danger?	Anx	72.2	19.8	8	0.31	0.14	0.27	**0.66**
46	Did you ever think “if only I was dead”?	Dep	89.5	6.8	3.7	**0.71**	0.22	–0.13	0.34
47	Did you ever have fleeting images of an upsetting event(s) that you have experienced?	Dis	72.7	21	6.3	**0.53**	0.23	0.18	0.43
48	Did you ever have to do your best to put aside thoughts about any upsetting event(s)?	Dis	57.1	28.5	14.4	0.43	0.17	0.35	0.32
49	Did you have to avoid certain places because they frightened you?	Anx	84.1	9	6.9	0.35	0.2	0.05	0.68
50	Did you have to repeat some actions a number of times before you could do something else?	Anx	69.5	21.2	9.3	0.31	0.23	0.3	0.55

Som *= Somatization,* ***Dep*** *= Depression,* ***Anx*** *= Anxiety,* ***Dis*** *= Distress*
1 *= “no”,* ***2*** *= “sometimes”,* ***3*** *= “regularly”,* ***4****=”often”,* ***5****= “very often or constantly”*
Factor loadings are given in bold if $\geq .5$

data did not fit the hypothesized 4-factor model. Instead, a 3-factor model emerged superior on all the fit indices. Initially and in line with theory, the 4factor model was tested but did not meet the criterion of the fit indices except for the RMSEA. After correlating the error variances of six item pairs, the four factor model slightly improved but still fell short of the criterion of the fit indices of 0.90 although the RMSEA improved to 0.07. Further inspection of the item-factor correlations suggested dropping items 33 and 46 which were correlating below 0.5. Even after this tweaking the 4-factor model did not meet the recommended fit indices criterion.

The high intercorrelations among the factors Distress, Depression, Anxiety and Somatisation strongly suggested there could be one single factor for general psychological well-being. The model was tested using the following fit indices: the χ^2 goodness- of- fit statistic, the Root Mean Square Error of Approximation(RMSEA), the Goodness – of – Fit Index (GFI), the Adjusted Goodness- of – Fit Index (AGFI), the Normed Fit Index(NFI), the Tucker Lewis Index (TLI), and the Comparative Fit Index (CFI), Joreskog and Sorbon (1986). Inspection of the pattern matrix had shown that seven items of the Distress scale had loaded significantly on the Depression factor and the possibility of one single factor accounting for both Depression and Distress was indicated. This 3-factor model was tested with Depression and Distress items combined into one Depression Scale. The resultant model fitted the data better than the best fitting 4-factor model ($\Delta\chi^2$=1264, df=563) ; $p < 0.001$) with CFI meeting the fit criterion of 0,90 although the RMSEA was slightly out at 0,90. The modification indices indicated the model could be further improved by permitting the error variance of eight items within the same scale to correlate and dropping item 11 which was not loading significantly to the scale. The new model fitted the data better ($\Delta\chi^2$=239, df=23), p=0.001) with TLI=0.91, NFI=0.90, CFI=0.93 and RMSEA=0.08, thus

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Table 4: Confirmatory Factor Analysis Results of the 4DSQ: goodness of fit indices χ^2,GFI, AGFI, TLI, NFI, CFI, RMSEA. N=409

Model	χ^2	*df*	GFI	AGFI	TLI	NFI	CFI	RMSEA
1–factor	5214	860	.53	.48	.68	.65	.69	.11
3-factor	912	206	.80	.76	.88	.87	.90	.09
3-factor****	673	183	.85	.81	.91	.90	.93	.08
4-factor	3107	854	.74	.71	.82	.79	.83	.08
4-factor*	2419	848	.78	.76	.88	.83	.88	.07
4–factor**	2176	769	.80	.77	.88	.84	.89	.07
3-factor**** Validation	698	180	.84	.80	.92	.91	.93	.08

df *= degrees of freedom*
*** correlations allowed between the error of 3 item pairs (only within the same factor)*
**** Item 11 dropped*
* Correlation allowed between the errors of 6 items pairs (only within the same factor)*
** Items 33 and 46 dropped*

reasonably meeting the criterion for model fit indices.

8 Cross validation

Reliability and 3-factor model inter-correlations

The reliability of the 3-factor model now made up of Depression, Anxiety and Somatisation scales and their inter-correlations are shown in Table 5.

