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Reliability and Validity Testing of Wagnild and Young's Resilience Scale in a Sample of Nigerian Youth

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ABSTRACT The aim of this study was to determine the validity and reliability of the 25-item Wagnild and Young's resilience scale in order to establish its suitability for use in Nigeria. 284 (males 154 (54.2%) and females 130 (45.8%) randomly selected sample participated in the cross-sectional survey.The results suggested that 22 of the initial 25 items of the scale were retained because items 11, 20 and 22 of the initial scale loaded below the .3 benchmark. Principal component analysis with varimax rotation produced 3 factors, against the 5 factors of the initial scale; a KMO test produced .91 and Alpha reliability coefficient of the total scale was .867, while for each subscales was .897, .644, and 605 respectively. It was concluded that 22 out of the 25 items on the scale are culturally relevant, but the scale is reliable and valid for use in Nigeria.

INTRODUCTION

Globally, individuals are exposed to challenging and difficult life situations such as life threatening events, loss of job, unemployment, terrorist attacks, poverty, natural disasters, and a host of others.There is no gainsaying the fact that Nigerian youths are part of the individuals who face these stressors around the world. In the face of these challenges, individuals do exhibit different behavioral reactions (Basim and Cetin 2010); some people are able to cope adequately well while others do not. This differential reaction to challenges raises a poser- what makes Nigerian youth thick in the face of adversities?

The answer may be found in that despite the various frustrating and psychologically disturbing experiences that many Nigerian youth encounter on daily basis, majority of them are still optimistic; they forge ahead with hope and tenacity, which invariably precipitates the question of whether Nigerian youth are more resilient than youth in other nations. Although very promising question for scientific exploration, unfortunately, the lack of indigenous measures that assess the construct of resilience put research in this area at bay. Nevertheless, extensive literature search revealed several measures of resilience which have been developed and used in many western countries; these include: Connor-Davidson Resilience Scale (Connor and Davidson 2003), Brief Resilience Scale (Smith et. al 2008), Resilience Scale for Adult (Friborg et al. 2003), Brief Resilience Coping Scale (Sinclair and Wallston 2004) and Wagnild and Young Resilience Scale (Wagnild and Young 1993). Of all these measures, Wagnild and Young's resilience scale has been reported as the best and most widely used (Wagnild 2009; Ahern and Kiehl 2006); the first developed resilience measuring instrument (Wagnild 1993); easy to use with focus on psychological qualities rather than deficits (Abiodun 2011) and its applicability cuts across adolescents to elderly age groups (Abiola and Udofia 2011).

Although there is an abundance of resilience measures, majority of these measures are mostly from western countries and little or nothing is available from the developing world, particularly Nigeria. The only validated resilience scale for use in Nigeria was the 14-item resilience scale which was done at Kano in the Northern part of Nigeria (Abiola and Udofia 2011). The need for validation of the 25 item scale for Nigerian use despite the 14 item scale already validated is necessitated because; longer scales have been reported to be better compared to shorter ones (Ahern et al. 2006; Ryan and Caltabiano 2009); besides, the 25 item scale has enjoyed wider usage with researchers reporting strong psychometric properties for the scale (Humphreys 2003; Christopher 2000; Heilemann et al. 2003).

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Unfortunately, it seems there is no study in Nigerian context on the validity and reliability of the 25-item Wagnild and Young's (1993) resilience scale. Based on this gap in literature, the primary purpose of this study was to determine the validity and reliability of the 25-item Wagnildand Young's (1993) resilience scale in order to establish its suitability for use in Nigeria. Thesecondary purpose of this study is to contribute to the body of knowledge on the cross-cultural usefulness of the 25-item Wagnild and Young (1993) resilience scale. Two research questions are therefore put forward in this regard: (a) Will the 25-item Wagnild and Young's scale be a valid and reliable scale for use in Nigeria? (b) Will all the 25 items be culturally relevant and retained on the scale for use in Nigeria?

Researchers have identified that Nigerian youth have positive thoughts about the future (Oladipo et al. 2012) despite low life satisfaction (Oladipo et al. 2012). The positive thoughts about the future seem to have become a motivating factor accounting for the supposed calmness in the face of the psychologically frustrating situation.

It is not unlikely that the positive thoughts about the future have motivated Nigerian youths to develop a wide variety of different coping skills, such as ignoring problems, venting frustration, thinking positively, and working on solving the problem (Neill 2008); which researchers like Luthar et al. (2000) and Masten (2001) have referred to as resilience.

