

Validation of the Basic Psychological Needs Scale in a South African student group

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Abstract

The aim of this study was to validate the English version of the Basic Psychological Needs Scale with subscales Autonomy, Competence, and Relatedness in a South African student sample. The participants were a nonprobability sample of 322 students from a South African university. Confirmatory factor analysis was used to examine the scale's factorial validity. Neither a one-factor nor a three-factor model fitted the original 21-item scale. After problematic items were removed, a 17-item Basic Psychological Needs Scale with a negatively worded method effect fitted the data best, but the fit was inadequate. Although the 17-item scale exhibited good convergent and discriminant validity, the internal consistency reliability remained low. The Basic Psychological Needs Scale had limited application in a South African student sample as a domain-general measure of basic psychological need satisfaction. Questions are raised regarding the extent to which the scale taps the construct under study in the current sample.

Keywords

Basic psychological needs, convergent and discriminant validity, factor structure, internal consistency reliability, psychometric properties.

Basic psychological needs theory (BPNT) is a subtheory of self-determination theory which proposes that human beings have three basic psychological needs, namely, autonomy, competence, and relatedness. Autonomy refers to the need to feel free to regulate one's own behaviour, rather than being controlled by external sources. Competence refers to the need to feel that one is capable

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of performing tasks at various levels of difficulty. Relatedness refers to the need to feel connected to and cared for by others (Deci & Ryan, 2000).

According to BPNT, all three psychological needs must be satisfied to attain psychological well-being. When one or more of these needs are thwarted or neglected, it leads to nonoptimal functioning and compensatory behaviour patterns (Deci & Ryan, 2000). BPNT postulates that the needs are universal across cultures (Deci & Ryan, 2000) and that the outcomes associated with need satisfaction and need thwarting will replicate across cultures (Chen et al., 2015; Deci & Ryan, 2000).

One measure of basic psychological need satisfaction is the Basic Psychological Needs Scale (BPNS; SDT Research Network, n.d.) which Gagné (2003) adapted from a measure of basic need satisfaction at work (Ilardi, Leone, Kasser, & Ryan, 1993) to be suitable to a general context. Multiple studies used the BPNS since its development (e.g., Costa, Ntoumanis, & Bartholomew, 2015; Gagné, 2003). Although reliability coefficients and subscale correlations were reported for the BPNS in the initial studies where it was used, its factor structure was not explored (Johnston & Finney, 2010).

Johnston and Finney (2010) assessed the validity of the BPNS in three American student samples. After removing problematic items (items 16, 14, 11, 20, and 4), they found support for a three-factor, 16-item model with a negatively worded method effect. The Relatedness subscale had acceptable internal consistency reliability (between .78 and .82), while the Autonomy and Competence subscales had low internal consistency reliability scores (between .60 and .68 and between .55 and .62, respectively). Evidence was found for external validity.

As far as we could establish, the validity of the BPNS has not yet been studied in a South African context. This study will address this gap. A student sample was used to determine if the psychometric properties found by Johnston and Finney (2010) in their student samples will replicate in a South African student sample.

The aim of this study was to investigate the psychometric properties of the English version of the BPNS in a South African student context, by examining the scale's factorial validity, internal consistency reliability, and its convergent and discriminant validity. We hypothesised that (a) the three-factor, 21-item scale would not fit the data well. Instead, the three-factor 16-item scale (items 16, 14, 11, 20, and 4 removed) with a negatively worded method effect was expected to fit the data well; (b) the BPNS and its subscales were expected to have insufficient internal consistency reliability, with only the Relatedness subscale having sufficient reliability; and (c) the BPNS total score and the subscale scores would have medium to high positive correlations with scores on other measures of well-being and a negative correlation with scores on an indicator of ill-being.

Method

Participants

A convenience student sample ($n = 322$, male = 79, female = 240, gender unspecified = 3) from multiple campuses of a South African university and from various fields of study completed a battery of quantitative measurement scales in English. Three participants were excluded because they completed less than half of the BPNS. The participants were between 18 and 54 years of age ($M = 21.04$, $SD = 4.12$, three participants did not report age) and indicated different native languages (English = 18%, Setswana = 18%, Afrikaans = 7%, Other = 55%, 1% did not answer). According to the home language distribution statistics of the university where the data were gathered, almost all students at the university spoke English, Setswana, Afrikaans, or another native

African language at home. It is therefore reasonable to assume that most of the students who indicated 'Other' as their home language had another African language as native language.