Table 5: Cronbach's alpha and Correlation coefficients (Pearson r) for the validated new 3 DSQ-Factor Scale

	α			
	Scale	**Dep**	**Som**	**Anxiety**
Depression	.96	-		
Somatisation	.78	.47**	-	
Anxiety	.82	.60**	.32**	-

The revised 3-factor model meeting the fit indices was tested on the holdout sample comprising 410 cases. The data was subjected to exploratory factor an analysis. The KMO test of sampling adequacy was .96 and the Bartlett's test of Sphericity was significant at 0.001 enabling us to proceed with the factor analysis. The rotated pattern matrix is shown in Table 6. The items that are in italics in Table 6 form the new 3 DSQ Questionnaire.

9 Discussion

Reliability the Scales

The reliability of the scales (4DSQ) calculated on the whole sample (N=819) before splitting the samples into two for validation purposes is very high ranging from .89 to .96. This is beyond the recommended minimum of .70 (Nunnally and Bernstein, 1994). This was slightly better than Terluin et al, 2004 which ranged from .79 to .90. An analysis of the frequencies (N=819) shows that there is a higher prevalence rate of psychological symptoms compared to the Terluin et al, 2004 sample.

The reliability of the scales in the new (3DSQ) test sample (N=410) range from .76 to .96 which slightly lower than what was found in the full sample (N=819) and what was found in Terluin et al, 2004 sample. This could be due to the shortening of the scale from 50 items (4DSQ) to 21 items (3 DSQ).

Inter-correlations

As shown in Table 2, the significantly high intercorrelations between distress, depression and anxiety of above .72 could be an indication of one common factor. The amount of variance shared by distress and the other factors range between 46% - 71% (N=819).

The three factor model scales (3DSQ) intercorrelations shown in Table 5 range from .32 to .60. The low inter- correlations in the 3 factor model indicate that multicollinearity is not an issue as compared to the four factor 4 DSQ scales.

Factor Structure of the 4 DSQ and the 3DSQ

When the 4DSQ was subjected to exploratory factor analysis (EFA) four factors emerged with high cross loading of items. 7 Distress items loaded on the depression factor, and 3 Anxiety items loaded on the Distress (> .50).

When the 4 factor model was tested on the test sample (N=410), the model had inferior fit indices (Table 4). When the three factor model was tested on the same sample (410), it was found to have a better fit. In this 3-factor model 7 Distress items loaded on the Depression scale. These items are to do with feelings of incompetence (items

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Table 6: Three Dimensional Symptom Questionnaire (3 DSQ): Items, scales, frequencies of scores (N=409), factor loadings from an exploratory factor analysis

No:	Item	Scale	0(1)	1(2)	2(3,4,5)	Dep	Som	Anx
	During the past week, did you suffer from;							
1	Dizziness or feeling light headed?	Som						
2	*Painful muscle?*	*Som*	40.6	35.7	23.7	.185	**.741**	.175
3	Fainting?	Som				.147	**.784**	−.011
4	*Neck pain?*	*Som*	*50.6*	*34*	15.4	.065	**.756**	.083
5	*Back pain?*	*Som*	*46*	*35*	19	.093	**.607**	.127
6	Excessive perspiration?	Som						
7	Palpitations?	Som						
8	Headache?	Som						
9	Bloated feeling in the abdomen?	Som						
10	Blurred vision or spots in front of your eyes?	Som						
11	Shortness of breath?	Som						
12	Nausea or upset stomach?	Som						
13	Pain in the abdomen or stomach area?	Som						
14	Tingling in the figures?	Som						
15	Pressure or a tight feeling in the chest?	Som						
16	*Pain in the chest?*	*Som*	*69.7*	*24.2*	6.1	**.585**	**.565**	.118
17	*Feeling down or depressed?*	*Dis*	*22.2*	*49.6*	28.2	**.62**	**.520**	.122
18	Sudden shock for now reason?	Anx						
19	*Worry?*	*Dis*	*22.2*	*43.3*	34.5	**.62**	.477	.181
20	Disturbed sleep?	Dis						
21	Indefinable feelings or fear?	Anx						
22	*Listlessness?(lack of energy)*	*Dis*	*37.9*	*36.7*	25.4	**.546**	.459	.145
23	Trembling when with other people?	Anx						
24	Anxiety of panic attacks?	Anx						
	During the past week, did you feel:							
25	*Tense?*	*Dis*	*41.8*	*42.1*	16.1			
26	Easily irritated?	Dis						
27	Frightened?	Anx						
28	*That everything is meaningless*	*Dep*	*51.8*	*30.6*	17.6	**.78**	.302	.128
29	*That you can't do anything anymore?*	*Dis*	*56.5*	*27.1*	16.4	**.841**	.305	.121
30	*That life is not worthwhile?*	*Dep*	*76*	*13.9*	10.1	**.803**	.110	.244
31	*That you can no longer take an interest in the people and things around you?*	*Dis*	*60.1*	*27.6*	12.3	**.85**	.149	.235
32	*That you can't cope anymore?*	*Dis*	*60.6*	*24*	15.4	**.863**	.216	.134
33	That you would be better off if you were dead?	Dep						
34	*That you can't enjoy anything anymore*	*Dep*	*70.4*	*20.5*	9.1	**.834**	.076	.258
35	*That there is no escape from your situation?*	*Dep*	*68.9*	*21.5*	9.6	**.836**	.078	.254
36	*That you can't face it anymore?*	*Dis*	*71.9*	*18.6*	9.5	**.851**	.086	.244