Resilience as a psychological construct is defined as an individual's capacity to overcome stressful life situations and do well in spite of exposure to significant adversity (Cicchetti 2003; Luthar 2006; Masten 2001; Rutter 2000). Resilience has also been defined as *"…both the capacity of individuals to navigate their way to the psychological, social, cultural, and physical resources that sustain their well-being, and their capacity individually and collectively to negotiate for these resources to be provided in culturally meaningful ways"* (Ungar 2011). In other words, resilience is associated with such individual capacities as being able to form meaningful and useful attachments, capacity to self-regulate and the ability to interact in socially appropriate ways with members of the broader society or community (Luthar 2006; Masten 1999; Ungar 2011).

Although debate is still ongoing regarding whether resilience is a fixed, stable personality trait that is genetically transferred; a dynamic process that can start at any given moment in life, or a mix between the two, there is strong agreement that having higher degree of resilience can enhance better self-esteem, self-confidence and self-discipline (Portzky et al. 2010), courage and optimism in the face of misfortune (Luthar et al. 2000), moderate the negative effects of stress and promotes positive adaptation (Portzky et al. 2010).

A core of resilience is to minimize the impact of risk factors (such as stressful life events) and enhance the protective factors (such as optimism, social support, and active coping) that increase people's ability to deal with life's challenges (Smith et al. 2008). Therefore, having a good measuring instrument for resilience is a positive step towards assessing people's level of resilience in the face of several daily challenging situations since such a step has positive implications for mental health planning, policy, research and impact treatment and promotional outcomes.

Resilience has global cultural and contextual specific aspects (Ungar 2008), yet the available scales of measure were developed outside the African context which implies that such scales may not be culturally relevant within the African context, therefore, using them without revalidation will put a great limitation on the scale's usage and it will jeopardize the reliability of the studies conducted with such scales (Cheung and Leung 1998). It is of paramount importance to validate the resilience scale in order to establish its cultural relativity and validity for use within the Nigerian cultural context.

In addition to the above, young people are often faced with major life events that can pose a variety of stresses and psychologically disturbing circumstances to them (DeChesnay 2005; Williams and Lisi 2000), these life events are contextually specific risks related to their exposureand which are managed individually, within families or as communities. Therefore, while there may be global aspects of resilience which are relevant to youth internationally, resilience related patterns of functioning and expression are contextually distinct, and this needs to be put into consideration in the development of scales to measure resilience; therefore it might be needful to effect a reconstruction of some items in the scale so as to make it relevant and meaningful to the respondents within the cultural con-

text where the scale will be administered (Yang 2006).

An observation of unfolding events within Nigeria as a country shows that many young people cope and adapt despite being exposed to risk and adversity (Ahern 1996). What would easily have led to youth violence in some other countries have not produced same reaction among Nigerian youths. It is therefore necessary to investigate resilience among this population, with a view to being able to help youths better and advice policy makers better on issues relating to coping with life challenges. However, such an investigation cannot be done without a valid, reliable and culturally relevant instrument of measurement (Marshall et al. 2000), hence the need to establish the psychometric properties of the resilience scale for use in Nigeria.

The original resilience scale developed by Wagnild and Young (1993) was a 25-item scale which was developed based on narratives from elderly women who were interviewed because they were perceived to be successful and positively adapted following major and potentially harmful life events. From the narratives given during the interview, five personality characteristics constituting resilience (which eventually formed the bedrock of the 25-item resilience scale) were identified, namely: equanimity (a balanced perspective of one's life), meaningfulness (the understanding that life is meaningful and valuable), perseverance (the ability to keep going, even after setbacks), self-reliance (the belief in one's abilities and awareness of limitations) and existential aloneness (the recognition of one's unique path and acceptance of one's life).

Previous revalidation studies available for review suggests that the 25-item resilience scale is a valid and reliable tool for measuring resilience among adults (Ahern et al. 2006; Ryan and Caltabiano 2009) basically because of its reported good psychometric properties and total number of respondents in various studies, both from the original authors as well as others (Humphreys 2003; Christopher 2000; Heilemann et al. 2003, and Aroian and Norris 2000). Apart from reporting a valid and reliable scale, Portzky et al. (2010) in a Dutch adaptation of the Wagnild and Young Resilience Scale study, reported that all the 25 items of the original RS were retained, but a 4-point rather than a 7-point response was used and one item was re-worded by removal of the negation. They however maintained a two factor solution ('Personal Competence' and 'Acceptance of Self and Life') because they did not observe strong evidence for a five factor structure reflecting the ûve characteristics described by Wagnild and Young, mainly because of high secondary loadings. They concluded that the resilience scale is a valid and useful screening instrument to detect persons at risk, who could beneût from closer and prolonged psychological help.

