



The value for Life (VfL) hypothesis and the Value for Life Scale (VfLS): Conceptualization, development and initial validation

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ABSTRACT

Recent trends of violence in societies across the world have given rise to renewed interests by scholars across disciplines in research on peace, conflict, tolerance and other violence-related concepts. Levels of tolerance across cultures and religions have also greatly decreased and this turn of events has necessitated inquiry into the real value of and for life. We hypothesize that individuals' value for life (their lives, the lives of other humans as well as the lives of other living things) has serious indications and implications across levels of tolerance, suicidal/genocidal behaviours, murder intentions, commitment to climate change mitigation, stereotypes, prejudice and psychopathy. However, value for life as a concept has received little or no scientific exploration and therefore little is known about how value for life may be influencing individuals' day to day cognitions, attitudes and behaviors. If the influence of value for life is to be determined scientifically, a psychometrically sound and valid measure of the concept is required. In this study, we present the premise alongside evidence for the need of a psychological enquiry into Value for Life. We also offer the theoretical framework around which further studies in the area of Value for life may revolve. Finally, we present evidence for the reliability, validity and factor structure of the value for life scale (VfLS) developed to assess individuals' self-reported value for life. The reliability and validity (established using exploratory and confirmatory factor analysis, including construct validity) in three studies supported the utility of the Value for Life Scale. We encourage other researchers to conduct investigations on the postulations of the hypothesis and obtain further psychometric indices for the measure of value for life.

Introduction

Recent trends of violence in societies across the world have given rise to renewed interests by scholars across disciplines in research on peace, conflict, tolerance and other violence-related concepts. Most countries have witnessed one form of terror attack or the other and various forms of groups are springing up in different parts of the world (Institute for Economics and Peace, 2017). Some of these groups emerge as a resistance to some form of political or religious ideology. Some are birthed as a result of insurgency while others are a result of a mere desire to terrorize the society and get rich in the process or to attain a level of significance or relevance in the society. Religious extremism is also not to be left out as one of the leading causes of present-day violence and terrorism experienced in most parts of the world. In Nigeria, for instance, different terrorist or militia groups have emerged: Boko Haram in Northern Nigeria, Movement for the Emancipation of the Niger Delta (MEND), Egbesu, Niger Delta Liberation Front, etc. Violent cases of kidnapping and ritual killings also exist in the south eastern and south western parts of Nigeria. Violent forms of communal clashes and climate change induced farmers/herders' clashes in the middle Belt (North Central) region of the country are also not to be left out. In places where these extreme forms of violence are absent, human – induced climate change is a leading cause of earthquakes, wild fires, tornadoes and tsunamis which are also violently claiming lives.

It is therefore no longer strange to report the loss of hundreds of lives due to one terror attack or natural disaster.

As this trend in loss of human lives across the globe has progressed, scientist and other researchers have over the years began to seek ways of answering enormous questions being posed. Scientists and researchers interested in resolving the issues of extreme human violence have extensively studied peace and conflict resolution approaches and strategies. Others who believe that the disharmony in nature which gives rise to climate change and its accompanying natural disasters can be resolved have sought ways to heal the relationship between humans and nature by proposing pro- environmental and ecological behaviours. All these represent excellent efforts of scientists and researchers to heal the world and make it a better place. Since little results have been achieved (violence remains on the increase and new terror groups are springing up; climate change is still rumored to be a hoax and governments across the world are yet to agree on whether it is happening or not and if it is happening what the best approach at curbing it should be. There is need for more efforts by researchers to identify a lasting solution to human violence. It is due to this need therefore that the study and inquiry into value for life has emerged as an attempt to explain life-threatening violent behaviour in human beings. In explaining this, the present research puts forth the value for life (VfL) hypothesis as an explanation to individuals' value for life.

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The value for life hypothesis does not claim to be the first theory that explains violent behaviours, but rather to be the first to be drawn from pre-existing theoretical frameworks to build a wholistic approach to understanding human nature in general and specifically in relation to violent behaviours. Value for life is an emerging hypothesis and has a prospect to growing and becoming a large field of study in positive psychology. Therefore, the present study seeks to conceptualize it, operationalize it, and empirically establish its validity.

The value for life hypothesis and its basic assertions

The Value for Life (VfL) hypothesis states that human beings who have the greatest value for life (human, animal and plant life) will exhibit the most rational and civilized forms of behaviour, be less prone to violence, and consequently experience or report the least experiences of psychopathologies than their counterparts who have lower value for life. This hypothesis assumes that all other circumstances held constant, the amount of value (VfL) individuals place on life (human, animal, plant and the life after death) would predict a wide range of behaviours. Although the term value for life is commonly used, it has not been given attention in the scientific world and especially within the field of Psychology. The empirical study of the Value for Life concept requires a definition of Value for Life that is independent of pre-existing related theories or concepts. This new operational definition will therefore be utilized to test the validity of the VfL theory as well as its relationship with other theories and variables. This study will also attempt to develop such a preliminary and fundamental definition of Value for Life as a psychological construct based on phenomenological analysis of individuals' accounts of Value for Life.