Instruments

Socio-demographic questionnaire. This questionnaire obtained data on variables such as gender, age, and native language.

The BPNS. This 21-item questionnaire measures the satisfaction of basic psychological needs in a general context (Gagné, 2003). The BPNS consists of three subscales measuring autonomy (BPNS-A), competence (BPNS-C), and relatedness (BPNS-R) on a scale ranging from 1 (not true at all) to 7 (very true). Nine items are negatively worded. Researchers have scored the measure by either calculating a total score of need satisfaction (Meyer, Enström, Harstveit, Bowles, & Beevers, 2007) or calculating individual scores for each of the subscales (Johnston & Finney, 2010). Higher scores indicate higher levels of need satisfaction. Gagné (2003) obtained Cronbach's alpha values of .69, .71, and .86 for Autonomy, Competence, and Relatedness, respectively.

The Mental Health Continuum-SF. The Mental Health Continuum–Short Form (MHC-SF; Keyes, 2002; Keyes et al., 2008) consists of 14 items and measures positive mental health in terms of three subscales, namely, Emotional Well-being (EWB), Social Well-being (SWB), and Psychological Well-being (PWB) on a scale ranging from 0 (never) to 5 (every day). The subscale scores are added together to form a total score between 0 and 70. Higher scores indicate higher levels of positive mental health. In South Africa, Keyes et al. (2008) found support for the three-factor model of the Setswana version of the MHC-SF, with Cronbach's alpha values of .73 (EWB), .59 (SWB), and .67 (PWB). Cronbach's alpha values for the MHC-SF in this study were .77 (EWB), .72 (SWB), and .79 (PWB).

The Satisfaction with Life Scale. The Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) is a 5-item questionnaire that measures the cognitive component of subjective well-being on a scale ranging from 1 (strongly disagree) to 7 (strongly agree). Scores between 5 and 35 are possible. Higher scores indicate higher levels of satisfaction with life. Diener et al. (1985) reported a test–retest reliability score of .82 and sufficient internal consistency reliability ($\alpha = .87$). In South Africa, Wissing and Van Eeden (2002) found support for a unidimensional factor structure and obtained Cronbach's alpha values ranging between .70 and .85 in three age groups. Cronbach's alpha value for the SWLS in this study was .73.

The Meaning in Life Questionnaire. The Meaning in Life Questionnaire (MLQ; Steger, Frazier, Oishi, & Kaler, 2006) measures the respondent's subjective experience of how meaningful his or her life is in the Presence of Meaning subscale (MLQ-P), and a person's motivation to find meaning or to obtain a better understanding of meaning in his or her life in the Search for Meaning subscale (MLQ-S). Each subscale contains five items ranging from 1 (absolutely untrue) to 7 (absolutely true). Each subscale is independently scored. Higher scores indicate higher levels of presence of and search for meaning. Steger et al. (2006) indicated a two-factor structure as well as convergent and discriminant validity, with Cronbach's alpha values between .82 and .86 (MLQ-P) and between .86 and .87 (MLQ-S). In South Africa, Temane, Khumalo, and Wissing (2014) found support for the two-factor structure of the MLQ, with $\alpha = .85$ (MLQ-P) and $\alpha = .84$ (MLQ-S). Cronbach's alpha values in this study were .85 (MLQ-P) and .85 (MLQ-S).

The Patient Health Questionnaire-9. The Patient Health Questionnaire-9 (PHQ-9; Kroenke, Spitzer, & Williams, 2001) is used to diagnose depressive disorders on a scale ranging from 0 (not at all)

to 3 (nearly every day). Scores between 0 and 27 are possible. Higher scores indicate higher levels of depression. Kroenke et al. (2001) reported internal consistency reliability scores of $\alpha = .86$ and $\alpha = .89$ in two samples and confirmed test–retest reliability, as well as criterion, construct, and external validity. Botha (2011) showed the validity and reliability ($\alpha = .86$) of the English version of the PHQ-9 in a multicultural South African sample. Cronbach's alpha value of the PHQ-9 in this study was .82.

