

## Validation of the SPANE in a South African Student Sample

**Validation of the Scale of Positive and Negative Experience in a South African student sample**

Graham A du Plessis & Tharina Guse  
Department of Psychology, University of Johannesburg

**Abstract**

This study investigated the validity of the Scale of Positive and Negative Experience (SPANE) in a South Africa context using a sample of 992 university students. Item fit and unidimensionality of the Positive and Negative Experience subscales were examined using a process of Rasch analysis. Reliability of the subscales was evaluated and correlations were between the SPANE, the Mental Health Continuum – Short Form (MHC-SF) and the Satisfaction with Life Scale (SWLS), were examined. In general, the SPANE exhibited good Rasch fit and reliability. However, there were two items, one from each the Positive and Negative Experience subscales respectively that exhibited some problems with Rasch fit. While the substantive effect of these problematic items on reliability was marginal, their identification as problematic corroborated analysis in another study, enjoining, if not their removal, certainly a direction for future research. Overall, the findings serve to both support the notion that in its present form the SPANE is a psychometrically sound instrument to measure positive and negative experience as a facet of well-being among South African university students, and to indicate directions for further research on the scale.

## INTRODUCTION

### **Well-being among university students**

Understanding and promoting well-being is central to the field of positive psychology. Moreover, the well-being of emerging adults is particularly important as higher levels of well-being have consistently been associated with positive outcomes in life domains such as relationships, work and health, including a lowered likelihood to develop lifestyle diseases and addictions (Diener & Ryan, 2009; Lyubomirsky, King, & Diener, 2005). These domains are prominent for university students who are focused on establishing social rules, academic achievement, settling away from home (Conley, Kirsch, Dickson, & Bryant, 2014) and developing positive health behaviours (Sirois, 2015) during the transition to adulthood. The university environment may be well-suited for enhancing well-being and supporting emerging adults on their developmental trajectory. University campuses provide the opportunity to forge enriching social relationships through its social nature (Oades, Robinson, Green, & Spence, 2011) and to experience enhanced subjective well-being through being fully engaged intellectually and emotionally with the student experience (Schreiner, 2015). This study examined the measurement of positive and negative emotions as facets of subjective well-being among students in the South African context.

In the positive psychology literature there is general agreement that well-being can be understood from two distinct, yet overlapping traditions referred to as the hedonic and eudaimonic perspectives (Biswas-Diener, Kashdan, & King, 2009). From the hedonic perspective, well-being is conceptualized as consisting of life satisfaction, high levels of positive affect and relatively low levels of negative affect. This is generally referred to as subjective well-being (SWB) (Pavot & Diener, 2013). The eudaimonic perspective views well-being as optimal functioning and focuses on aspects such as growth, excellence, meaning in life and self-realization (Huta & Waterman, 2014). It is widely accepted that both hedonic and eudaimonic perspectives need to be considered in understanding well-being (Huta & Ryan, 2010). However, exploring individuals' subjective experiences remains an important focus in positive psychology research. In particular, the experience of pleasant emotions may indicate that life is going well (Lucas, Diener, & Larsen, 2009).

### **Affect as an indicator of well-being**

From the hedonic perspective, both positive and negative affect are considered in determining well-being. Experiencing relatively more positive emotions in comparison to negative emotions is generally associated with higher levels of well-

being (Deci & Ryan, 2008; Pavot & Diener, 2013). The frequency of experiencing positive affect, rather than the intensity thereof, is important in determining subjective well-being (Diener, Sandvik & Pavot, 1991).

Cohen and Pressman (2006, p. 122) define positive affect as “feelings that reflect a level of pleasurable engagement with the environment, such as happiness, joy, excitement, enthusiasm, and contentment”. Several studies suggested that positive emotions are associated with positive outcomes. For example, early research indicated that positive emotions lead to creativity (Estrada, Isen, & Young, 1994) and can buffer the detrimental physiological effect of negative emotions (Fredrickson & Levenson, 1998). According to Frederickson’s (2001) broaden and build theory, positive emotions increase social, cognitive, and behavioural resources which ultimately contribute to an upward spiral towards greater well-being.