Value for life is therefore operationalized as individuals' self-reports of the regard, worth, usefulness as well as their judgments of the importance of life. Firstly, stating that an individual has value for life implies that such an individual holds in high regard his/her life, the life of other human beings, the life of plants, the life of animals, and by extension of the current value placed on life in this present state (world; and holds in high regards the life to be lived after death, that is, the life beyond earth. Thus, it can be stated that when an individual claim to have value for life, it implies that;

- a. He/she holds positive attitudes towards his/her life, the life of others, the life of animals, the life of plants, and to a relatively reasonable extent, regards the life after death and is currently working towards achieving it.
- b. The concept of value for life provides him/her a structure or framework around which most (if not all) of his/her life activities revolve, that is to say, that value for life is the fulcrum around which his/her life rotates or revolves.
- c. He/she to a great or relatively acceptable extent, perceives his/her life as in several (if not all) activities aiming towards maximal value for life.
- d. He/she, if presented with the opportunity, will express in ways observable and quantifiable, value for life.

Development, reliability, validity and factor structure of the Value for Life Scale (VfLS)

Anastasi (1976) stated that among the major procedures in current use for test development are those based on content validation, empirical criterion keying, factor analysis and personality theory. These techniques, however, are not completely alternative or mutually exclusive. There is the

possibility to utilize two or more of these at the same time and according to Anastasi (1976), these techniques can be combined theoretically in the development of a single personality inventory. In the development of the VfLS therefore, the above-named techniques were drawn upon. Specifically, content validity was employed as the initial item pool was drawn from previous studies of qualitative analysis with individuals. The concept of value for life was derived from the researchers' previous works on the lived experiences of internally displaced persons, victims of sexual violence and children on the street (see Iorfa, 2019; Effiong, Ibeagha, Chukwuorji, Ariku, & Iorfa, 2019; Iorfa, Apejaye, Ariku, & Eche, 2019; Iorfa, Ifeagwazi, Chukwuorji, & Echa, 2018; Iorfa, Ifeagwazi, Chukwuorji, Agashua, & Ugwu, 2018; Iorfa, Chukwuorji, Ifeagwazi, Ibeagha, & Agashua, 2018) as well as personal communication with certain authorities wherein value for life was a recurrent theme. Initial items pooled and winnowed were drawn from responses to interviews. Thereafter, extensive factor analyses and other validity and reliability checks were conducted.

Study 1

The process of content validation entails formulating/pooling items in reference to existing verifiable literature obtained either by qualitative studies or interviews with experts. However, content validation is seldom used alone in test development. It is often accompanied with certain empirical statistical checks.

Item Pooling and winnowing

A qualitative study exploring the perceptions of people as regarding value for life was undertaken. Therefore, using hermeneutic phenomenological approach, their responses were qualitatively analyzed and organized into five themes which form the five domains for the VfLS. From the overarching and reoccurring themes also, a total number of over 100 items were initially pooled. The proposed contents were discussed among the researchers prior to the pilot investigation and minor adjustments were made according to the outcome of the discussions. Items were face validated by experts in the department of psychology, religion and philosophy in the University of Nigeria Nsukka. The researchers again evaluated these items based on the feedback from the experts, and 67 were retained. These 67 items were administered to obtain data for reliability and initial factor analysis.

Method

Participants, measures and procedure

Participants in this study were 200 undergraduate students. Their mean age was 20.5 years ($SD=3.1$). Participants were 50% female; mostly Christians (80%), followed by Muslim (15%), and others (5%). They completed the 67-items VfLS.

Results and discussions

We subjected the 67 items to a principal-axis factor analysis (PFA) with oblique, direct oblimin rotation ($\text{deltas} = 0$). We chose PFA over principal-components analysis (PCA) because PCA introduces more spurious common variance into solutions (Comrey, 1988), assumes perfect measurement (Finch & West, 1997), and is more appropriate for data reduction than latent variable identification (Floyd & Widaman, 1995). Scree-plot analysis indicated that eight factors could be present in the data, with eigenvalues of 12.25, 11.02, 9.66, 8.82, 3.10, 2.92, 1.87, and 1.08; but strongly suggested the existence of five dominant factors. We examined the rotated pattern matrix of the initial item pool vis-à-vis observing results from the reliability analysis to check for items that either double-loaded or had weak loadings and for which it was suggested they should be removed to

increase the scale's total Cronbach's α reliability coefficient. Reliability analysis suggested the removal of some items which also conformed to the PFA results. Evaluating the results based on theoretical expectations, we observed that the first factor clearly tapped the value for one's life, the second factor captured one's value for the life of others, the third factor captured one's value for the life of plants, the fourth factor captured one's value for the life of animals and the fifth factor captured the value for one's life after death (or the life beyond the earth). These five factors were of substantial theoretical interest given previous research in lived experiences of internally displaced persons (Iorfa, Ifeagwazi, Chukwuorji, & Echa, 2018; Iorfa, Ifeagwazi, Chukwuorji, Agashua, & Ugwu, 2018), children on the street (Effiong, Ibeagha, Chukwuorji, Ariku & Iorfa, 2019) and victims of sexual molestation and abuse (Iorfa, Apejoye, Ariku, & Eche, 2019; Iorfa, Chukwuorji, Ifeagwazi, Ibeagha, & Agashua, 2018). Factors 6, 7 and 8 appeared to be redundant and had items from the other factors double load on them with weak loadings.