Procedure

This study implemented a quantitative, cross-sectional survey design. Lecturers who were not involved as researchers in this study acted as mediators and invited their students to participate in the study. Trained fieldworkers collected the data under the supervision of the principal investigator. The participants completed a battery of quantitative measurement scales in English. Participants were expected to be sufficiently fluent in English to complete the questionnaires, since English was the medium of tuition at the university.

Ethical considerations

This study was approved by the Health Research Ethics Committee of the North-West University, South Africa. Participation was voluntary and followed written informed consent. No incentives were given for participation. Responses were handled anonymously. Debriefing was available.

Data analysis

The data were analysed in four stages. In stage 1, the descriptive statistics (means, standard deviations, skewness, and kurtosis) of the individual items of the BPNS were generated using IBM SPSS Statistics 22.

In stage 2, the factor structure of the BPNS was examined using confirmatory factor analysis (CFA). Mplus Version 7.3 (Muthén & Muthén, 1998–2014) was used. The robust maximum likelihood (MLR) estimator was used and missing data (1.09% of the responses to the BPNS) was handled using full information maximum likelihood estimation. Various fit indices were used to assess global model fit, namely, the χ^2 -statistic, the standardised root mean square residual (SRMR), the root mean square error of approximation (RMSEA), the Tucker–Lewis index (TLI), and the comparative fit index (CFI). Improvement in model fit is indicated by the extent to which the χ^2 -value of the hypothesised model is less than the χ^2 -value of the baseline model. Since the χ^2 -value is highly dependent on sample size, our interpretation will focus on the other fit indices (Byrne, 2012). SRMR and RMSEA values <0.05 are indicative of a good model fit, while RMSEA values <0.08 are indicative of a reasonable model fit (Byrne, 2012). For the TLI and the CFI, earlier recommendations were that values above 0.90 are indicative of a good model fit, but lately a guideline value of 0.95 is more often used (Byrne, 2012; Hu & Bentler, 1999).

Areas of local misfit were indicated by high modification indices (MI) and nonsignificant factor loadings (Byrne, 2012). Further insight into the models' functioning was obtained by considering the items' factor loadings (sign, size, and statistical significance) and the R^2 -values which indicate the percentage of item variance explained by the model. Factor correlations were also examined (Byrne, 2012).

In stage 3, Cronbach's alpha coefficients for the BPNS and its subscales were calculated using IBM SPSS Statistics 22. Cronbach's alpha values higher than .70 are deemed acceptable (Moerdyk,

2015). In stage 4, the correlational patterns between the BPNS and the MHC-SF, SWLS, MLQ, and the PHQ-9 were calculated using SPSS to determine convergent and discriminant validity.

Results

Stage 1: descriptive statistics of individual items

The descriptive statistics (means, standard deviations, skewness, and kurtosis) for the items of the BPNS were calculated. Item-level mean scores ranged between 3.77 (SD = 2.03 for item 4) and 5.83 (SD = 1.40 for item 18). Skewness values ranged between -1.17 (item 12) and 0.14 (item 3). Kurtosis values ranged between -1.14 (item 4) and 0.91 (item 12). These values fall within the acceptable range of values (less than 2.00 in absolute value) for skewness and kurtosis, indicating that the deviation from normality was not significant (Bandalos & Finney, 2010).

Stage 2A: CFA

The factor structure of the BPNS was examined using CFA (all models were overidentified, which rendered it of scientific use, Byrne, 2012). In Stage 2A, four models were tested, namely, a 21-item one-factor model (Model 1), a 21-item three-factor model without a negatively worded method effect (Model 2), a 21-item three-factor model with a negatively worded method effect (Model 3), and the 16-item three-factor model with a negatively worded method effect (Model 4; Johnston & Finney, 2010). A method effect occurs when the characteristics of the measurement process or the measuring instrument accounts for variance in scores over and above that accounted for by the construct that is measured (Maul, 2013). A negatively worded method effect refers to the variance in scores that is explained by the effect of items' negative wording (Johnston & Finney, 2010).

Models 1, 2, and 3 are depicted in Figure 1. The fit indices of the CFA's of Models 1 to 4 are presented in Table 1.

