

The Purpose in Life Test-Short Form: Development and Psychometric Support

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Abstract This study's purpose was to examine the psychometric properties for a brief, four-item form of the 20-item Purpose in Life test (PIL-SF). Confirmatory factor-analytic procedures were used to demonstrate how well the items (3, 4, 8, and 20) fit together. Reliability and descriptive data for the PIL-SF are provided, as well as correlations with other measures of well-being and psychological distress. Data are provided with respect to whether the four items are administered independently or within the larger parent form. The final aspect of the study evaluated whether the PIL-SF was of utility in predicting psychological distress, above and beyond other measures of meaning. This study utilized data from undergraduates ($N = 298$) from a medium-sized university located in the southern United States. The PIL-SF was supported via confirmatory factor analysis, the measure yields reliable scores, and these scores correlate significantly and as expected with the other measures administered. Data were similar regardless of whether items were administered independently or embedded in the 20-item PIL. Finally, hierarchical regression demonstrated that PIL-SF scores are useful in predicting psychological distress, offering a psychometric contribution beyond other measures of meaning.

Keywords Logotherapy · Meaning · Confirmatory factor analysis · Purpose in Life test · Short form

1 Introduction

The Purpose in Life test (PIL; Crumbaugh and Maholick 1964, 1969) was designed to assess perceived meaning and life purpose. Logotherapy was a guiding theoretical framework for the instrument's development, emphasizing perceived meaning and purpose in life and how these constructs relate to well-being (see for example, Frankl 1985, 1988,

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2004; Schulenberg et al. 2008). The importance of meaning/purpose in life to the human condition has grown beyond logotherapy to become a core component of Positive Psychology (King et al. 2006; Schulenberg et al. 2008; Wong and Fry 1998). Meaning is positively associated with hope, faith, love, health, and happiness, and negatively associated with depression, anxiety, drug/alcohol use, and boredom proneness (Melton and Schulenberg 2007, 2008; Pöhlmann et al. 2006; Schulenberg et al. 2008).

The PIL is routinely used by researchers interested in studying the meaning construct (Frazier et al. 2003; Reker 2000; Steger 2006). The PIL's 20 items employ a 7-point Likert-type response format. Different anchors are used for each item, depending on item content (see Table 1 for a general description of item content). Thus, while the response format for each item ranges from 1 to 7, the anchors for each item vary from one item to the next. By way of example, item 3 reads "In life I have:", with response options ranging from 1 ("no goals or aims at all") to 7 ("very clear goals and aims"). Alternatively, item 4 reads "My personal existence is:", with response options that range from 1 ("utterly meaningless without purpose") to 7 ("very purposeful and meaningful"). Responses to items are summed to yield a total score ranging from 20 to 140. Higher scores suggest greater perceived meaning/purpose in life. As for psychometric properties, internal consistency and split-half reliability coefficients typically range from the high .70s to the low .90s (e.g., Crumbaugh and Henrion 1988; Hutzell 1988; McGregor and Little 1998; Melton and Schulenberg 2007, 2008; Reker 2000; Schulenberg 2004; Schulenberg and Melton 2010; Sink et al. 1998). With regard to validity, PIL scores are positively associated with constructs such as life satisfaction, happiness, self-acceptance, and emotional stability, and are negatively correlated with depression and anxiety (Crumbaugh and Henrion 1988; Hutzell 1988, 1989; Reker 2000; Robak and Griffin 2000). Such documented relationships are consistent with logotherapy tenets and empirical publications of the relationship between meaning/purpose in life and well-being (Melton and Schulenberg 2008; Schulenberg 2004; Schulenberg et al. 2008).

While there are many psychometric pros to the PIL, it is not without criticism. For instance, some have argued that certain items may be confounded too specifically with other constructs, such as depression (e.g., Dyck 1987; Steger 2006; Yalom 1980). Another potential criticism involves the underlying dimensionality of the PIL. The question was posed as to whether the PIL is one-dimensional, or whether there are viable subscales

Table 1 Purpose in Life test general item content

Item	General item content	Item	General item content
1	Enthusiasm (versus boredom)	11	Having a reason for being alive
2	Excitement in living	12	World being meaningful
3	Presence of clear life goals	13	Individual responsibility
4	Life being meaningful	14	Freedom in making decisions
5	Newness of each day	15	Being prepared for death
6	Wishing more lives	16	Suicidal thoughts
7	Activity after retirement	17	Capacity to discover meaning
8	Life goal completion	18	Life internally/externally determined
9	Good things in life	19	Contentment in daily tasks
10	Life lived having been worthwhile	20	Presence of goals/life purpose

PIL-SF items presented in bold type

(Marsh et al. 2003; Reker 2000; Schulenberg and Melton 2010; Shek 1992). The PIL literature had become convoluted in this regard, with different studies reporting various findings, with no evidence to suggest a consistently replicable model (e.g., Frazier et al. 2003; Steger 2006). This latter criticism was directly addressed in a recent study by Schulenberg and Melton (2010).