Thereafter, we extracted the five principal factors from the 67 items and obliquely rotated them. To create independence between the scales, we used a criterion of factor loadings above .60 for item retention (see Watson, Clark, & Tellegen, 1988). Thirty-three items met this criterion (7 on the value for one's life subscale, 6 on the value for the life of others subscale, 6 on the value for life of animals subscale, 7 on the value for the life of plants subscale and 7 on the value for one's life after death subscale). We further did a reliability analysis for the scale in order to further refine the scale and probably bring the items on a uniform number for each subscale. It was suggested that two items if removed, will raise the scale's total Cronbach's alpha value to .94. Thus, we were left with 31 items for the scale, 7 items for the value for one's life scale and 6 items for all the other subscales.

Study 2

We used CFA to further refine the items for assessing value for life across the proposed five dimensions. The modification indices and empirical tests of model fit available in CFA provide reliable evaluation and information for refining and revising scales (Floyd & Widaman, 1995).

Method

Participants and procedure

Participants in study 2 were 360 undergraduate students sampled at two different time points ($n_{\text{Time 1}} = 240$; $n_{\text{Time 2}} = 120$). Their mean age was 23 years ($SD = 8.43$). Participants were 50% female; mostly Christians (96%), followed by Muslim (3%), and others (1%). They were administered the 31 item VfLS alongside other measures of relevant psychological variables and demographic questionnaire.

Measures

Alongside assessment of demographic variables, other measures were distributed with the 31 item VfLS to the participants to obtain evidence of convergent and discriminant validity for the VfLS. All measures used were selected because of demonstrated validity and reliability in previous studies in Nigerian samples. The measures were considered relevant for convergent and discriminant validity of VfLS.

The Satisfaction with Life Scale (SwLS)

The SwLS (Diener, Emmons, Larsen, & Griffin, 1985) is a widely used and well-validated measure of life satisfaction. Satisfaction with life represents the cognitive aspect of subjective well-being (Lucas, Diener, & Suh, 1996).

Responses are made using a 7-point scale ranging from *strongly disagree* (1) to *strongly agree* (7) to rate the scale's five items. The SWLS has demonstrated good reliability, as well as convergent and discriminant validity (see Pavot & Diener, 1993). Steger, Frazier, Oishi, & Kaler (2006) reported a good internal consistency reliability (Cronbach's $\alpha = .84$). A previous study in Nigeria has reported that the SwLS had a good internal consistency reliability (Cronbach's $\alpha = .83$, Anazonwu, Nwafor, Nweke, & Dike-Aghanya, 2018). For the present study, a Cronbach's alpha reliability coefficient (α) of .80 was obtained.

The Consideration of Future Consequences Scale (CFCS)

The CFCS (Strathman, Gleicher, Boninger, & Edwards, 1994) is a 12-item scale made up of five positively worded items and seven negatively worded items. Responses are made on a 5-point Likert-type scale ranging from 1 (*very unlike me*) to 5 (*very like me*). Following the pattern in other studies (e.g. Joireman, Balliet, Sprott, Spangenberg, & Schultz, 2008), the positively worded items were summed to yield a CFC-F (future) score, indicating active consideration of future consequences, in this study. The negatively worded items were reverse-scored and were summed to yield a CFC-I (immediate) score, so that CFC-I score reflects active consideration of immediate consequences. Strathman et al. (1994) reported internal consistency estimates for CFCS scores in college student samples ranging from .80 to .86, a 2-week test-retest reliability coefficient of .76, and a 5-week test-retest reliability coefficient of .72. In a Nigerian sample, the scale had acceptable reliability and validity indices (see Iorfa, 2019). For the present study, Confirmatory Factor Analysis yielded NFI = .90, CFI = .91 and RMSEA = .05 (Confidence intervals = .04, .07) suggesting that the scale is moderately fit for use among the current population. Internal reliability coefficients of $\alpha = .79$ and $\alpha = .82$ were obtained for the CFC-F and CFC-I, respectively.

Purpose in Life (PIL) Test

The 20-item PIL test (Crumbaugh & Maholick, 1964) was used in this study as well to assess respondents reported levels of meaning and purpose in life. The PIL scale had generally demonstrated good convergent validity with measures of well-being and distress, as well as good internal consistency (e.g., Zika & Chamberlain, 1992). The PIL provides participants with unique anchors for each item, some of which are bipolar, some of which are unipolar, and some of which provide an indeterminate continuum (that is, "If I could choose, I would . . . prefer never to have been born", through "live nine more lives just like this one"). In the present study, the internal consistency reliability was good, with a Cronbach's α of .78.