Lyubomirsky et al. (2005)’s review paper concluded that positive emotions are both reflecting of and preceding life going well. Specifically, they found that individuals who more often experience positive emotions are more likely to have satisfying interpersonal relationships, generate higher incomes and demonstrate exceptional work performance, which are relevant to students who are preparing to enter the world of work. Experiencing positive emotions more frequently predicts life satisfaction (Diener, Suh, Lucas, & Smith, 1999) while increasing daily positive emotions seems to increase overall life satisfaction (Cohn, Fredrickson, Brown,

Mikels, & Conway, 2009). Positive emotions have also been associated with health and longevity (Cohen & Pressman, 2006; Lyubomirsky et al. 2005). Further, Moskowitz, Shmueli-Blumberg, Acree and Folkman (2012) reported that positive emotions lead to better role functioning under stressful conditions. This is especially important to during the transition to university which can be a disruptive and challenging experience (Conley et al. 2014). Although experiencing positive emotions may be pleasurable in itself, it can also lead to personal growth and optimal functioning over time (Algoe, Fredrickson, & Chow, 2011). Therefore, it is evident that positive emotions are important to both hedonic and eudaimonic perspectives on well-being.

Negative affect also needs to be considered in examining well-being. Lucas et al. (2009) defined negative affect as consisting of high unpleasantness and high arousal, including being nervous, afraid and distressed. It is well-documented that a reduction in negative emotions is important to enhancing health (Larsen, Hemenover, Norris, & Cacioppo, 2003). Negative affect is further seen as a predictor of psychiatric disorders in general, with high levels being associated with both depression and anxiety (Watson, Clark & Carey, 1988). However, negative emotions are also relevant to optimal functioning, depending on the frequency and necessity thereof (Algoe et al., 2011). In particular, negative emotions may be necessary in certain contexts, for example when courage or self-regulation is

required (Kashdan & Biswas-Diener, 2014). It is, therefore, appropriate to measure both positive and negative affect when examining well-being.

### **Measuring positive and negative affect**

The measurement of emotions remains complex due to the fact that these phenomena consist of multiple components (Larsen et al., 2003). Several self-report measures have been put forward, including the Affect Balance Scale (Bradburn 1969) and the Positive and Negative Affect Schedule (PANAS) (Watson, Clark, & Tellegen, 1988). The PANAS is one of the most widely-implemented scales to assess positive and negative affect. However, Diener et al. (2009) argued that the PANAS suffered from several limitations, such as measuring states which are not viewed as feelings, measuring only high arousal feelings, and inadequately assessing feelings that are considered important to well-being. In their view, the PANAS also lacks inclusion of feelings that may be important in specific cultural contexts.

Diener et al. (2009) contended that existing scales aimed at measuring positive and negative affect were limited in assessing ongoing feelings of well-being. To this end, Diener and his colleagues developed the Scale of Positive and Negative Experience (SPANE) which offers an improved measure of feelings. The SPANE measures general positive and negative feelings rather than specific emotions. Further, several experiences that were omitted from previous scales

assessing affect (for example, interest, flow, pain) are included in the measure. The SPANE includes feelings which are generally desirable or undesirable, which implies that the scale could be implemented across cultures. Moreover, the SPANE aims to assess a broad range of positive and negative feelings, not only emotions or moods, which are important in understanding subjective well-being (Diener et al., 2009). Another advantage of the SPANE is that it reflects all levels of arousal feelings, and not only high arousal feelings as reflected in the PANAS. Finally, since respondents have to select a response based on the amount of time a particular feeling was experienced, the SPANE may be more indicative of general well-being and easier to compare across respondents (Diener et al., 2010).

### **The present study**

The well-being of university students remains an important area of enquiry. Higher levels of well-being are associated with better academic performance (Howell, 2009) which is important given the low graduation rate in South Africa (Letseka & Maile, 2008). Further, the future well-being of society depends on student well-being, as they are the leaders of the future (Møller, 1996). To measure student well-being, valid and reliable instruments are needed. The SPANE could be considered as a brief measure of the affective component of well-being because it taps into a broad range of positive and negative feelings (Diener et al., 2009).

Cultural norms, acculturation, ethnic group membership and ethnic identity could contribute to differences in the experience and expression of affect (Kim-Prieto & Eid, 2004). Further, as Milfont and Fischer (2010) pointed out, it is important to determine whether psychological instruments measure the same construct adequately in different cultural groups. Although Diener et al. (2009, 2010) argued that the SPANE could be implemented to assess emotional experience across cultures, they recommended further research in this regard and validity in the multicultural South African context needs to be confirmed. For example, some research suggested that participants from African nations, including South Africa, viewed the experience of negative emotions as less desirable than participants from Western or Eastern origin (Kim-Prieto & Eid, 2004) which may influence responses on measures of affect.