Schulenberg and Melton (2010) employed confirmatory factor analysis with undergraduate student data ($N = 620$) to evaluate previously documented models of the underlying factor structure of the PIL. Previously reported factor-analytic models that were examined included those proposed by Walters and Klein (1980), Dufton and Perlman (1986), Molcar and Stuempfig (1988), Shek (1988, 1992, 1993), McGregor and Little (1998), Waisberg and Starr (1999), Marsh et al. (2003), Steger (2006), and Morgan and Farsides (2009). The models were selected because they were parsimonious (one to two factors), easier to interpret (limited to no items patterning onto more than one factor), and more likely to be reliable (larger numbers of items per factor). The 20-item PIL was also examined as a one-factor model. Using AMOS 6 software, maximum likelihood estimation, and eight different fit indices, the data were supportive of the two-factor model of Morgan and Farsides (2009). As part of their goal of developing a comprehensive measure of meaning based primarily on three, established measures of meaning, Morgan and Farsides factor analyzed the PIL, retaining two factors termed exciting life (items 2, 5, 7, 10, and 17–19) and purposeful life (items 3, 8, and 20). Thus, the PIL does appear to have a viable subscale structure. While this finding was an interesting one and added clarity to the literature, it also held implications for the development of a PIL short form.

Morgan and Farsides' (2009) purposeful life factor items (items 3, 8, and 20) were on the same factor in the Walters and Klein (1980), Dufton and Perlman (1986), Molcar and Stuempfig (1988), Waisberg and Starr (1999), Marsh et al. (2003), and Steger (2006) models. Moreover, if this factor is isolated, and item 4 added because it asks specifically about meaning in life (see for example, the work of King et al. 2006), the reliability of the purposeful life factor improved from .75 to .81. In addition, the cluster of these four items was strongly supported by confirmatory factor analysis (see Table 2), and these items have appeared together on the same factor in a number of research studies (e.g., Dufton and Perlman 1986; Molcar and Stuempfig 1988; Steger 2006; Waisberg and Starr 1999; Walters and Klein 1980). Thus, there is theoretical and empirical support for the specific grouping of these four items.¹ Although Schulenberg and Melton (2010) based this argument on their empirical data, they did not replicate their finding as it was an outgrowth of their primary goal (i.e., examining various factor-analytic models of the PIL). This being the case, they argued for the need to employ rigorous procedures to ensure that any short form is a reliable and valid representation of the 20-item PIL, referring to issues like bandwidth and fidelity (see such resources as Aiken and Groth-Marnat 2006; Cronbach 1984; Murphy and Davidshofer 2005; Reise et al. 2000; Smith and McCarthy 1995; Smith et al. 2000; Wei et al. 2007 for additional relevant psychometric issues with respect to scale validation and short-form development).

Schulenberg and Melton (2010) argued that one should have a good reason for developing a short form. For example, if one could assess meaning in a reliable and valid manner with substantially fewer items, and therefore less time and effort were involved, then a short form could have some potential utility. However, this rationale is not enough

¹ In the Morgan and Farsides (2009) study, item 4 was reported as being part of a third factor which was not extracted. How the item relates to the purposeful life factor is unclear as loadings of less than .35 were not reported.

Table 2 Confirmatory factor analysis of the Purpose in Life (PIL) test Short Form

Model	χ^2/df	RMSR	GFI	AGFI	CFI	RMSEA; 90% CI	TLI	NFI
Schulenberg and Melton (2010); <i>N</i> = 620 undergraduates	.30	.01	1.00	1.00	1.00	.00; .00–.06	1.01	1.00
Current study; <i>N</i> = 298 undergraduates	.06	.00	1.00	1.00	1.00	.00; .00–.02	1.01	1.00

These data are presented with the four PIL-SF items embedded in the parent 20-item form

RMSR root mean square residual, *GFI* goodness of fit index, *AGFI* adjusted goodness of fit index, *CFI* comparative fit index, *RMSEA* root mean square error of approximation, *TLI* Tucker-Lewis index, *NFI* normed fit index

and more justification would be warranted. In the case of the PIL, given that it is a broad measure of meaning containing a diverse array of items of relevance to the meaning construct (considered by some to be an advantage and some to be a disadvantage), a major benefit of a short form would be to put to rest criticisms about certain items being confounded too specifically with constructs such as depression (e.g., Dyck 1987; Steger 2006; Yalom 1980). A complication to the development of a short form is the idea that the psychometric properties could not be assumed simply because items were drawn from a well-studied parent measure. A short form must be validated separately of the respective larger form.