The Brief Inventory of Thriving

The BIT (Su, Tay & Diener, 2014) was used to assess participants' perceived levels of thriving in life. It is a 5-point Likert-type scale, consisting of 10 items, responded to on a response format ranging from strongly disagree to strongly agree. It consists of items such as "There are people who appreciate me as a person", "I feel a sense of belonging to my community", "I feel good most of the time", etc. All items are directly scored. Possible range of scores was from 10-50. High scores indicate that an individual is thriving while low scores reflect a negative evaluation of one's life suggesting low levels of thriving and consequently languishing. The validity and reliability of the BIT has been demonstrated in various studies. For example, Su, Tay, and Diener (2014) reported a reliability coefficient of $\alpha = .90$. In Nigeria, Chukwuorji, Iorfa, Nzeadibe and Ifeagwazi (2017) reported a Cronbach's α of .87. Also, Ugwu, Iorfa, Ogba, Effiong, and Ugwu (2018) reported a Cronbach's α of .80. A Cronbach's alpha reliability coefficient (α) of .88 was obtained for the present study.

The RCI-10 (Worthington et al., 2003) assesses one’s level of religious adherence in daily life and the extent to which an individual interprets life events based on his/her religious views. The 10 items are scored on a 5-point Likert type scale: not at all true of me (1), somewhat true of me (2), moderately true of me (3), mostly true of me (4) and totally true of me (5). Sample items of the scale include: ‘my religious beliefs lie behind my whole approach to life’ (intrapersonal), and ‘I enjoy working in the activities of my religious organization’ (interpersonal). Worthington et al. (2003) reported 6 different studies for the development and refinement of RCI - 10, in large heterogeneous samples, including college students and university undergraduates. Scores on the RCI-10 had strong estimated internal consistency with Cronbach’s alpha ranging from .93 - .96 (Worthington et al., 2003). A previous study in Nigeria had confirmed the two-factor structure of RCI-10 (See Ifeagwazi & Chukwuorji, 2014), while Chukwuorji, Ituma and Ugwu (2018) obtained Cronbach’s α of .85 (full scale), .79 (intrapersonal religious commitment) and .74 (interpersonal religious commitment). Iorfa, Ugwu, Ifeagwazi and Chukwuorji (2018) obtained Cronbach’s alpha values of .80 for the full scale as well as acceptable goodness of fit indices for a one factor structure. Higher scores on the inventory indicate higher religious commitment. For the present study, a Cronbach’s α values of .89 was obtained for the full (composite) scale.

Procedural and Distributive Just World Scale (JWS)

The JWS (Lucas, Alexander, Firestone, & LeBreton, 2007) is an 8-item scale that measures individuals’ beliefs about the fairness of the world. It was designed to assess the extent to which individuals believe in a just world, that is a world which is fair and where people get what they deserve. It distinguishes between Procedural Just World (PJW): a belief in a world with “fair rules, procedures, and interpersonal treatment” and Distributive Just World (DJW): a belief in a world with “fair outcomes”. All items were answered using a 7-point Likert-type scale ranging from ‘strongly disagree’ to ‘strongly agree’. Lucas, Zhdanova and Alexander (2011) reported a Cronbach’s α reliability of .92 for the PJW and α of .92 for the DJW domains. In a second study, Lucas et al. reported Cronbach’s α of .89 and α of .88 for the PJW and the DJW respectively. For the present study, a Cronbach’s α of .88 was obtained for the composite scale while the PJW and DJW domains yielded α of .84 and .72, respectively, suggesting that the items have relatively high internal consistency as recommended by Cortina (1993). Confirmatory Factor Analysis yielded an NFI = .89, CFI = .90 and RMSEA = .06 (confidence intervals [0.04, 0.08]) confirming the 2-factor structure and suggesting that the scale is moderately fit for use among the current population.

Table 1: Summary of fit indices for confirmatory factor analysis in study 2

Study	N	χ^2	GFI	AGFI	TLI	CFI	RMSEA	α (Factors 1, 2, 3, 4 & 5)
2	360	67.48	.97	.95	.96	.95	.05	.87, .86, .89, .91 & .89

Note. GFI= goodness-of-fit index; AGFI= adjusted goodness-of-fit index; TLI =Tucker–Lewis index; CFI = comparative fit index; RMSEA= root-mean-square error of approximation

Descriptive statistics and relations with demographics

Mean scores were 10.5 (*SD* = 2.3), 11.1 (*SD* = 2.1), 9.5 (*SD* = 3.3), 8.68 (*SD* = 1.1) and 8.4 (*SD* = 2.2), on the five subscales, respectively. Scores on the five subscales did not differ across gender nor religion. We however observed significant correlations ($r = .26, p < .01$) between age and the fifth factor (value for the life after death/the life beyond earth) suggesting that older participants scored higher on this subscale than their younger counterparts.