Model 1 did not fit the data well. According to RMSEA and SRMR scores, Models 2, 3, and 4 revealed a reasonable fit to the data, but none of the models had a good fit according to CFI and TLI scores. We next explored the areas of local misfit that contributed to the insufficient model fit.

Stage 2B: CFA from an investigative perspective

We used Model 3 as the basis from which to determine why the model did not fit our data. Model 3 enabled us to determine which of the 21 items of the BPNS were problematic in our sample, while incorporating the negatively worded method effect as a latent factor. The global fit indices of all the resulting models (Models 5, 6, 7, and 8) are displayed in Table 2.

Model 5. The first area of local misfit was a suggested high correlation (MI = 34.140) between the residuals of item 7 ('I pretty much keep to myself and don't have a lot of social contacts') and item 16 ('There are not many people that I am close to'). The content of item 7 and item 16 clearly overlaps, making one of these relatedness items redundant. Item 7 explained more of the variance ($R^2 = .27$) than item 16 ($R^2 = .20$) and had a higher factor loading (.39) on the Relatedness factor than item 16 (.34), so we removed item 16.

Model 6. The second area of local misfit was item 14 (MI = 30.917; 'People I interact with on daily basis tend to take my feelings into consideration'). A better model fit would be obtained if item 14 would also be allowed to load on the Relatedness factor. Item 14 was intended to measure

Table 1. Fit indices for the confirmatory factor analysis of the BPNS (Models 1, 2, 3, and 4).

Latent model	χ^2	df	p	CFI	TLI	RMSEA	90% CI	SRMR
Model 1	593.909	189	<.001	0.628	0.586	0.082	(0.074; 0.089)	0.083
Model 2	560.875	186	<.001	0.655	0.611	0.079	(0.072; 0.087)	0.080
Model 3	411.982	177	<.001	0.784	0.744	0.064	(0.056; 0.072)	0.065
Model 4	187.156	96	<.001	0.869	0.837	0.054	(0.043; 0.066)	0.065

Model 1: unidimensional, 21 items; Model 2: three factors, 21 items; Model 3: three factors, negatively worded method effect, 21 items; Model 4: three factors, negatively worded method effect, 16 items (items 16, 14, 11, 20, and 4 removed); χ^2 : χ^2 test statistic; df: degrees of freedom of χ^2 test statistic; p: probability value of χ^2 test; CFI: comparative fit index; TLI: Tucker–Lewis index; RMSEA: root mean square of approximation; 90% CI: 90% confidence interval of the RMSEA; SRMR: standardised root mean square residual.