As for the rationale of developing the PIL-SF, the authors began by examining more closely the two factors supported by Schulenberg and Melton (2010). The exciting life factor is comprised of items 2 (excitement in living), 5 (newness of each day), 7 (activity after retirement), 10 (life lived having been worthwhile), 17 (capacity to discover meaning), 18 (life internally/externally determined), and 19 (contentment in daily tasks). Reviewing these items, it does seem apparent that they would assess how exciting a person's life is perceived as being (i.e., excitement versus boredom). In the original Schulenberg and Melton (2010) study, the exciting life and purposeful life factors were compared to a number of other measures of well-being and psychological distress. The correlations were generally comparable between each of the PIL factors and the other measures administered. The largest discrepancy was between these factors and the Boredom Proneness Scale (exciting life correlated with this scale at $-.67$ while the purposeful life factor correlated at $-.54$). An interpretation for this finding is that the exciting life items are one source of influence on the correlation between the PIL and Boredom Proneness Scale. We do not take this finding to indicate that exciting life, or a lack of perceived boredom, is not an important aspect of meaning. Indeed, Frankl (1985, 1988) noted that boredom is one possible outcome of perceived meaninglessness. From a Franklian theoretical perspective, boredom is regarded as a related, but distinct construct. Therefore, with respect to developing a Purpose in Life test short form with the goal of retaining items that inquire directly about meaning/purpose in life (i.e., a more "pure" measure of meaning as opposed to a measure that may be criticized for containing items that too closely approximate related, yet distinct constructs), we shifted our attention to the purposeful life factor, coupled with item 4. These four items tap presence of clear life goals, life being meaningful, life goal completion, and presence of goals/life purpose. From a Franklian perspective, if people are aware of their life goals and are living their lives consistently with these goals, they are more likely to perceive life as being meaningful (Frankl 1985, 1988; Schulenberg et al. 2008). We take this as additional theoretical support

for this specific grouping of items, in addition to the theoretical and empirical support noted previously.

With additional regard for the development of a short form, Schulenberg and Melton (2010) also cautioned against validating a short form if there were already measures available that assess meaning/purpose in life in a similar fashion. Developmental efforts could have the unintended consequence of complicating this literature. Thus, measures such as the Meaning in Life Questionnaire should be considered (MLQ; Steger et al. 2006). The Meaning in Life Questionnaire contains a five-item Presence scale which measures meaning, and a specific avenue of empirical investigation would be to determine whether a brief form of the PIL (comprised of items 3, 4, 8, and 20) measures meaning similarly to this scale (in which case in all likelihood a PIL short form would not be needed). However, if a PIL-SF could be demonstrated to assess a different, complementary aspect of meaning, then it would have utility.

1.1 The Present Study

The purpose of this study was to examine the psychometric properties of PIL items 3, 4, 8, and 20 as a short form (PIL-SF). The first step was to determine via confirmatory factor-analytic procedures that these items fit together well (i.e., replicating a previous finding). We hypothesized that support would be found for this grouping of PIL items. The second step was to examine the reliability and descriptive data of the PIL-SF, when administered as an independent version and when administered embedded within the 20-item PIL. We hypothesized that PIL-SF scores would be reliable, regardless of administration method, and that they would yield similar score distributions. The third step was to compare the PIL-SFs (administered independently and embedded within the larger form) with the 20-item PIL, and to examine these patterns of correlation with other measures of well-being and indices of psychological distress. Based on previous conceptualizations and research findings (previously discussed and further illuminated subsequently), we hypothesized that the patterns of correlation would be comparable between the PIL forms (the 20-item form, the independent short form, the embedded short form) and the other measures. Specifically, the PIL forms would be significantly and positively correlated with indices such as life satisfaction and other measures of perceived meaning. Moreover, they would be significantly and negatively associated with indices of perceived need to discover additional meaning and psychological distress. Finally, because of the strong theoretical and empirical relationship between meaning and well-being, as well as meaninglessness and psychological distress (Frankl 1985, 1988, 2004; Melton and Schulenberg 2007; Schulenberg et al. 2008), the final step was to examine the PIL-SFs (independent administration, embedded administration) as a means of estimating psychological distress scores, and to examine their psychometric contributions above and beyond two other measures of meaning (the Presence scale of the Meaning in Life Questionnaire and the Life Purpose Questionnaire, both of which are described below).