Existing studies reported on the psychometric properties of the SPANE in North-American and European samples (Diener et al., 2010; Howell & Buro, 2014; Silva & Caetano, 2013) as well among Asian participants (Li, Bai, & Wang, 2013; Sumi, 2014). However, research in the African context is lacking.

Moreover, existing validation studies used confirmatory factor analysis to determine model fit. These were satisfactory, lending support to the two factor-model of positive and negative emotions (Howell & Buro, 2014; Li et al., 2014; Silva & Caetano, 2013; Sumi 2014). While Howell and Buro's (2014) recent work



largely supported the reliability and validity of the scale in a Canadian sample, the factor analysis conducted in their study identified relatively weak loadings for one item in the positive affect scale (“Contented”) and two items in the negative affect scale (“Afraid” and “Angry”). This suggests that a more acute examination of items in relation to the hypothesized positive and negative affect constructs may serve not only to aid cross-cultural reliability and validation but potentially also afford greater understanding in respect of the positive and negative affect constructs themselves. To this end, the present study employed the Rasch measurement model. This model offers a means by which to assess how the relationship between two aspects of performance on a scale in respect of scale items (typically a person’s latent manifestation of a trait and the degree to which a particular item reflects endorsement of the trait) are preserved in a third aspect (typically the response probabilities particular to a given individual and item) (Bond & Fox, 2007). In the context of the present investigation, Rasch modelling of the SPANE scale affords a means of examining both the extent to which individual items that make up the positive and negative affect components of the scale reflect variance in the underlying constructs, and the extent to which the positive and negative aspects of the SPANE underlying the items are unidimensional. In examining whether the items fit with the two theorized unidimensional constructs of positive and negative affect, this study facilitates both a contextual examination of the SPANE in the

South African context as well as addressing an important question relating to whether the theorized latent constructs of positive and negative affect are consistent with the manifest scale items.

The main aim of this study was to investigate the psychometric properties of the SPANE as measure of the affective facet of well-being among university students. To this end, three sub-aims were set: a) to examine the item fit of the SPANE by means of a Rasch analysis; b) to examine the reliability of the SPANE through an examination of Cronbach's alpha coefficients, and c) to evaluate psychometric properties by examining correlations between the SPANE and its subscales, and other measures of well-being and positive affect.

## **METHOD**

### **Participants**

A quantitative cross-sectional survey design was implemented in a convenience sample of a multicultural group of 992 first year psychology students at a large South African university who completed measures related to affect, life satisfaction and psychological well-being via an online platform. All respondents completed the survey electronically and submission necessitated complete responses.

Accordingly, no missing cases exist in the 992 responses. A total of 1202 student were invited to participate in this exercise that informed part of their psychology

module. Those who elected not to participate (36 students) in this exercise were offered an alternative exercise covering the same theoretical content.

The mean age of the participants was 19.95 years with a standard deviation of 2.01 years. Most of the participants were female (75.9%). Reflecting the multicultural nature of the South African context, the majority of participants' indicated their home language to be one of the indigenous South African languages (70.8%), followed by English (22.1%) and Afrikaans (5.2%). This multicultural context is further reflected in the participants' affiliation with specific South African population groups, where most identified themselves as being black (African) (71.83%), followed by white (Caucasian) (10.28%), Indian or Asian (5.95%) and mixed ethnicity (5.65%).

### **Instruments**

The participants completed the following measures in English, which is the medium of tuition at the university:

#### *The Scale of Positive and Negative Experience (SPANE)*

Consisting of two six-item scales that measure positive and negative experiences, the SPANE assesses subjective feelings of well-being and ill-being (Li et al., 2013). Developed by Diener et al. (2009) the SPANE evaluates respondents' agreement with their subjective experience of positive and negative experiences during the past

four weeks on a five-point Likert scale ranging from “very rarely or never” to “very often or always”. Due to the dichotomous positioning of positive (SPANE-P) and negative (SPANE-N) experiences the two scales are independently scored. The two scales can, however, be combined by subtracting the negative from the positive scale total in order to derive an Affect Balance (SPANE-B) score (Diener et al., 2009). The process of subtraction is central to the use of the scale as advocated by Diener et al. (2009) and is a process that we have kept in our analysis. To date, several researchers have reported sound reliability and validity scores for the SPANE scale (Howell & Buro, 2014; Silva & Caetano, 2013; Sumi, 2014).