On the contrary, Lundman et al. (2007) in another validation study to establish the psychometric properties of the resilience scale for Swedish use, reported a five factor structure of 'equanimity', 'meaningfulness', 'perseverance', 'existential aloneness' and 'self-reliance' reflecting the five dimensions described by Wagnild and Young. The five-factor solution comprised all 25 items and only four items contained double loadings. The factors could be labelled in accordance with the resilience theory without difficulties: meaningfulness (factor 1), equanimity (factor 2), self-reliance (factor 3), perseverance (factor 4), and aloneness (factor 5). Concerning the underlying structure some support for the theoretical assumptions were found, supporting that resilience is a multidimensional construct. These authors also reported that four items had double loadings that is, Item 3 'I am able to manage myself more than anyone else' loads in factor 5 (aloneness) as well as in factor 3 (self-reliance). Item 8 'I am friends with myself' loads in factor 1 (meaningfulness) as well as in factor 2 (equanimity). The other two items, item 9 'I feel that I can handle many things at a time' and 17 'My belief in myself gets me through hard times' loads in factor 3 (self-reliance) as well as in factor 1 (meaningfulness). Item 8 was placed in accordance with the highest factor loading, that is, factor 1. The other three were placed in accordance with theoretical assumptions rather than statistical. They concluded that the resilience scale is valid and reliable for use among the Swedish population.

Summarily, common research findings revealed a valid multi-interrelated components of resilience; a strong reliability coefficient for the entire scale as well as the dimensions, although factor loadings ranged between 2 – 5 factors (Connor and Davidson 2003; Friborg et al. 2006; Luthar et al. 2000; Maluccio 2002; Richardson 2002; Ryan and Caltabiano 2009).

METHODOLOGY

Design

The study adopted a cross-sectional survey design.

Participants

Participants were 284 randomly selected undergraduates from a University in Nigeria. The sample comprised of 154 (54.2%) male; 130 (45.8%) female. Distribution according to age showed that 16-20 years old were 127 (44.7%); 21-25 years 117 (41.2%); 26-30 years 40 (14.1%); academic level showed that 151 (53.2%) were in 100 level, 37 (13.0%) in 200 level, 38 (13.4%) in 300 level and 58 (20.4%); 400 level. Categorization based on religious affiliation revealed Christian respondents to be 235 (82.7%); Muslims were 47 (16.6%), while traditionalists were 2 (.7%). Distribution according to course of study showed that students in economics were 35 (12.3%) political science 38 (13.4%) psychology 118 (41.5%), and sociology 93 (32.7%)

Instrument

The 25-item, Likert format, Wagnild and Young (1993) resilience scale was used for data collection. It is self-reported summated rating scale, with responses ranging from strongly disagree (1) to strongly agree (7). Scoring and interpretation was in the following pattern: 25-100 very low resilience; 101-115 low resilience; 116-130 moderately low resilience; 131-145 moderately high resilience; 145-160 high resilience; 161-175 very high resilience, Wagnild and Young (1993) reported reliability co-efficient of .91 for the scale, while for the present study an Alpha reliability co-efficient of .861 was established, both indicating that the resilience scale is reliable.

Procedure for Data Collection

Data collection process was done within two weeks with the assistance of a colleague at the setting of the data collection. Sample was drawn among the students with the assistance of coordinators in charge of compulsory university courses. The minimum response time for the questionnaire was 5 minutes, hence it was possible to administer and collect back the questionnaire the same day. A total of 300 questionnaires were administered, but 284 were found adequate for data analysis. Others were rejected on the ground of mutilation or incomplete response.

Ethical Considerations

Participants' consent was obtained before administering the questionnaires on them and only participants who consented to participate were included in the study.

Data Analysis

All analyses were performed using the Statistical Package for the Social Sciences (SPSS) for Windows version 22. Internal consistency of the resilience scale and its sub-scales were evaluated according to Cronbach's alpha and to study the validity of the RS scale, a principal component analysis was performed. The number of factors retained was determined by the standard rule of retaining factors with eigenvalue > 1. Factor loadings were obtained after Varimax rotation in accordance with Wagnild and Young's original analyses on the RS scale. Factor loadings exceeding the value of 0.4 were accepted to meet the same criteria as used in the Wagnild and Young study. Specific analysis conducted is reported in the results section.