Data obtained was analyzed using Pearson’s correlation in SPSS version 22 and CFA using the structural equation modelling package IBM SPSS AMOS 24. The AMOS package affords researchers the opportunity of assessing goodness of fit of a scale across varying indices such as the root-mean-square error of approximation (RMSEA), the goodness-of-fit index (GFI), the adjusted goodness-of-fit index (AGFI), the Tucker-Lewis index (TLI), comparative fit index (CFI), etc. Finch and West (1997) recommended that scores below .90 indicate acceptable fit, except for the RMSEA, on which values below .10 indicate adequate fit (Browne & Cudeck, 1993). However, more recently, Kline (2005) as well as Hooper, Coughlan and Mullen (2008) suggested that values equal to or greater than .95 demonstrate more excellent fits for the GFI, AGFI, TLI and the CFI, while for the RMSEA and the RMR (root mean square residual), values equal to or less than .08 represent acceptable fits, and as they get closer to zero, the better the fit.

We ran CFA with the 31 item VfLS but did not achieve acceptable fit with the five-factor model proposed. The chi-square was highly significant ($p < .01$) and other fit indices were poor (GFI = .64, CFI = .73, RMSEA = .16). It was observed that the third item on the fifth factor greatly reduced model fit (modification index (13.67) and had a low factor loading (.37) and was therefore removed leaving all five factors with 6 items each. We then conducted a CFA with the remaining 30 items. Modification indices still suggested that allowing several residuals to covary and eliminating a total of two items from the first and fifth factor (items with asterisks in the appendix) would improve the scale’s overall model fit. However, based on theoretical considerations of item and scale content, we did not allow residuals to covary, neither did we eliminate further, any item. This was because the model fit indices were at this point acceptable and we wanted uniformity in the number of items across the factors. All items as well by this time had significant factor loadings (.60 and above). See the Appendix for the final, 30-item VfLS.

In the course of this refinement we had struggled with sacrificing the traditional psychometrics concern of sufficient items per factor (internal consistency, Clark & Watson, 1995) on the altar of achieving the best model fit. However, the model which best balanced the concerns regarding model fit and internal consistency comprised six items per factor (see the Appendix). The summary for the fit indices alongside internal consistency for the 30-item, 5-factor model using data from studies 2 are presented in Table 1. We further performed a PFA to calculate item cross-loadings, which were not estimated in CFA. We observed that all items loaded more highly on their intended factors (.82 to .89) than on the others (.21 to .30).

Convergent and discriminant validity

We computed correlations among the final VfLS subscales and other variables (see Table 2). As theoretically expected, the value for life subscales had significant correlations among themselves and among variables which theoretically were expected to correlate with them. Consideration of future consequences significantly converged with the value for life subscales while consideration of immediate consequences had

negative correlations with the fifth factor measuring value for life after death/life beyond the earth. Purpose in life correlated positively with the value for one's life, value for the life of others and value for one's life after death factors. This pattern of convergence was replicated for thriving and procedural just world beliefs. Life satisfaction and distributive just world

beliefs converged with all the five factors of the VfLS. Index of religiosity converged with all except the value for the life of plants factor. We obtained evidence for discriminant validity from the non-significant associations between some factors of VfLS and consideration of immediate consequences.

Table 2: Correlations between VfLS subscales and other measures in studies 2 & 3

Variables	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Factor 1	-.00				
Factor 2	.26**	-.00			
Factor 3	.21**	.27**	-.00		
Factor 4	.26**	.22**	.19*	-.00	
Factor 5	.34**	.21**	.25**	.21**	-.00
CFC-F ^a	.22**	.24**	.31**	.28**	.45**
CFC-I ^a	.09	.11	.16*	.12	-.20**
Purpose in life ^a	.36**	.23**	.10	.08	.21**
Thriving ^a	.26**	.16**	.13	.11	.20**
Life satisfaction ^a	.31**	.22**	.21**	.19*	.21**
PJW ^b	.22**	.21**	.08	.10	.08
DJW ^b	.19**	.21**	.22**	.24**	.17*
Religiosity ^b	.26**	.27**	.19*	.10	.52**
Prosociality ^c	.28**	.38**	.21**	.25**	.22**
Proenvironmentalism ^c	.31**	.23**	.53**	.61**	.21**
Suicidal ideation ^c	-.27**	-.08	.13	.09	.20*
Life regard ^c	.33**	.28**	.19*	.17*	.26**
Social desirability ^c	.02	.08	.03	.07	-.10

Note. Sample sizes differ because not everybody completed the same measures, although the VfLS was part of all the questionnaire packs. ^an = 240; (study 2a) ^bn = 120 (study 2b); ^cn = 280 (study 3); *p < .05; ** p < .01; *** p < .001.

Summary of study 1 and 2

In Study 1, exploratory factor analysis results identified five factors for the VfLI, labeled value for one's life, value for the life of others, value for animal life, value for plant life and one's value for the life after death/life beyond the earth. In Study 2, a CFA indicated that the best model was one in which each factor was measured with 6 items. Also, all five factors were shown to be highly internally consistent. In addition, theoretically expected convergence with and discrimination from other measures were observed. To assess the robustness of the factor structure, we sought replication in an independent sample.