*The Mental Health Continuum – Short Form (MHC-SF)*

Developed by Keyes (2009) the MHC-SF consists of 14 items that measure an overall score of well-being as well as three subcomponents of well-being, namely: (1) Hedonic (Emotional) well-being, (2) Eudaimonic (Social) well-being, and (3) Eudaimonic (Psychological) well-being (Lamers, Westerhof, Bohlmeijer, ten Klooster, & Keyes, 2011). The scale measures the frequency of respondents’ experiences of well-being within the three sub-dimensions over the past four weeks using a seven-point Likert scale based response set that ranges from “Never” to “Every Day”. The scale evidenced sound reliability in a number of contexts (Lamers et al., 2011) including South Africa (de Bruin & du Plessis, 2015; Keyes et

al., 2008), with Cronbach's alphas exceeding .70 across each of the subscales individually as well as for the overall well-being measure (Keyes, 2009; Petrillo, Capone, Caso, & Keyes, 2014).

#### *The Satisfaction with Life Scale (SWLS)*

Consisting of 5 items the SWLS measures a person's satisfaction with life as a whole (Li et al., 2013). Scored on a seven-point Likert scale ranging from "strongly agree" to "strongly disagree" (Lucas, Diener, & Larsen, 2003), the scale has consistently evidenced sound reliability with numerous researchers reporting Cronbach's alphas in excess of .79 (Steger, Frazier, Oishi, & Kaler, 2006). Validity studies have found similarly positive results for external and predictive validity (Bendayan, Blanca, Fernandez-Baena, Escobar, & Trianes, 2013; Glaesmer, Grande, Braehler, & Roth, 2011) and underscore the motive for the wider employ of this scale.

#### **Procedure**

Participants were recruited by the course coordinator as part of a project implementing positive psychology interventions to enhance student well-being. They were informed of the fact that participation was voluntary and that

confidentiality of responses will be upheld. The measures were completed via an online platform at a time convenient to the participants. They had a limited time period to complete the measures after which access to the platform was closed.

### **Ethical considerations**

Ethical approval to conduct the study was obtained from the Humanities Research Ethics Committee at the University of Johannesburg. Students were required to give their informed consent in respect of the following ethical processes: (1) Participation was voluntary, (2) participants were afforded the opportunity to withdraw from the study at any point, (3) anonymity was maintained, and (4) all stored data was encrypted. The procedures for maintaining confidentiality and reporting on the data were explained to the students in class, and in the online survey which required their informed assent.

### **Data analysis**

The analytic procedure for examining the SPANE commenced with an examination of the psychometric properties of unidimensionality of the scale using Rasch modelling. Further insight into the functioning of the SPANE was facilitated by means of establishing Pearson product-moment correlations with the MHC-SF and

SWLS. As the means by which different scholars undertake Rasch modelling can differ, the analytic procedures employed in this study are clarified below.

*Rasch modelling procedures*

The analytic procedure employed (using Winsteps Rasch Measurement software version 3.75.0 (Linacre, 2012) entailed the following sequential steps: (1) An examination of the sufficiency of the item category functioning; (2) examining whether any items violate the assumption of local independence; and (3) an examination of the extent to which the items fit the Rasch model assumption of the measurement of an invariant unidimensional trait. These three steps are briefly summarized below:

- i. Sufficiency of item category functioning describes an examination of the fit of the scale categories where step calibrations are determined in order to ascertain the threshold difficulties between selecting different categories of response options. Step calibration can be understood as the difficulties estimated for choosing one response category over the next (Linacre & Wright, 1996). Simply put, this steps determines whether each of the scale categories, ranging on the five-point scale from “very rarely or never” to “very often or always” are meaningfully delimited for the particular data. In the event that this is not the case it is possible to collapse one category into the other in order to facilitate effective measurement step calibrations.

- ii. Local independence from a Rasch perspective refers to the notion that items within a scale are independent of one another given a particular endorsement of the specific latent trait (Camminatiello, Gallo, & Menini, 2010). Fundamentally, this means that the way in which one item functions should not bear relation or indeed a dependence on the functioning of another item. A notable example of such an occurrence would be the inclusion of two highly similar items in a scale.
- iii. Having examined and where necessary accounted for item category calibration and violations of independence it is possible to determine the extent to which individual items fit the Rasch model assumption of the measurement of an invariant unidimensional trait. Particular to this examination, the extent to which the items of the SPANE-P and SPANE-N fit with the measurement of subjective feelings of well-being and ill-being respectively were determined.