RESULTS

Factor Analysis

A principal components analysis with a Varimax (orthogonal) rotation to produce the dimension of differentiation of 25 Likert scale questions from the resilience scale was conducted on data gathered from 284 participants in order to confirm or not the scale construct validity. To define if the subscales were suitable for factor analysis, two statistical tests were conducted: The Barlet Test of Sphericity, which tests for the inter-independence of the sub-scales and the Kaiser-Meyer Olkin Measure of Sampling Adequacy (KMO), which examines sample sufficiency.

The factorability of the 25 items resilience scale was first examined. Initial correlation analysis conducted revealed that 22 of the 25 items correlated at least .3 with at least one other item,

suggesting reasonable factorability. Items 11, 20 and 22 were excluded in the analysis because the diagonals of the anti-image correlation matrix were < .5 (Schene et al. 1998; Hair et al. 1995). Again, the communalities for the three items were< .3 (Comrey and Lee 1992 cited in Tabachnick and Fidell 2001: 588).

After the initial correlation analysis, the Kaiser-Meyer-Olkin measure of sampling adequacy which compares the sizes of the observed correlation coefficients to the sizes of the partial correlation coefficients for the sum of analysis variable was carried out, which gave a result of .91, (91%), which is well above the recommended value of .6 (60%) and which is an indication that the sample data are suitable for factor analysis. The Bartlett's test of sphericity was also significant ($c^2(231) = 2117.049$, $p < .001$), which also affirms that the principal component analysis is valid. Based on the above, the 22 items were factor analyzed.

The result of factor analysis showed four factors with eigenvalues > 1. The first factor explained 33.28 percent of the variance, the second factor 7.18percent of the variance, third factor 5.71 percent of the variance and the fourth was 5.06 percent, this is shown in Table 1 a.

Table 1 b shows the communalities among the items before extraction; the communalities for all items is 1 because Principal component analysis works on the assumption that all variance is common. The communalities under extraction column reflect the common variance in the data structure, which is a representation of the variance in each variable that can be explained by the retained factor.

Table 1a: Total variance explained

	Component	*Initial Eigenvalues*		*Extraction sums of squared loadings*		
	Total	*% of variance*	*Cumulative %*	*Total*	*% of variance*	*Cumulative %*
1	7.322	33.283	33.283	7.322	51.223	51.223
2	1.579	7.175	40.458			
3	1.255	5.706	46.164			
4	1.113	5.059	51.223			

Extraction Method: Principal Component Analysis.

Table 1b: Communality table

S. No.	*Items*	*Initials*	*Extraction*
1	When I make plans, I follow through with them.	1.000	.559
2	I usually manage one way or another	1.000	.489
3	I am able to depend on myself more than anyone else	1.000	.478
4	Keeping interested in things is important to me	1.000	.464
5	I can be on my own if I have to	1.000	.476
6	I feel proud that I have accomplished things in life	1.000	.544
7	I usually take things in stride	1.000	.675
8	I am friends with myself	1.000	.430
9	I feel that I can handle many things at a time	1.000	.655
10	I am determined	1.000	.634
12	I take things one day at a time	1.000	.353
13	I can get through difficult times because I've experienced difficulty before	1.000	.454
14	I have self-discipline	1.000	.571
15	I keep interested in things	1.000	.478
16	I can usually find something to laugh about	1.000	.480
17	My belief in myself gets me through hard times	1.000	.384
18	In an emergency, I'm someone people can generally rely on	1.000	.360
19	I can usually look at a situation in a number of ways.	1.000	.474
21	My life has meaning	1.000	.655
23	When I'm in a difficult situation, I can usually find my way out of it	1.000	.616
24	I have enough energy to do what I have to do	1.000	.511
25	It's okay if there are people who don't like me	1.000	.529

Extraction method: Principal Component Analysis

Looking at Table 2 (component matrix table), when all items with initial eigenvalues < 1 were excluded, the factorization yielded fourfactors, the table shows 17 items loading under first factor;3 items under the second factor; 2 items under the third factor and only 1 item under the fourth factor. However, because of the rule that a single item loading under a factor is unacceptable (Costello and Osborne 2005), the factor analysis was repeated with the number of factors to be extracted specified to three. Thus, item 4 which was originally categorized under the fourth factor eventually loaded under the third factor. The three factors finally emerging were categorized in line with Wagnild and Young (1993) categorization as Meaningfulness, Perseverance and Self-reliance.