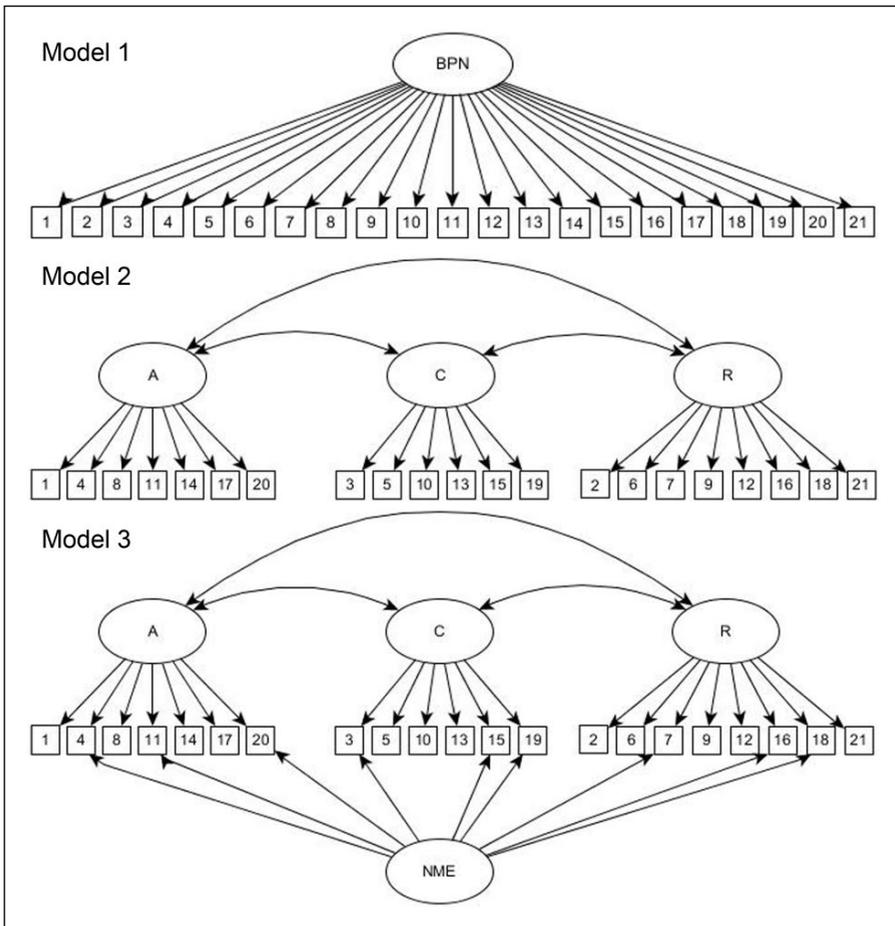


Figure 1. The factor structure of the 21-item BPNS represented by different models. BPNS: Basic Psychological Needs Scale; A: Autonomy; C: Competence; R: Relatedness; NME: negatively worded method effect; Model 1: single-factor model; Model 2: three-factor model, without NME; Model 3: three-factor model with NME. For simplicity, measurement error associated with the observed variables and residual error associated with the latent factors are not depicted in the figure.

Table 2. Fit indices for the confirmatory factor analysis of the BPNS (Models 5, 6, 7, and 8).

Latent model	χ^2	df	p	CFI	TLI	RMSEA	90% CI	SRMR
Model 5	355.076	159	<.001	0.805	0.767	0.062	(0.053; 0.071)	0.063
Model 6	280.026	141	<.001	0.844	0.810	0.055	(0.046; 0.065)	0.059
Model 7	232.500	125	<.001	0.869	0.840	0.052	(0.041; 0.062)	0.058
Model 8	181.729	109	<.001	0.902	0.878	0.046	(0.034; 0.057)	0.055

Model 5: three factors, negatively worded method effect, item 16 removed; Model 6: three factors, negatively worded method effect, items 16 and 14 removed; Model 7: three factors, negatively worded method effect, items 16, 14, and 4 removed; Model 8: three factors, negatively worded method effect, items 16, 14, 4, and 5 removed; χ^2 : χ^2 test statistic; df: degrees of freedom of χ^2 test statistic; p: probability value of χ^2 test; CFI: comparative fit index; TLI: Tucker–Lewis index; RMSEA: root mean square of approximation; 90% CI: 90% confidence interval of the RMSEA; SRMR: standardised root mean square residual.

autonomy, but since the item also refers to human interaction, the item could theoretically also measure relatedness, and we removed item 14 (cf., Johnston & Finney, 2010).

Model 7. Third, a suggested high correlation ($MI = 25.475$) between the residuals of item 4 ('I feel pressured in my life') and item 18 ('The people I interact with regularly do not seem to like me much') was found. Item 4 could potentially tap autonomy, competence, and relatedness. One could feel pressured to comply with the standards set by others (autonomy), feel pressured to attain a certain level of performance (competence), or feel pressured in one's relationships (relatedness; cf., Johnston & Finney, 2010). We therefore removed item 4.

Model 8. The fourth area of local misfit was a suggested high correlation ($MI = 26.042$) between the residuals of the competence item 5 ('People I know tell me I am good at what I do') and the relatedness item 6 ('I get along with people I come into contact with'). Item 5 also refers to interaction with others and we removed item 5 as it theoretically appears to be associated with both competence and relatedness (cf., Sheldon & Hilpert, 2012).

For models 5, 6, and 7, the RMSEA and SRMR revealed a reasonable fit, while the CFI and TLI revealed an insufficient fit. For Model 8, the RMSEA revealed a good fit, while the SRMR, CFI, and TLI revealed a reasonable fit.

We next considered whether all items had significant factor loadings on their intended factors. Item 11 ('In my daily life, I frequently have to do what I am told') had a low factor loading and a nonsignificant p value on the Autonomy factor, but since removing the item did not significantly impact the global fit indices and we did not find sufficient substantive reason to remove the item, we retained item 11.