2 Methods

2.1 Participants

Data were collected from 298 undergraduates enrolled in psychology courses at a medium-sized university located in the southern United States. Of the 292 participants who reported

demographic information, age ranged from 18 to 48 years ($M = 19.67$, $SD = 2.27$). Of the respondents who reported their gender, 107 were male (36.6%) and 185 were female (63.3%). With regard to those who reported their racial/ethnic identification, 210 identified as White (71.9%), 61 as Black (20.9%), 10 as Asian/Pacific Islander (3.4%), 5 as Hispanic (1.7%), 1 as American Indian/Alaskan native (.3%), and 5 as “Other” (1.7%).

2.2 Measures

In addition to the PIL, the measures employed included the Life Purpose Questionnaire (LPQ; Hablas and Hutzell 1982; Hutzell 1989), the Meaning in Life Questionnaire (MLQ; Steger et al. 2006), the Seeking of Noetic Goals test (SONG; Crumbaugh 1977a, b), the Satisfaction with Life Scale (SWLS; Diener et al. 1985), the Boredom Proneness Scale (BPS; Farmer and Sundberg 1986), and the Outcome Questionnaire (OQ-45.2; Lambert et al. 1996). Such measures are commonly used in studies of meaning/purpose in life and were selected to include a range of variables (e.g., satisfaction with life, alternative measures of meaning/life purpose, boredom proneness, psychological distress) that are empirically and theoretically related to the meaning construct.

Life Purpose Questionnaire. The Life Purpose Questionnaire (LPQ; Hablas and Hutzell 1982; Hutzell 1989) is a 20-item scale designed to assess perceived meaningfulness and purpose. LPQ items were adapted from the PIL, with a key difference being an agree/disagree response format as opposed to a Likert-type response format (Hablas and Hutzell 1982; Hutzell 1989). Thus, the LPQ may be regarded as a simpler, alternative form of the PIL. Responses to items are summed yielding a total score ranging from 0 to 20, with higher scores suggestive of greater perceived meaning/life purpose (Hablas and Hutzell 1982; Schulenberg 2004). Coefficient alphas are often reported in the .80's, and scores are positively correlated with the PIL and the Empowerment Scale, and negatively correlated with the Brief Symptom Inventory (Hablas and Hutzell 1982; Kish and Moody 1989; Melton and Schulenberg 2008; Schulenberg 2004; Schulenberg and Melton 2010; Strack and Schulenberg 2009).

Meaning in Life Questionnaire. The Meaning in Life Questionnaire (MLQ; Steger et al. 2006) is a 10-item inventory designed to assess meaning in life employing a Likert-type response format. It contains two five-item scales, Presence (perceived meaning in life) and Search (perceived motivation to find meaning) (Strack 2007). Internal consistency coefficients for both scales often exceed .80, and the scores correlate as expected with a range of positive and negative constructs (Kashdan and Breen 2007; Steger et al. 2006; Steger and Kashdan 2007; Strack 2007). The PIL would be expected to correlate significantly and positively with Presence and significantly and negatively with Search (e.g., Steger et al. 2006; Strack 2007).

Seeking of Noetic Goals test. The Seeking of Noetic Goals test (Crumbaugh 1977a, b) contains 20 items (Likert-type response format) designed to assess motivation to find meaning in life. Item responses are summed, with higher scores interpreted to mean that the person has stronger motivation to discover meaning (noetic is a logotherapy term that can be interpreted as meaning). SONG scores often have internal consistency reliability coefficients in the .80s, with scores correlating with the PIL significantly and in the negative direction (ranging from the high $-.20$ s to the low $-.50$ s), often interpreted as perceptions of life as meaningful being related to less of a need to discover additional meaning (Reker and Cousins 1979; Schulenberg 2004; Schulenberg and Melton 2010; Sink et al. 1998).

Satisfaction with Life Scale. The Satisfaction with Life Scale (SWLS; Diener et al. 1985) measures perceived life satisfaction. The instrument is comprised of five items and

employs a Likert-type response format. Item responses are summed, with higher scores suggesting greater perceived satisfaction (Nassar 2008; Pavot and Diener 1993). Scores tend to be reliable, ranging from the high .70s to high .80s, and scores are positively correlated with measures of well-being and negatively related to indices of depression (Diener et al. 1985; Nassar 2008; Pavot and Diener 1993). PIL scores should correlate significantly and positively with Satisfaction with Life Scale scores (Nassar 2008).

Boredom Proneness Scale. The Boredom Proneness Scale (BPS; Farmer and Sundberg 1986) was developed to assess a person's tendency to become bored (Melton 2006). The measure contains 28 items utilizing a Likert-type response format, with higher scores suggestive of greater perceived boredom proneness. Internal consistency reliability of scores tends to range from the high .70s to mid .80s, and scores are associated with depression, anxiety, hopelessness, and meaninglessness (Melton 2006; Melton and Schulenberg 2007). Statistically significant and negative correlations between PIL scores and Boredom Proneness Scale scores have been reported, suggesting that greater perceived boredom proneness is associated with lower degrees of perceived meaning/life purpose (Melton and Schulenberg 2007; Schulenberg and Melton 2010; Weinstein et al. 1995).