Study 3

Reise, Waller and Comrey (2000) suggested that as regards CFA, often, replication with another independent sample is important in order to concretize the findings. Therefore, study 3 offers results for further validation using CFA in a replication sample. Study 3 was conducted in order to further establish the convergent and discriminant validity of the VfLS subscales and confirm the factor structure in a replication sample using CFA.

Participants and procedure

Participants were 280 persons randomly selected from the Nsukka campus of the University of Nigeria, Nsukka. Their mean age was 38 years (*SD* = 9.15). Participants were 50% female; and mostly Christians (99%). They completed the 30 item VfLS alongside other instruments and demographic questions.

Measures

Pro-environmental Behavior Scale: PEB scale (Tapia-Fonllem, Corral-Verdugo, Fraijo-Sing, & Duron-Ramos, 2013) was used to assess pro-environmental behaviour. It is a 16-item self-report instrument designed to measure individuals' environmentally friendly actions across a series of behaviours including the report of actions such as reuse, recycling, energy conservation, etc. It is adapted in this study to measure individuals' pro-environmental behaviour. Sample items include, "I look for ways to reuse things", "I collect and recycle

used paper", etc. There was only one reversed item. Respondents were required to indicate their level of agreement with each item on a 5-point Likert scale response format ranging from strongly disagree to strongly agree. Psycho-environmental researchers have reported high and relevant psychometric properties for the scale. For example, Tapia-Fonllem, Corral-Verdugo, Fraijo-Sing and Duron-Ramos (2013) reported a Cronbach's α of .72, while Chukwuorji, Ndata, Anih, Nwonyi and Ndukaihe (2019) reported alpha coefficient of .79.

Marlowe-Crowne Social Desirability Scale: The 33-item Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1960), is a widely used inventory that assesses the need to obtain social approval using a series of statements concerning socially desirable opinions or behaviours that most people cannot truthfully claim to adhere to at all times, as well as 14 statements of socially undesirable opinions or behaviours that have been true for most people at least some of the time (α = .80). Those who respond true to many of the socially desirable and false to many of the socially undesirable statements have a high need for social approval that is presumed to affect their responses to other psychological measures.

The Scale of Public Attitudes about Suicide (SPAS)

The SPAS, developed by Li et al (2011) was used to assess attitudes towards suicide. The SPAS include 47 items; 44 items are divided into seven attitudinal subscales that reflect different attitudes towards suicide while the remaining three items assess basic knowledge about suicide. Subscale 1 includes 6 items assessing beliefs about suicide prevention (preventability); Subscale 2 includes five items assessing beliefs about individuals' ability to control suicidal tendencies (self-control); Subscale 3 includes ten items assessing respondents' feelings of stigma towards suicide (stigmatization); Subscale 4 includes seven items assessing respondents' feelings of empathy and understanding for persons with suicidal behavior (understanding and empathy); Subscale 5 includes six items assessing respondents' beliefs about suicidal behavior as an effective method of controlling others (controlling others); Subscale 6 includes five items assessing respondents' views of suicide as a social problem (social importance); Subscale 7 includes five items assessing respondents' categorization of

suicides and suicide attempts (dissimilarity). Li et al (2011) reported the internal consistency and test-retest reliability of six of the seven SPAS subscales as good to excellent. Cronbach's α and intraclass correlation coefficients [ICC] ranged from .62 to .87; but subscale 6 (about the belief that suicide is an important social problem) had relatively low internal consistency (Cronbach's α = .48) and fair test-retest reliability (ICC = .59). In the present study, we used the sum of scores on the preventability and self-control factors. We obtained an internal consistency reliability, Cronbach's α = .84.

The Life Regard Index (LRI)

The LRI (Battista & Almond, 1973) is a 28-item scale that assesses positive life regard, which is defined as the extent to which a person has a valued life framework, or meaning in-life structure, and believes that this framework is being fulfilled. The LRI has two subscales, each consisting of 14 items that purport to measure the framework (FR) and fulfillment (FU) aspects of life regard, with equal numbers of positively worded and negatively worded items (e.g., "I have a very clear idea of what I'd like to do with my life" and "I don't really value what I'm doing"). In the original formatting, the items were rated on a 5-point Likert scale ranging from 1 (disagree) to 5 (agree). Debats (1998) recommended altering the original presentation of the items, which consisted of seven positively worded items followed by seven negatively worded items, seven positively worded fulfillment items, and seven negatively worded fulfillment items. Debats (1998) also suggested that replacing the 5-point item rating scale with a 3-point scale, arguing that a 3-point rating scale would disrupt extreme response sets. However, no published studies of the LRI have revealed evidence of such extreme response sets. We adopted the original 5-point item rating scale but retained Debats's (1998) reordering of items as done by Steger (2007). The LRI has demonstrated high internal consistency reliability in previous studies (e.g., Zika & Chamberlain, 1992), as well as Steger (2007) reporting Cronbach's alpha .93 for the full scale and .87 and .89 for framework and fulfillment subscales, respectively. Reliability analysis for the present study yielded a

Cronbach's α reliability of .91.