A three-factor, 17-item model (items 16, 14, 4, and 5 removed) with a negatively worded method effect (Model 8) best fitted our data. However, the fit was inadequate. Model 8 is depicted in Figure 2. The standardised pattern coefficients of the 21-item model with negatively worded method effect (Model 3) and the final 17-item model with negatively worded method effect (Model 8) are shown in Table 3. The factors were highly correlated, with $r = .74$ (BPNS-A with BPNS-C), $r = .67$ (BPNS-A with BPNS-R), and $r = .65$ (BPNS-C with BPNS-R).

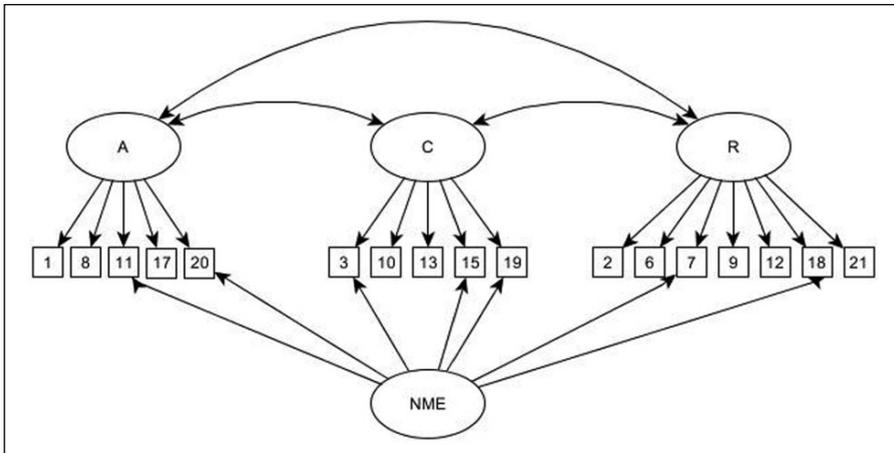


Figure 2. The factor structure of the 17-item BPNS.

BPNS: Basic Psychological Needs Scale; A: Autonomy; C: Competence; R: Relatedness; NME: negatively worded method effect; Model 8: three-factor model with NME. For simplicity, measurement error associated with the observed variables and residual error associated with the latent factors are not depicted in the figure.

Stage 3: reliability analysis

The 21-item BPNS (Model 2) showed low reliability with $\alpha = .64$ (BPNS-A), $\alpha = .65$ (BPNS-C), and $\alpha = .68$ (BPNS-R). The subscales of the 17-item BPNS (Model 8) also showed low reliabilities with $\alpha = .61$ (BPNS-A), $\alpha = .62$ (BPNS-C), and $\alpha = .64$ (BPNS-R).

Stage 4: convergent and discriminant validity

The total and subscale correlations between the 17-item BPNS and other measures of psychological well-being and ill-being are presented in Table 4. Correlation coefficients can be considered as effect sizes, where values of ± 0.1 are regarded as a small effect, values of ± 0.3 are regarded as a medium effect, and values of ± 0.5 are regarded as a large effect (Field, 2009). Convergent and discriminant validity was confirmed. The BPNS and its subscales had medium to high positive correlations with other measures of well-being, medium to high negative correlations with a measure of depression and negligible correlations with a measure of search for meaning.

Discussion

The aim of this study was to investigate the psychometric properties of the English version of the BPNS in a South African student sample. The 21-item BPNS with a negatively worded method effect had unsatisfactory psychometric properties with low reliabilities and inadequate model fit. A three-factor, 17-item measure with a negatively worded method effect best fitted our data, although the fit was inadequate and reliabilities were low. The BPNS and its subscales had satisfactory convergent and discriminant validity.

Factors such as problematic item formulation, insufficient representation of the complexity and dimensionality of the constructs, the meaning of constructs that may differ from one domain to another, as well as cross-culturally, and the possibility that BPNT may not be applicable in the current sample may have contributed to the scale's psychometric properties. Each factor will now be discussed.

Table 3. Standardised pattern coefficients for Model 3 and Model 8.