Outcome Questionnaire. The Outcome Questionnaire (OQ-45.2; Lambert et al. 1996) is comprised of 45 items (Likert-type response format) that assess a range of mental health concerns, such as depression, anxiety, and substance abuse; interpersonal relationship quality; and problems with family, work, and leisure. Thus, higher scores suggest greater perceived psychological distress (i.e., mental health symptoms) and potential impairment in functioning. Outcome Questionnaire total scores tend to be highly reliable, with internal consistency coefficients reported in the low to mid .90s, and scores tend to significantly correlate in the negative direction with the PIL, suggesting that psychological distress is related to meaninglessness/purposelessness (Schulenberg 2004; Schulenberg et al. 2008; Schulenberg and Melton 2010).

2.3 Procedures

Participants were recruited via an online system employed by the Department of Psychology at the University where data were collected. The study was approved by the University's Institutional Review Board. Students received course credit or extra credit for their participation. Informed consent was obtained and students had opportunities to have questions addressed. Questionnaires were organized into packets, half of which began with the PIL-SF (ending with the 20-item PIL) and half of which began with the 20-item PIL (ending with the PIL-SF). The remaining questionnaires were counterbalanced between the two PIL forms to account for the possibility of order effects. Respondents typically completed the battery of questionnaires in approximately 30–40 min. Data were collected as part of a larger study of meaning/purpose in life, well-being, and psychopathology.

3 Results

3.1 Confirmatory Factor Analysis

Items 3, 4, 8, and 20 from the 20-item PIL were examined to determine if the structure identified by Schulenberg and Melton (2010) could be replicated. The current procedures were identical to the previous study. Specifically, these four items were constrained to one factor using AMOS 6 software, and maximum likelihood estimation, the most popular and

justified method, was employed (Bryant and Yarnold 1995; Hoyle 2000; Thompson 2004). Selected fit indices to determine degree of fit between the model and the data included the root mean square error of approximation (RMSEA; Steiger 1990), the ratio of chi-square to degrees of freedom (χ^2/df ; Hoelter 1983), and the root mean square residual (RMSR; Jöreskog and Sörbom 1981). Values of .06 and smaller were sought for RMSR and RMSEA as being suggestive of reasonable model fit (Brown 2006; Browne and Cudeck 1993; Bryant and Yarnold 1995; Thompson 2004). For χ^2/df , a smaller ratio was desired as suggesting reasonable model fit (i.e., less than three, the closer to zero the better) (Bollen 1989; Brown 2006; Bryant and Yarnold 1995; Hair et al. 2006; Hoelter 1983).

Other indices, in which higher values are interpreted as suggestive of reasonable model fit, were interpreted and include the comparative fit index (CFI; Bentler 1990), the goodness of fit index (GFI; Jöreskog and Sörbom 1981), the adjusted goodness of fit index (AGFI; Jöreskog and Sörbom 1989), the normed fit index (Bentler and Bonett 1980), and the Tucker-Lewis index (Bentler and Bonett 1980). Desired values suggestive of reasonable model fit are typically in excess of .90, and ideally .95 and above (Brown 2006; Bryant and Yarnold 1995; Hair et al. 2006; Hoyle 2000; Kline 2005; Thompson 2004).

The fit indices for the current data are presented in Table 2, along with the data reported in the previous study. Based on the aforementioned criteria, all of the selected indices are suggestive of reasonable model fit, exceeding the recommended thresholds. The present data closely approximate those reported in the original Schulenberg and Melton (2010) study.

3.2 Reliability and Descriptive Data for the PIL-SF

Internal consistency reliability coefficient alphas were calculated for each of the measures employed, ranging from .79 (Life Purpose Questionnaire) to .93 (Outcome Questionnaire) (see Table 3). Values are acceptable by conventional interpretive guidelines (DeVellis 2003; Murphy and Davidshofer 2005; Nunnally and Bernstein 1994; Vogt 2005). As for the PIL, the alpha for the 20-item form was .86, with a .86 alpha for the four items comprising the short form (embedded administration). The reliability for the PIL-SF was .84 when the items were administered independently of the larger form, comparable to the reliability of the items when administered embedded in the long form and to the reliability of the 20-item form itself.

Table 3 also presents the means and standard deviations for the measures employed in this study. Of most relevance to the utility of the PIL-SF are the data reported for the four items when administered separately or embedded within the larger form. The means and standard deviations for the PIL-SF were virtually identical, regardless of whether items were administered independently ($M = 22.67$, $SD = 3.73$, minimum = 6, maximum = 28) or embedded ($M = 22.54$, $SD = 3.61$, minimum = 8, maximum = 28). This interpretation was supported via a paired samples t test, $t(297) = -.957$, $p = .339$, with more than enough participants to meet the central limit theorem, and power to detect a difference if it existed.