## **RESULTS**

### **Descriptive findings**

The descriptive statistics for the SPANE, MHC-SF and SWLS are reported in Table 1 below. Reliability coefficients for all of the scales were sound and comparable with those of previous examinations of the scales in a variety of contexts (de Bruin



& du Plessis 2015; Howell & Buro, 2014; Keyes, 2009; Petrillo et al., 2015). The means, standard deviations and observed ranges of the SPANE were consistent with existing findings (Diener et al., 2010; Howell & Buro, 2014).

< Table 1 here >

### **Rasch analysis of the SPANE-P**

Examination of the category functions suggests that the scale step calibrations are appropriate and that the categories are functioning well. Further, there is no violation of independence between the items. This means that all pairs of items should be uncorrelated after controlling for the latent measured trait (Jafari, Bagheri, Ayatollahi, & Soltani, 2012). All standardized residual correlations were less than .20. Table 2 below details the fit statistics for each of the SPANE-P items for subjective feelings of well-being.

<Table 2 here>

The outfit mean squares ranged from .83 (“Joyful” item) to 1.53 (“Contented” item), whereas the infit mean squares ranged from .84 (“Joyful” item) to 1.46 (“Contented” item). The determination of appropriate cut-off points where

items may be regarded to misfit to such an extent as to warrant conclusion is the product of some debate. Central to this determination is the consideration of interpreting t-values scores relative to the magnitudes of both fit statistics and sample size (Bond & Fox, 2007). Arguably one of the most widely accepted guiding criteria for such interpretation is that suggested by Bond and Fox (2007, p. 243) who argue that “reasonable item mean square ranges” for Likert rating scales of 0.6 to 1.4 suggest adequate infit and outfit. This is a relatively conservative range with other authors such as Franchignoni, Giordano and Ferriero (2008) recommending a more stringent 0.7 to 1.3. Interpreted from either criterion, the “Contented” item of the SPANE-P suggests misfit for both the outfit and infit categories. In particular, this item is underfitting (Franchignoni et al., 2008), which suggests that the item tends towards a fixed endorsement probability irrespective of a person’s underlying measure on the latent unidimensional trait of well-being.

### **Rasch analysis of the SPANE-N**

As with the SPANE-P, examination of the category functions suggest that the scale step calibrations are appropriate, that the categories are functioning well and that there is no violation of independence between the items. All standardized residual correlations were less than .20. Table 3 below details the fit statistics for each of the SPANE-N items for ill-being.

<Table 3 here>

The outfit mean squares ranged from .78 (“Negative” item) to 1.53 (“Afraid” item), whereas the infit mean squares ranged from .77 (“Negative” item) to 1.54 (“Afraid” item). In accordance with the earlier noted range guidelines, the “Afraid” item evidenced misfit, underfitting on both the outfit and infit indexes. As with the misfitting item evidenced in the SPANE-P, the indication of underfitting for this items suggests that the item tends towards a fixed endorsement probability irrespective of a person’s underlying measure on the latent unidimensional trait, in this instance, of ill-being.

### **Correlations between the SPANE and other measures of well-being**

Indications of the SPANE’s psychometric properties are facilitated by the examination of the correlation between the SPANE, MHC-SF and SWLS. These are reported in Table 4. The results demonstrated all correlations to be statistically significant and to be medium to large correlations (Field, 2005). As expected, the SPANE-N, measuring aspects of ill-being, negatively correlated with all other scales and subscales which measure well-being while the SPANE-P positively correlated with these scales.

<Table 4 here>

As the Rasch modelling of the SPANE-P and SPANE-N each indicated the poor fit of a single item respectively (“Contented” and “Afraid” items), adjusted SPANE scale scores were computed for scales without these items and the resultant scales’ convergence and divergence with the MHC-SF and SWLS was again explored by means of a correlational analysis. In order to calculate these adjusted scales the total scale score was computed by summing the Likert score without the misfitting item for the SPANE-P and SPANE-N respectively. As the SPANE-B, or affect balance, is typically computed by subtracting the total SPANE-N score from the total SPANE-P score, and as each of these adjusted scales was reduced in proportional weighting (each less one item) the Adjusted SPANE-B was computed by subtracting the Adjusted SPANE-N from the Adjusted SPANE-P. The results of the correlational analyses using these adjusted scales are reported in Table 5 below.