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DOI: https://doi.org/10.32476/70afe04c-80b7-439b-8b02-3e7881c78ee1
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Table 6: Continued from previous page

No:	Item	Scale	0(1)	1(2)	2(3,4,5)	Dep	Som	Anx
	During the past week did you							
37	*No longer feel like doing anything?*	*Dis*	*60.1*	*28.1*	11.8	**.816**	.213	.156
38	*Have difficulty in thinking clearly*	*Dis*	*50.4*	*37.4*	12.2	**.763**	.175	.282
39	Have difficulty in getting to sleep?	Dis						
40	Have any fear of going out of the house?	Anx						
	During the past week							
41	Did you easily become emotional?	Dis						
42	*Where you afraid of anything when there was really no need to be afraid?(for instance animals, heights, small rooms)*	*Anx*	*81.9*	*11.5*	6.6	.38	.156	**.761**
43	*Where you afraid to travel on buses, trains or trams (street cars)?*	*Anx*	*86.3*	*8.6*	5.1	.143	.193	**.842**
44	Where you afraid of becoming embarrassed when with other people?	Anx						
45	Did you ever feel as if you were being threatened by unknown danger?	Anx						
46	Did you ever think “if only I was dead”?	Dep						
47	Did you ever have fleeting images of an upsetting event(s) that you have experienced?	Dis						
48	Did you ever have to do your best to put aside thoughts about any upsetting event(s)?	Dis						
49	*Did you have to avoid certain places because they frightened you?*	*Anx*	*81.9*	*14.2*	3.9	.424	.096	**.723**
50	Did you have to repeat some actions a number of times before you could do something else?	Anx						

29 and 37), demoralisation (items 32 and 36), cognitive impairment (items 38 and 47) and loss of interest (item 31). These cross loadings are in line with the findings of Terluin et all, 2004 suggesting depression and distress could be one factor. These findings point to depression and distress being one factor. Contrary to Terluin et all, 2004 findings, in this particular Zimbabwean working population, it appears that depression subsumes distress. In the modifications indices of the 3 factor model paired error terms for items 17, 19 and 22 formed a sub factor of distress (Gerbing and Anderson, 1984). This might seem contrary to theory that distress is subsumed under depression. Terluin et all, 2004 study indicated there was substantial overlap between distress and depression, but still maintained that they were two separate constructs. In this present study the separate construct conclusion is not supported.

This present study is not refuting Terluin et al. (2004) findings. This may be due to Zimbabwean working population being subjected to more than 10 years of economic depression characterised by salary cuts, hyperinflation and shortage of cash (World Bank Zimbabwe Country Overview, 2016). As a result, the Zimbabwean working population may have already graduated from distress to depression, somatisation and anxiety.

10 Conclusion

The purpose of the present study was to assess the factor structure of the 4DSQ in the Zimbabwean working population. While Terluin et al. (2004) found that all the four factors in the 4 DSQ scale were confirmed in the Dutch working population this was not the case in the Zimbabwean working population. Our study found a 3 factor model fitted the data better than a 4 factor model. The three factors were labelled Depression, Anxiety and Somatisation with Distress as a sub factor of Depression. A possible explanation of Distress being a sub factor of Depression is that the working population in Zimbabwe has been subjected to severe and chronic distress.

A survey sample of employees drawn from the database of a Zimbabwean consulting firm was used. This sample may not represent a random sample of the working Zimbabwean population. This may introduce sample bias. The study focused on the global factors of the 4DSQ in the general working population and did not tease the factorial invariance across demographic factors. Given that

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Published: 12 July 2018

contribution of demographic variables to scale variance was a negligible 4% it is not suspected that they will have much impact on the overall results. It recommended that the scales be validated not only here in Zimbabwe but in in other African countries using random samples of the working populations.

DOI: https://doi.org/10.32476/70afe04c-80b7-439b-8b02-3e7881c78ee1
Published: 12 July 2018

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