		Model 3 ^a		Model 8 ^b	
		SF	NME	SF	NME
Autonomy					
(1)	I feel like I am free to decide for myself how to live my life.	0.495		0.540	
(4)	I feel pressured in my life. (R)	0.153	0.350		
(8)	I generally feel free to express my ideas and opinions.	0.664		0.713	
(11)	In my daily life, I frequently have to do what I am told. (R)	0.090	0.478	0.103	0.481
(14)	People I interact with on a daily basis tend to take my feelings into consideration.	0.532			
(17)	I feel like I can pretty much be myself in my daily situations.	0.467		0.498	
(20)	There is not much opportunity for me to decide for myself how to do things in my daily life. (R)	0.388	0.431	0.380	0.451
Competence					
(3)	Often, I do not feel very competent. (R)	0.215	0.319	0.237	0.280
(5)	People I know tell me I am good at what I do.	0.509			
(10)	I have been able to learn interesting new skills recently.	0.538		0.587	
(13)	Most days I feel a sense of accomplishment from what I do.	0.695		0.731	
(15)	In my life I do not get much of a chance to show how capable I am. (R)	0.351	0.461	0.367	0.452
(19)	I often do not feel very capable. (R)	0.462	0.508	0.436	0.494
Relatedness					
(2)	I really like the people I interact with.	0.590		0.588	
(6)	I get along with people I come into contact with.	0.463		0.465	
(7)	I pretty much keep to myself and don't have a lot of social contacts. (R)	0.392	0.334	0.344	0.273
(9)	I consider the people I regularly interact with to be my friends.	0.467		0.464	
(12)	People in my life care about me.	0.523		0.519	
(16)	There are not many people that I am close to. (R)	0.339	0.293		
(18)	The people I interact with regularly do not seem to like me much. (R)	0.381	0.409	0.372	0.490
(21)	People are generally pretty friendly towards me.	0.521		0.521	

a. 3-factor, 21-item BPNS, with a NME.

b. 3-factor, 17-item BPNS (items 16, 14, 4, and 5 removed), with a NME.

BPNS: Basic Psychological Needs Scale; (R): reverse scored item; SF: substantive factor; NME: negatively worded method effect.

Problematic item formulation

We found that many items do not tap the real meaning or the full extent of the construct they are intended to measure, while other items seem to be duplications of each other or had ambiguous meanings. With regard to the Autonomy subscale, Johnston and Finney (2010) indicated that item 20 ('There is not much opportunity for me to decide for myself how to do things in my daily life') was an inverse duplicate of item 1 ('I feel like I am free to decide for myself how to live my life'). We found that item 11 ('In my daily life, I frequently have to do what I am told') uses only different wording than item 20 to suggest that one is not allowed to make one's own decisions.

On closer inspection of the Competence subscale, we found that item 3 ('Often, I do not feel very competent') is nearly a duplicate of item 19 ('I often do not feel very capable'). Item 10 ('I

Table 4. The total and subscale correlations between the 17-item BPNS and other measures of psychological well-being and ill-being.

Criterion-scale	BPNS-A	BPNS-C	BPNS-R	BPNS-total
MHC-SF (EWB)	.352*	.456*	.374*	.492*
MHC-SF (SWB)	.175*	.346*	.334*	.361*
MHC-SF (PWB)	.425*	.519*	.364*	.542*
MHC-SF (Total)	.373*	.521*	.423*	.550*
SWLS (Total)	.337*	.441*	.317*	.453*
MLQ-P	.424*	.504*	.290*	.503*
MLQ-S	-.053	-.103	-.009	-.063
PHQ-9 (Total)	-.370*	-.441*	-.318*	-.467*

BPNS: 17-item Basic Psychological Needs Scale; BPNS-A: BPNS (Autonomy); BPNS-C: BPNS (Competence); BPNS-R: BPNS (Relatedness); MHC-SF: Mental Health Continuum–Short Form; MHC-SF (EWB): MHC-SF (emotional well-being); MHC-SF (SWB): MHC-SF (social well-being); MHC-SF (PWB): MHC-SF (psychological well-being); SWLS: Satisfaction with Life Scale; MLQ-P: Meaning in Life Questionnaire (Presence); MLQ-S: Meaning in Life Questionnaire (Search); PHQ-9: Patient Health Questionnaire-9.