<Table 5 here>

As with the correlation matrix depicted in Table 4, the correlations are all statistically significant and medium to large (Field, 2005). All of the correlations between the adjusted SPANE scales, MHC-SF and SWLS were marginally improved in magnitude relative to the correlations summarized in Table 4. Computation of Cronbach’s alpha for the adjusted SPANE scales was comparable to those of the non-adjusted scales, yielding coefficients of .85, .79 and .84 for the positive, negative and balance scales respectively.

## **DISCUSSION**

The primary aim of this study was to examine the psychometric properties (?) of the SPANE among South Africa university students by investigating the item fit and unidimensionality of the subscales through a process of Rasch analysis.. Overall, the SPANE demonstrated acceptable psychometric properties to measure positive and negative emotional experiences among a group of university students.

The first sub-aim of the study was to examine item fit of the SPANE. The Rasch modelling procedure offered a number of important insights into the functioning of the individual items of the two subscales of the SPANE as well as to the internal cogency of the underlying positive and negative aspects of the scale. In addition to largely corroborating other researchers' findings that the scale functions well, the measurement of item-fit allowed for largely confirmatory findings in terms of unidimensionality. Put simply, the theoretical cogency of the latent positive and negative aspects incumbent in the scale is apparently well measured in the manifest items. This finding supports the notion that the underlying aspects or constructs have theoretical integrity as the items derived from the theoretical understandings demonstrate fit with each other as a measure of a latent construct.

While on the whole the Rasch modelling of the non-adjusted SPANE evidenced good fit, the findings of two notably problematic items (one in the positive affect measure and one in the negative affect measure) does offer important

insight into the scale. On the one hand, the items could be argued to be only mildly problematic as their removal resulted in relatively minor improvements in terms of Cronbach's alpha coefficients as well as convergent and discriminant correlation coefficients. On the other hand, the finding that these items do not necessarily contribute much to the measure of affect using the non-adjusted SPANE enjoins, if not their removal from the scale, certainly further research. For instance, the findings of substantively poor fit with the "Contented" and "Afraid" items of the SPANE-P and SPANE-N respectively certainly corroborates the relatively low factor loadings for these items in Howell and Buro's (2014) analysis of the scale.

The second sub-aim of the study was to examine the reliability of the subscales measuring positive and negative affect, respectively. The alpha coefficients obtained in this study ranged from, .79 to .85, indicating that the SPANE yields sufficiently reliable scores of positive and negative affect. However, these coefficients were slightly lower than those reported in existing studies in Western (Diener et al., 2010; Howell & Buro, 2014; Silva & Caetano, 2013) Middle-Eastern (Kormi-Nouri, Farahani, & Trost, 2013) and Eastern (Sumi, 2014) contexts.

Finally, further insight into the functioning of the SPANE was facilitated by correlating positive and negative emotional experience with constructs that were hypothesized to be either positively associated (positive emotional experience with

well-being and life satisfaction) or negatively associated (negative emotional experience with well-being and life satisfaction). The results confirmed that the SPANE-P (positive emotional experience) positively correlated with well-being (as reflected by the total score on the MHC-SF) and life satisfaction. As expected, the SPANE-N negatively correlated with well-being and life satisfaction. This is consistent with other studies that confirm the SPANE as a measure of positive and negative affect (Diener et al., 2010; Silva & Caetano, 2013; Sumi, 2014)

Despite finding support for the utility of the SPANE in the South African context it is important to acknowledge limitations of the study. Notably, the sample was non-randomized and consisted of a specific group of participants (undergraduate university students) which could limit generalizability. Further research employing probability sampling in a wider range of contexts, including other age groups, would serve to improve both generalizability of results as well as contribute to the body of knowledge on the measurement of affect in general and the SPANE in particular. Another recommendation is to explore measurement invariance of the SPANE across language groups and gender as both these factors may play a role in affective experience. The employ of differential item functioning analysis in this regard offers a potential avenue for such inquiry. An additional avenue for further inquiry pertains to the subtraction of ordinal data to generate the SPANE-B. This process is a notable limitation of the SPANE-B and critical

reflection need be exercised when working with this particular aspect of the SPANE. Finally, formal tests of the construct validity of the SPANE would improve the veracity of present findings, and are an important area for future research.