Table 2: Component matrix

	Components	*1*	*2*	*3*	*4*
resilience21	.765				
resilience10	.747				
resilience23	.729				
resilience3	.668				
resilience14	.657				
resilience15	.645				
resilience5	.628				
resilience19	.617				
resilience13	.616				
resilience24	.611				
resilience18	.595				
resilience17	.563				
resilience2	.554				
resilience16	.540				
resilience1	.538			.425	
resilience8	.507				
resilience7			.667		
resilience6			.512		
resilience9			.495		
resilience25		.481			
resilience12				.476	
resilience4					.519

Table 3 is a summary table for the principal component analysis conducted on the resilience scale showing the eigenvalues and percent of variance explained by each of the factors; the alpha coefficient for each of the factors as well as for the entire scale. It also shows the value of KMO and Bartlett's test of sphericity.

Figure 1 is a graphical representation of the eigenvalues which led to the determination of the number of the essential factorial axes. The graph presents a distinguished break up to the fourth factor after which an almost linear part of the eigenvalue curve follows. Thus the eigenvalues which are > 1 for all the four factors are considered (7.322, 1.579, 1.255 and 1.113 respectively).

Reliability

Reliability test was conducted for the scale and the result presented in this section. The composite reliability of the scale was tested using the emerging 22 items and a Cronbach's α reliability test. The result is presented in Tables 4 a and b.

Table 4a: Reliability statistics for the entire scale

Cronbach's Alpha	*Cronbach's Alpha based on standardized items*	*No. of items*
.867	.898	22

Table 4b: Scale statistics

Mean	*Variance*	*Std. deviation*	*No. of items*
130.99	699.760	26.453	22

From Table 4a, it was shown that the value of the Cronbach's co-efficient alpha of the entire scale is 0.867 = 86.7 percent, which is considered to be a good value for internal consequence of the conceptual construction of the scale being investigated (Anastasiadou 2010; Nouris 2006; Diamantopoulos and Siguaw 2000; Bagozzi and Yi 1988). With the reliability coefficient established for the scale, the resilience scale

Table 3: Principal component analysis summary

	Factor 1	*Factor 2*	*Factor 3*
Eigenvalues	7.322	1.579	1.255
Variance Explained (%)	18.647	14.712	10.536
Cronbach's ó for each of the factors	.897	.644	.605
Total Variance Explained (%)	51.223		
Total Reliability Cronbach's ó	.867		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy = 0.911			
Bartlett's Test of Sphericity: χ^2 = 2117.049, df = 231, p = 0.000			

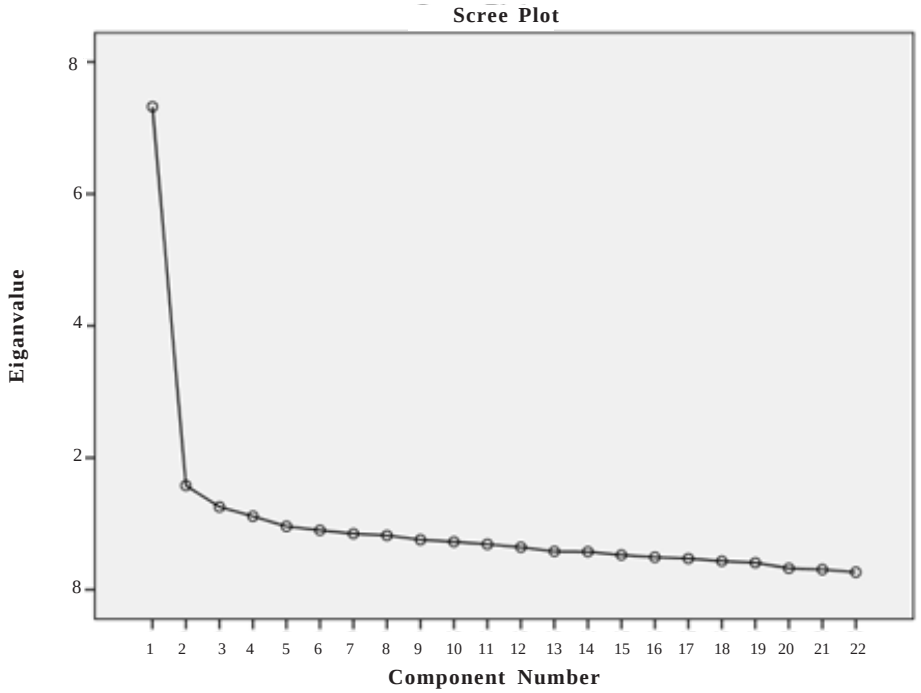

Fig. 1. Scree plot

can thus be adjudge a reliable scale for measuring resilience among samples in Nigeria.