3.3 Correlational Analyses

Correlations between the PIL (20-item form) and the PIL-SF (items embedded or administered independently) are presented in Table 4. The PIL and PIL-SF (items embedded) correlate at .82 ($p < .01$, 1-tailed), while the PIL and PIL-SF (items administered independently) correlate at .75 ($p < .01$, 1-tailed). The former correlation would be

Table 3 Means, standard deviations, and internal consistency reliability coefficients for measures administered ($N = 298$)

Measure	<i>M</i>	<i>SD</i>	<i>α</i>
Purpose in Life test (PIL, 20 item)	107.99	13.17	.86
Purpose in Life test-Short Form (PIL-SF, items embedded)	22.54	3.61	.86
Purpose in Life test-Short Form (PIL-SF, independent administration)	22.67	3.73	.84
Life Purpose Questionnaire (LPQ)	15.54	3.46	.79
Meaning in Life Questionnaire (MLQ) Presence scale	25.97	5.90	.88
Meaning in Life Questionnaire (MLQ) Search scale	23.92	6.97	.88
Seeking of Noetic Goals test (SONG)	77.77	14.37	.84
Satisfaction with Life Scale (SWLS)	25.37	5.91	.84
Boredom Proneness Scale (BPS)	94.43	18.30	.82
Outcome Questionnaire (OQ-45.2)	53.41	21.22	.93

expected to be higher given the same four items are counted twice. The PIL-SF versions (items embedded in comparison to items administered independently) correlate at .81 ($p < .01$, 1-tailed).

As for the correlations between the PIL forms and the other measures employed in this study, correlational patterns are consistent with the literature in terms of magnitude and direction. The patterns of correlation between the PIL-SF versions and the other measures of well-being and psychological distress are remarkably similar. Using Fisher z transforms (Cohen et al. 2003), the correlations among PIL-SF items administered separately were compared to correlations among the PIL-SF items embedded within the long form. No pairs of correlations were significantly different with the exception of the correlations with the PIL long form ($p = .04$, other p values ranging from .38, Satisfaction with Life Scale, to .97, Life Purpose Questionnaire). This was to be expected since items in the embedded version are represented twice in the correlation, yielding a stronger association.

Table 4 Correlations between the PIL forms with measures of well-being and psychological distress ($N = 298$)

	PIL 20 item	PIL-SF Embedded	PIL-SF Independent	LPQ	MLQ PRES	MLQ SRH	SONG	SWLS	BPS	OQ-45.2
PIL (20 item)	–	.82*	.75*	.72*	.64*	–.27*	–.33*	.67*	–.64*	–.67*
PIL-SF (embedded)		–	.81*	.59*	.63*	–.24*	–.27*	.47*	–.49*	–.51*
PIL-SF (independent)			–	.58*	.64*	–.20*	–.22*	.53*	–.51*	–.49*

PIL Purpose in Life test, *PIL-SF* Purpose in Life test-Short Form, *Embedded* PIL-Short Form items administered within the larger questionnaire, *Independent* PIL-Short Form items administered separately, *LPQ* Life Purpose Questionnaire, *MLQ PRES* Meaning in Life Questionnaire Presence scale, *MLQ SRH* Meaning in Life Questionnaire Search scale, *SONG* Seeking of Noetic Goals test, *SWLS* Satisfaction with Life Scale, *BPS* Boredom Proneness Scale, *OQ-45.2* Outcome Questionnaire

* Correlation significant at $p < .01$ (1-tailed)

3.4 Regression Analyses: Predicting Psychopathology with the PIL-SF

A series of hierarchical regressions were conducted to determine if addition of the PIL-SFs improved prediction of general psychological distress beyond that afforded by other measures of meaning. In each of these analyses, multivariate outliers were removed using indices from Mahalanobis distance, Cook's values, and leverage. At most, four outliers were removed, all with very large multivariate outlier indicators and strong influence over slopes. The statistical significance of the following regressions did not change, merely the variance accounted for by the independent variables. Data from regression analyses are presented in Table 5. When predicting general psychological distress (Outcome Questionnaire), the PIL-SF (embedded) predicted 7.4% additional variance beyond the Meaning in Life Questionnaire Presence scale, total $R^2 = .276$, $F(1, 293) = 29.913$, $p < .001$. Likewise, the PIL-SF (independent) predicted 8% additional variance over the Meaning in Life Questionnaire Presence scale, total $R^2 = .279$, $F(1, 291) = 33.031$, $p < .001$. Further, the PIL-SFs (embedded and independent) accounted for 3.5% (total $R^2 = .427$) and 3.1% (total $R^2 = .423$) additional variance, respectively, beyond that accounted for by the Life Purpose Questionnaire, $F(1, 293) = 17.797$, $p < .001$; $F(1, 293) = 15.724$, $p < .001$.