Prosocial Behavior Intentions Scale

The Prosocial Behavior Intentions Scale (Baumsteiger & Siegel, 2019) is a 4-item measure of personality that assesses individuals' prosocial behavior intentions. Each item is rated on a 7-point Likert scale ranging from 1 (definitely would not do this) to 7 (definitely would do this). Items include behaviours such as, "Care for a sick friend or relative," "Comfort someone I know after they experience a hardship", etc. All items were coded positively, with higher scores indicating stronger intentions to perform prosocial behaviours. Baumsteiger and Siegel (2019) reported a Cronbach's α reliability of .83. Reliability analysis for the present study yielded a Cronbach's α of .81.

Results and discussion

Data obtained was analysed using Pearson's correlation in SPSS and CFA using the structural equation modelling package IBM SPSS AMOS 24. We observed that mean scores for the VfLS subscales were higher in study 3: 16.5 (*SD* = 2.3), 12.1 (*SD* = 3.1), 10.5 (*SD* = .3), 14.0 (*SD* = 2.1) and 11.2 (*SD* = 4.2) for the five subscales. Scores on the five subscales did not differ across gender. We observed significant correlations (r = .22, p < .01) between age and the fifth factor (value for the life after death/the life beyond earth) suggesting that older participants scored higher on this subscale than their younger counterparts.

CFA of the VfLS structure and reliability in a replication sample

CFA on this final sample was performed using IBM SPSS AMOS. Factor loadings ranged from .29 to 1.59. Fit indices were acceptable (see Table 3). The low loading observed on item 1 would have suggested that the item be removed to reflect a statistically more accurate factor structure. However, as earlier stated, six items per subscale was desired to maintain internal consistency. The subscales again showed acceptable internal consistency as reported in Table 3.

Table 3: Summary of fit indices for confirmatory factor analysis in study 3

Study	<i>N</i>	χ^2	GFI	AGFI	TLI	CFI	RMSEA	α (Factors 1, 2, 3, 4 & 5)
3	280	89.33	.97	.96	.97	.95	.04	.89, .86, .91, .87, & .95

Convergent and discriminant validity

Prosociality, proenvironmentalism and life regard converged with all the five factors of the VfLS. Suicide ideation had negative correlation with the value for one's life factor but converged positively with the one's value for the life after death/life beyond the earth factor. We obtained evidence for discriminant validity from the non-significant associations between factors of VfLS and social desirability. Put together, the subscales of VfLS were unrelated to some other variables which theoretically buttress the discriminant validity of the VfLS.

Summary

In Study 3 the convergent and discriminant validity of the five subscales was further established. CFA again suggested the suitability of the five-factor structure, except that one item seemed to be problematic. It was however retained due to the desire to have a six items per subscale and maintain internal consistency.

General discussion

We conducted three studies to validate the VfLS. Evidence from these studies suggest that the five subscales of the VfLS appear to represent reliable, structurally sound measures of value for life in individuals. These factors measure value for life across five domains of value for one's life, value for the life of others, value for the life of animals, value for the life of plants, and value for one's life after death/life beyond the earth. The last domain holds if such individuals have beliefs about life existing after the life lived here on earth. As the present populations were largely Christians and Muslims who both believe in life after death, this fifth factor was found significant and valid in the present study. The factor structure of the VfLS was replicated in two independent samples using CFA.

The VfLS comes forth as the first instrument developed to measure individuals' value for life, and therefore stands further refinement and revalidation in future studies. This initial evaluation of the scale has shown that it has acceptable structural stability and is psychometrically sound. Taken individually, the VfLS subscales can be used to measure differing aspects of value for life. Due to the small number of items in each subscale, the VfLS may be beneficial to large scale or longitudinal studies

and therapeutic outcomes as well. In investigating value for life, we believe that the VfLS will afford more accurate estimation of the true relationship between value for life and other related constructs. From the findings we can deduce that persons who value life may be more religious, may have more life regard, may be more prosocial and pro-environmental as well. They will also have less suicidal ideation, be likely to believe that the world is just, both procedurally and distributive. They may also have more purpose in life, thrive better, and experience higher levels of well-being.

The ability of the VfLS to measure the independent domains of value for life allow for greater theoretical and empirical flexibility. This means that it is possible to identify those who value their life so much yet value so less the lives of others. These kinds of persons may go to whatever extent to preserve their lives even at the expense of others lives. It is possible to also identify individuals who value their life as it is, and who because they are religious, it is expected that they should value the life after death/beyond the earth, but do not. For instance, Adolph Hitler may come as a good example of one who placed so much value on his life and by extension the life of Germans and would go to whatever length (even genocide) to preserve his and that of his race over and above others. Hitler is not the only example. Some individuals also believe in the existence of climate change, yet they have very low commitment to mitigating it as should be expressed in their pro-environmental attitudes. It is possible to measure independently, their value for their life and value for the life of plants. Other explanations for these variations exist in psychology as most times, the true interpretation of a behaviour may rest on the mediating and moderating effects of other behaviours. Personality, religiosity, spirituality and moral cognitions may be important intervening variables in value for life.