DISCUSSION

The aim of this study was to determine the validity and reliability of the 25-item Wagnild and Young's resilience scale in order to establish its suitability for use in Nigerian. Initial inter-item correlational analysis carried out revealed that two items (11, 20 and 22) did not have significant correlation neither did they correlate significantly with at least three of the other items on the scale; therefore, they were excluded in the factor analysis. A face validation of the excluded items suggests ambiguity in wording within the cultural context in which the scale is being administered. For example, item 11 reads: 'I seldom wonder what the point of it all is' this may not make so much meaning to a Nigerian youth because it appears clumsy and not definitive. Such question regarding the meaning of the phrase 'what the point of all is' may arise. The ambiguity was reflected in the responses to the question as shown on the questionnaire as, many respondents selected the neutral option in response to that statement. The situation may probably have been different if a specific situation or experience is referred to in the item.

Item 20 which reads: 'sometimes I make myself do things whether I want to or not' suffered the same fate as item 11. Although the wording appears clear and understandable, the responses were also neutral. This may be attributed to the cultural practices in the culture where the scale was administered. Individualistic life is not common among most Nigerian; communal living and practice of the extended family structure is still existent. Therefore, an individual may not feel like doing something but he goes against his will or her will in order to satisfy other significant figures in his life. Others in the immediate or extended family, or other social groups and organization may exert significant influence on the decision of the individual either for or against a particular issue. The contrary is the case in the Western world where an adult is allowed to live almost an absolute independent and autono-

mous life with little or no direct influence from his parents or significant others around him.

Item 22 reads: 'I do not dwell on things that I can't do anything about'. This may also sound ambiguous to respondents within the culture where the scale is being administered; this is because most Nigerians are religious and the religions teach that one should not give up in the face of challenging situations. People are encouraged to keep exercising faith and holding on tenaciously, even when it seems that there is no solution to the problem at hand. The impression is created that anyone who gives up or does not follow through is a coward or a weakling. Therefore individuals keep trying and seeking for means of getting solutions to naughty issues no matter what and how long it takes. This might have affected the response to this item on the scale and the eventual exclusion based on the result of analysis. The exclusion of the three items eventually reduced the total items on the scale to 22, as against the 25 which were on the original scale.

The result of analysis suggests that the resilience scale demonstrated sound psychometric properties, with good alpha reliability coefficient for the entire scale and the three dimensions that emerged after factorization. Analysis of the factor composition of the resilience scale initially revealed four factors, with 17 items under the first factor, 3 items under the second factor, 2 items under the third factor, while the fourth factor had only 1 item. However, because of the rule that a single item loading under a factor is unacceptable (Costello and Osborne 2005) the factor analysis was repeated, with the number of factors to be extracted specified to three, thus item 4 which was originally categorized under factor 4 eventually loaded under factor 3. The three factors finally emerging were categorized in line with Wagnild and Young (1993) categorization as Meaningfulness, Perseverance and Self-reliance respectively.

In line with previous research reports, the results of analysis in this study suggested that That Wagnild and Young's resilience scale is valid and reliable, having strong psychometric properties (Ahern et al. 2006; Ryan and Caltabiano 2009), however, the study establish a 3 factor scale rather than the five factors reported by the original developers of the scale and other researchers such as Hardy et al. (2004) and Portzky et al. (2010) and four factors reported by Lundman et al. (2007).

It thus implies that that though the Wagnild and Young 25 item resilience scale has strong psychometric properties, there are cultural variances in the understanding and perceptions of some of the items on the scale, therefore the need for revalidation before usage in a setting other than the original setting where the scale was developed.

CONCLUSION

Conclusively, positive psychology recognizes the value of assessing and developing individuals' strengths to increase positive adaptation and resilience is one of those strengths. The assessment and development of resilience in youthful age is important, because at that stage, many young people are faced with many stresses, challenges and changes that are peculiar to that developmental stage. The findings of the present study suggest that the resilience scale is a reliable and valid measure that has sound psychometric properties and can be administered on Nigerian samples. There was no strong evidence for a ûve dimensional structure, therefore, a three component solution with the three factors 'Meaningfulness', 'Perseverance' and 'Self-reliance' was maintained.

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