4 Discussion

A major purpose of this study was to determine if the four PIL items (3, 4, 8, and 20) identified by Schulenberg and Melton (2010) as a possible short form could be replicated in an independent sample. Similar confirmatory factor-analytic procedures were employed in the present investigation with a sample of undergraduate students ($N = 298$). Data were remarkably similar across studies, with each of the fit indices suggestive of model fit. Thus, the model consisting of PIL items 3, 4, 8, and 20 was supported.

The next step in the examination of the PIL-SF was to determine if it is reliable, and to report descriptive data. These data were also reported for all measures used in this study. With specific regard for the PIL, an important facet of this study was to compare the reliability of the PIL 20-item form with the PIL-SF, considering whether it made a difference if the items were administered embedded within the larger form or administered independently. As the PIL is generally a scale that yields highly reliable scores, one would expect the reliability to decline the more items are removed. However, this was not the case. The reliability of the parent form of the PIL was .86, and was also .86 for the four embedded items deriving the short form. Moreover, the reliability of those same four items was .84 when administered independently. In this instance, the reliability of PIL-SF scores was comparable to the parent form, whether those items were administered embedded in the larger form or independently. These reliability estimates are acceptable by interpretive standards (e.g., DeVellis 2003; Murphy and Davidshofer 2005; Nunnally and Bernstein 1994; Vogt 2005). As for PIL-SF means and standard deviations, these data were comparable as well, regardless of whether the items were administered independently or embedded within the larger form.

With respect to validity of the PIL-SF, the pattern of correlations between the four items, whether administered independently or embedded within the parent form, with other measures of well-being and psychological distress, were remarkably similar, and the two administration modalities correlate at .81.² These findings offer support for either form of

² A perfect correlation would not be expected as this may be more reflective of respondents simply remembering their answers. Subtle response differences between the two forms could explain why the correlation is not higher; however, a correlation of .81 explains a substantial amount of variance.

Table 5 Hierarchical multiple regression predicting psychological distress (Outcome Questionnaire) using the PIL-SFs (items embedded and administered independently) and other measures of meaning (Meaning in Life Questionnaire Presence scale and Life Purpose Questionnaire) ($N = 294$)

Variable	B	SE B	β	Sig.
<i>Step 1</i>				
MLQ Presence	-1.61	.19	-.45	.00
Constant	95.24	4.98		.00
<i>Step 2</i>				
MLQ Presence	-.82	.23	-.23	.00
PIL-SF (Independent)	-1.96	.37	-.35	.00
Constant	119.24	6.53		.00
<i>Step 1</i>				
MLQ Presence	-1.64	.19	-.45	.00
Constant	95.89	5.06		.00
<i>Step 2</i>				
MLQ Presence	-.81	.24	-.22	.00
PIL-SF (Embedded)	-2.13	.39	-.36	.00
Constant	122.46	6.85		.00
<i>Step 1</i>				
LPQ	-3.92	.29	-.63	.00
Constant	114.48	4.55		.00
<i>Step 2</i>				
LPQ	-3.20	.33	-.51	.00
PIL-SF (Independent)	-1.28	.32	-.21	.00
Constant	132.28	6.32		.00
<i>Step 1</i>				
LPQ	-3.91	.28	-.63	.00
Constant	114.29	4.53		.00
<i>Step 2</i>				
LPQ	-3.13	.33	-.50	.00
PIL-SF (Embedded)	-1.39	.33	-.23	.00
Constant	133.46	6.33		.00

PIL-SF administration (independent or embedded). As for their relationship with the 20-item PIL, the embedded PIL-SF correlated with the parent form at .82, with the independently administered PIL-SF correlating with the parent form at .75. It is not surprising that the former correlation is statistically significantly higher than the latter given that in the former case the four items are counted twice. Overall, the PIL-SF appears to be useful either as a stand-alone measure or as part of the larger 20-item form.