*: $p < .01$.

have been able to learn interesting new skills recently’) refers more to the process of becoming (increasingly) competent (i.e., learning a new skill) than to feeling competent. Sheldon and Hilpert (2012) commented that item 15 (‘In my life I do not get much of a chance to show how capable I am’) is ambiguous in its meaning. While the item is intended to represent the absence of competence, the item actually implies that a person feels competent, but does not get the opportunity to demonstrate this competence (Sheldon & Hilpert, 2012).

With regard to Relatedness subscale, Sheldon and Hilpert (2012) mentioned that item 6 (‘I get along with people I come into contact with’) and item 21 (‘People are generally pretty friendly towards me’) refer more to affiliation (i.e., pleasant social relations) than to intimacy (i.e., a deeper sense of connectedness) which is actually what the need for relatedness refers to according to BPNT. The items therefore do not tap the real meaning of the need for relatedness. This same argument holds for item 2 (‘I really like the people I interact with’). Item 7 (‘I pretty much keep to myself and don’t have a lot of social contacts’) is a double-barrelled item which may yield it ambiguous. Not having many social contacts does not necessarily imply that one keeps to oneself.

Insufficient reflection of the complexity and dimensionality of basic psychological needs

Costa et al. (2015) indicated that need satisfaction, need dissatisfaction, and need thwarting are different concepts and that each of these concepts has different outcomes with regard to (relational) well-being. This means that, for example, ‘autonomy satisfaction’ is a different construct than ‘autonomy dissatisfaction’ or ‘autonomy thwarting’ (cf., Bartholomew, Ntoumanis, Ryan, & Thøgersen-Ntoumani, 2011; Sheldon & Gunz, 2009). This suggests that negatively worded items are not merely opposites of positively worded items, but may tap a different dimension of the construct. This implies that the postulated three-factor structure would not fit the data well.

Issues when transferring theory or measurement scales from one domain to another

Measures are often adapted for application in different domains of life (e.g., life in general, work, and relationships). The fact that the psychometric properties of domain-specific measures like the Basic Psychological Needs in Exercise Scale (Liu, Chung, & Duan, 2013) were good, as opposed to the domain-general BPNS (Johnston & Finney, 2010; Sheldon & Hilpert, 2012) which was adapted from the domain (work) specific measure by Ilardi et al. (1993), may point out that adapting scales for use in different life domains may pose problems.

Cultural differences

Constructs may differ in meaning cross-culturally or may be unknown to some cultures (De Kock, Kanjee, & Foxcroft, 2013). Scale items should therefore reflect the cultural meaning of the concept. If not, scale items may operate differentially across the groups, thus affecting the psychometric properties of the measure.

When comparing the results obtained in our mainly African sample with the results obtained by Johnston and Finney (2010) in their mainly Caucasian samples, we found that some of the results obtained by Johnston and Finney (2010) replicated in our sample, while others did not replicate. Although the similarities found may suggest that the problematic psychometric properties are rather due to problematic item wording and scale construction, the differences in our results may be suggestive of cultural influences.

Problems with the underlying theory

The BPNS did not perform well in this study or the study of Johnston and Finney (2010) and may point towards problems with the underlying theory. This could, for example, suggest that the three needs that are delineated by the theory do not operationalise in practice, or at least not in student samples. Countering this argument, some recent studies found support for BPNT (cf., Chen et al., 2015; Sheldon & Hilpert, 2012). We therefore suggest that the issues related to scale construction are addressed first. If the problematic psychometric properties persist, the application of the underlying theory in a South African student context should be questioned. The above-mentioned factors emphasise the importance of proper conceptualisation of constructs and consideration of the dimensionality and the contextual and cultural meaning of constructs when scale items are developed.

A limitation of the study is the use of a student sample, and future research may investigate whether the psychometric properties of the BPNS will replicate in different populations, as well as cross-culturally. An emic approach to understanding basic psychological needs in an African context is indicated. Future research may also focus on improving the BPNS as a domain-general measure of basic psychological need satisfaction by removing or rewriting problematic scale items, and/or by constructing new scale items.

Conclusion

The purpose of this study was to validate the English version of the BPNS in a South African student context. The scale exhibited good convergent and discriminant validity, although the three-factor structure did not fit the data adequately. Internal consistency reliabilities remained low,

despite the removal of problematic scale items. The BPNS in its current form is of limited use in the current context as a domain-general measure of basic psychological needs.

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