### **CONCLUSION**

In summary, the SPANE seems to be a valid and psychometrically sound instrument to measure positive and negative affect as a facet of well-being among South African university students. The problems with certain items identified in this study are minor in terms of their detracting from the overall scale properties. Rather, these findings extend the application and measurement of affect as a facet of well-being to the African context and confirms the universality of positive and negative experience. The SPANE merits use as a brief instrument to measure affective experience and its correlates as well as to explore positive psychological functioning of university students.



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Table 1 : *Descriptive statistics for all variables*

<b>Variable</b>	<b><i>M</i></b>	<b><i>SD</i></b>	<b>Observed Range</b>	<b>Possible Range</b>	<b><i>α</i></b>
SPANE-P	21.91	3.81	8-30	6-30	.84
SPANE-N	15.96	3.94	6-30	6-30	.79
SPANE-B	5.96	6.72	-19-24	-24-24	.85
MHC-SF	59.76	11.97	20-84	0-70	.90
SWLS	23.33	6.35	5-35	5-35	.82

Table 2: *Item locations and fit statistics for the SPANE-P*

<b>Item</b>	<b>Location</b>	<b>SE</b>	<b>Infit</b>	<b>Outfit</b>	<b>Infit t-</b>	<b>Outfit t-</b>
<b>Descriptor</b>					<b>statistic</b>	<b>statistic</b>
Positive	-0.22	.06	.91	.90	-2.1	-2.2
Good	-0.44	.06	.89	.92	-2.5	-1.9
Pleasant	0.16	.06	.92	.92	-1.8	-1.9
Happy	-0.65	.06	.92	.92	-1.8	-1.8
Joyful	0.05	.06	.84	.83	-3.9	-4.0
Contented	1.05	.06	1.46	1.53	9.2	9.9

Table 3: *Item locations and fit statistics for the SPANE-N*

<b>Item</b>	<b>Location</b>	<b>SE</b>	<b>Infit</b>	<b>Outfit</b>	<b>Infit t-</b>	<b>Outfit t-</b>
<b>Descriptor</b>					<b>statistic</b>	<b>statistic</b>
Negative	-0.17	.05	0.77	0.78	-5.5	-5.4
Bad	-0.01	.05	0.79	0.79	-5.0	-5.1
Unpleasant	0.27	.05	0.85	0.84	-3.5	-3.7
Sad	-0.30	.05	0.81	0.81	-4.6	-4.5
Afraid	-0.05	.05	1.54	1.53	9.9	9.9
Angry	0.25	.05	1.21	1.20	4.5	4.3

Table 4: *Correlation matrix of all measures*

	<b>MHC</b>	<b>SWLS</b>	<b>SPANE-B</b>	<b>SPANE-P</b>	<b>SPANE-N</b>
<b>MHC-SF</b>	1				
<b>SWLS</b>	.620 <sup>*++</sup>	1			
<b>SPANE-B</b>	.631 <sup>*++</sup>	.559 <sup>*++</sup>	1		
<b>SPANE-P</b>	.653 <sup>*++</sup>	.606 <sup>*++</sup>	.862 <sup>*++</sup>	1	
<b>SPANE-N</b>	-.443 <sup>*+</sup>	-.367 <sup>*+</sup>	-.872 <sup>*++</sup>	-.502 <sup>*++</sup>	1

\* Correlation is significant at the 0.01 level (2-tailed).

+ Medium correlation

++ Large correlation

Table 5: Correlation matrix with adjusted SPANE scales

		<b>ADJUSTED</b>	<b>ADJUSTED</b>	<b>ADJUSTED</b>	
	<b>MHC</b>	<b>SWLS</b>	<b>SPANE-B</b>	<b>SPANE-P</b>	<b>SPANE-N</b>
<b>MHC-SF</b>	1				
<b>SWLS</b>	.620 <sup>*++</sup>	1			
<b>ADJUSTED SPANE-B</b>	.636 <sup>*++</sup>	.539 <sup>*++</sup>	1		
<b>ADJUSTED SPANE-P</b>	.661 <sup>*++</sup>	.592 <sup>*++</sup>	.876 <sup>*++</sup>	1	
<b>ADJUSTED SPANE-N</b>	-.451 <sup>*+</sup>	-.350 <sup>*+</sup>	-.874 <sup>*++</sup>	-.531 <sup>*++</sup>	1

\* Correlation is significant at the 0.01 level (2-tailed).

+ Medium correlation

++ Large correlation