The final step was to determine the unique psychometric contributions that the PIL-SF offers in relation to other measures of meaning when predicting psychological distress (Outcome Questionnaire scores). Results from hierarchical regression analyses indicated that the PIL-SFs each accounted for significant variance after controlling for the Meaning in Life Questionnaire Presence scale or the Life Purpose Questionnaire. This suggests that it is worthwhile to continue to examine the utility of the PIL-SF and lends support to the idea that the PIL-SF assesses a different, perhaps complementary, aspect of meaning when compared to the Meaning in Life Questionnaire Presence scale and the Life Purpose Questionnaire. Although the PIL-SF is similar to the Meaning in Life Questionnaire

Presence scale (both are concise measures of perceived life meaning), as well as to the Life Purpose Questionnaire (which was created as an alternate form of the PIL), these results suggest that it is distinct enough to warrant its inclusion among existing measures of meaning. For example, while both the Meaning in Life Questionnaire Presence scale and the PIL-SF ask the respondent to consider meaning/purpose in life, some items on the PIL-SF specifically inquire as to goal progress (attainment) whereas the Meaning in Life Questionnaire Presence scale does not.³ In cases where time is limited and when it is desirable to assess the presence of meaning/purpose and commensurate goal progress, the PIL-SF appears to be an appropriate and psychometrically sound option based on the current data.

Ultimately, whether the PIL-SF is the measure of choice in a given study of meaning/life purpose is the decision of the researcher and is likely to be the subject of continued debate. We have presented a rationale for developing a short form of the PIL, in part based on criticisms that the original 20-item form contains items that overlap with other constructs (e.g., depression, boredom) and which raises questions of content and construct validity. The contrary perspective is that the PIL was developed using a Franklian perspective and contains a diverse array of items to tap meaning and closely-related constructs. Thus, on the one hand, while the four-item PIL-SF is more narrowly focused than the 20-item parent form, with the intent of theoretically and empirically assessing meaning/purpose in life in an increasingly parsimonious manner, some may argue that the items may too narrowly constrain the domain in question (i.e., meaning/purpose in life). Our intent with the current paper was to provide reliability and validity support for the development of the PIL-SF; however, the reader should be reminded that various types of validity are best established over time and via a range of studies.

4.1 Study Limitations and Directions for Research

While the current results are viewed as support for the PIL-SF, whether administered independently or embedded within the 20-item PIL, replication of these data with multiple samples drawn from other populations is warranted to further examine the measure's reliability and validity. Samples should be drawn from clinical and community populations, and should be increasingly diverse in terms of age and racial/ethnic background. The respondents who participated in this research were predominantly White undergraduate students. Beyond the study of demographic variables, studies may also focus on determining whether there is value in interpreting specific PIL-SF scores (i.e., whether certain scores are suggestive of heightened risk for clinical problems, potential benefit of therapeutic intervention, etc.).

Another research direction would be to increase the range of external criteria to further assess the PIL-SF's psychometric properties. For instance, the measures incorporated into the current study are all self-report inventories. Future studies should include not only self-report questionnaires, but specific behaviors potentially relevant to the meaning construct (e.g., volunteerism). Different modalities for assessment should be explored as well, such as the relationship between the PIL-SF and informant reporting (e.g., friends or family members). A similar methodology was employed in the development of the MLQ. In addition, while there were multiple measures of psychological distress and well-being included in this study to establish correlational patterns, new research should focus on

³ As noted previously, the relationship between meaning/purpose in life and clarification and attainment of life goals is consistent with the Franklian theoretical perspective.

other constructs. Examples may include specific measures of psychological distress, such as depression, anxiety, and substance use, or particular indices of well-being, such as faith, hope, humor, and love. While there are ample data on such constructs with the 20-item PIL, there are little data available with regard to the PIL-SF.

Another direction for research involves additional incremental validity studies with other measures of meaning and different measures of psychological distress. This study was successful in demonstrating the incremental validity of the PIL-SF in relation to the Presence scale of the Meaning in Life Questionnaire and in relation to the Life Purpose Questionnaire. These data provide support that the PIL-SF measures a different, apparently complementary, aspect of meaning. Studies in relation to other measures of meaning and well-being would be of assistance in better understanding the PIL-SF's unique psychometric contributions. Examples of potential measures include the Life Regard Index (Battista and Almond 1973), Ryff's (1989) Purpose in Life Scale, and the Life Attitude Profile-Revised (Reker 1992). Moreover, in this study we conducted these incremental validity studies in relation to a general measure of psychological distress (i.e., the Outcome Questionnaire). Future research should involve conducting incremental validity studies with particular indices of depression, anxiety, and substance abuse, to name a few relevant constructs.

4.2 Concluding Comments

This study adds to the literature by supporting Schulenberg and Melton's (2010) empirically-guided assertion that items 3, 4, 8, and 20 of the PIL are a potentially useful short form. The current data suggest that the PIL-SF yields scores that are reliable and valid, regardless of whether the items are administered independently or embedded. In addition, the PIL-SF offers unique psychometric contributions when compared to the Meaning in Life Questionnaire Presence scale and the Life Purpose Questionnaire (in terms of their association with a general measure of psychological distress). While these results are promising, the PIL-SF would benefit from additional psychometric research focused on increasingly diverse populations.

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