Limitations of the study and future directions

The VfLS and the value for life hypothesis is a work in progress. This initial hypothesis, development and validation of value for life and the VfLS could not answer all questions about the nature of value for life as a construct. We have only provided a subjective measure that leaves open the question of what individuals consider when judging whether they have value for life or not. Future research, using the VfLS as an index of value for life, should seek to identify the necessary constituents and precursors to developing value for life, and the bounds of its content space. We hope to further investigate the determinants and trajectories of value for life as well. We used convenience samples of Nigerian undergraduate students and this may serve as a limitation as well because students may not be representative of all individuals. Value for life might play a larger role among older and special populations (e.g. medics and paramedics, military and paramilitary, etc.) than among younger populations and student samples. Based on theories of human development (Erikson, 1968; Bandura, 1977), it is expected that value for life may be developmental in nature and span throughout one's life. At such, one may have a certain level of value for life (across the different domains) at some points in their life, but either through socialization or a shift from one developmental stage to the other, the levels of value for life may increase or decrease. It may be useful to longitudinally assess value for life across the trajectories of life. Researchers (e.g., Clark & Watson, 1995) have opined on the importance of examining the factor structure of psychological assessment scales in heterogeneous samples. It is also possible that such heterogeneous data would be beneficial in establishing norms as well. Data collection is currently ongoing to address these concerns as well as access more diverse samples for cross-cultural evaluation of value for life.

Conclusion

This measure of value for life will be important in psychological research. It will also benefit theory development in value for life and other positive psychological constructs. The VfLS scales may be used to obtain information for therapeutic purposes. Clients presenting for suicidal ideations may be screened for their levels of value for their life as well as value for the lives of others. In some points, if the value for life after death/beyond the earth is over and above the life now in clients, clinicians and counsellors may be better informed on how to counsel. During recruitment into the military/paramilitary, medical/paramedical professions, police, people may be screened on their levels of value for life to predict their future commitment to saving and protecting lives. We believe that the value for life hypothesis and the VfLS will contribute significantly not only in psychology but also to other areas such as economics, sociology, social work, religion, as well as peace and conflict resolution studies. We conclude that the value for life concept as well as its measure is timely as it addresses contemporary issues in society.

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Appendix A – The Value for Life Scale (VfLS)

Below are 30 ordinary statements that may correspond to how you feel and think sometimes. Please respond to them accordingly and based on how true or untrue they are of you. There are no right nor wrong answers. The scale is given below, put the appropriate number in the space before the statement. The numbers are as follows: 5 = Absolutely true of me; 4 = Mostly true of me; 3 = can't say true or false; 2 = Mostly untrue; 1 = Absolutely untrue of me

- 1 _____ I feel pity when I see animals in pain
- 2 _____ I don't think any individual should be denied the right to life
- 3 _____ Plants are important to me
- 4 _____ I think laws prohibiting killing of animals should be scrapped*
- 5 _____ When I look around me, I can identify people who are better off dead*
- 6 _____ I don't care if trees are all cut down*
- 7 _____ I don't mind seeing bloodshed*
- 8 _____ I am concerned about animal species that are going into extinction
- 9 _____ If someone hurt me, I'd like to choose how they should die*
- 10 _____ I plant flowers and take time to nurture them to life
- 11 _____ I think if there is anyone who should be alive then it's me
- 12 _____ I can give my life to prove a point or fight for a cause*
- 13 _____ If I should die, I'd like to take others with me*
- 14 _____ I would watch an individual being lynched to death if he/she deserves it*
- 15 _____ I don't like animal pets; I'd do anything possible to get rid of them*
- 16 _____ I think that trees which don't produce edible fruit should be cut off to create more space*
- 17 _____ My life is very important to me
- 18 _____ I'd pay heavily to ensure animals deliver their young safely
- 19 _____ I'll give anything to recover from a terminal illness
- 20 _____ I believe that plants should be preserved at all cost
- 21 _____ As a person, I regard the idea of life and living

22 _____ I know that human and animal life is improved by the presence of plants

23 _____ I believe animals should be cared for and tended to

24 _____ I intend to have a stress-less, enjoyable and uninterrupted aging

25 _____ I believe there is some form of life after death

26 _____ Most of my actions are motivated by thoughts of life after death

27 _____ I ensure not to engage in acts that will jeopardize a happy life for me after death

28 _____ All I care about is the life here and now*

29 _____ I will do anything for the promise of a life beyond the earth

30 _____ I care less about life after death, I will cross the bridge when I get there*

* = reverse worded items

Value for One's life Items= 11, 12*, 17, 19, 21, 24

Value for Others' life Items= 2, 5*, 7*, 9*, 13*, 14*

Value for Animals' life Items= 1, 4*, 8, 15*, 18, 23

Value for Plants' life Items= 3, 6*, 10, 16*, 20, 22

Value for life after death/beyond earth= 25, 26, 27, 28*, 29, 30*

Appendix B – CFA pattern matrix for VfLS

