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RESEARCH PAPER

The Naturally Emerging Structure of Well-Being Among Young Adults: "Big Two" or Other Framework?

Carmel Proctor · Roger Tweed · Daniel Morris

Abstract This study explored common measures of well-being to assess whether the naturally emerging relationships are best explained by a "Big Two" (hedonic vs. eudaimonic) or another, yet to be discovered framework. A sample of young adult participants ($n = 355$) completed measures of life satisfaction, flourishing, positive and negative experience, meaning in life, basic psychological needs, and subjective happiness. Goldberg's (2006) Bass-Ackward procedure of component analysis was used to determine the relationship between the variables. Results indicated that life satisfaction and flourishing loaded on both hedonic and eudaimonic variables at several levels of the analysis, suggesting that these constructs may be outcomes of both hedonia and eudaimonia. Results further indicated that searching for meaning was distinct from hedonia, but was not an effective indicator of eudaimonic well-being. Overall, the results justify the distinction between hedonia and eudaimonia; however, they also suggest that further distinctions between different measures of well-being are required. Moreover, life satisfaction may be a superordinate category that reflects outcomes of both hedonic and eudaimonic well-being. Thus, the "Big Three" of positive psychology (i.e., positive affect, negative affect, and life satisfaction) is neither purely hedonic, nor purely eudaimonic, nor a balanced combination of the two, and thus is deficient as an indicator of either type of well-being. Furthermore, the results suggests that further understanding the place of life satisfaction within hedonic and eudaimonic conceptualizations of happiness is important in enhancing our overall understanding of well-being.

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1 Introduction

Positive psychologists face a vast array of possible measures and constructs of well-being. The relationships between these can be confusing, limiting the development of theory and maturation of positive psychology as a field. As such, efforts to clarify relationships among the various measures of well-being deserve attention. The experience of personality researchers offers some lessons and perspective.

In the 1970's and 1980's, personality research likewise faced a somewhat confusing array of apparently disparate constructs. For example, there were the 16 factors of the Sixteen Personality Factor Questionnaire (Cattell et al. 1970), the 20 factors on Gough's California Psychological Inventory (Gough 1987), and the personality disorders of the DSM-III (American Psychiatric Association 1980). Much clarity was introduced by the Big Five or Five Factor Model (Digman 1990) of personality traits. These five constructs replicated across cultures (McCrae 2002) and encompassed many of the existing constructs of personality (McCrae and John 1992). Some debate continues (Ashton et al. 2004), but the Big Five, nonetheless, have provided much clarity and a common framework to draw upon for discussion.

Likewise, positive psychology could benefit from greater clarity in the relationships among variables operationalizing well-being. Philosophically and historically, two traditions seem to dominate: hedonia and eudaimonia. Despite the considerable amount of research on these two conceptualizations of well-being, the range of methods employed in their measurement has been surprisingly narrow (Nave et al. 2008). In general, many operationalizations of hedonic well-being include measures assessing high positive affect, low negative affect, and life satisfaction (i.e., subjective well-being). Common measures of these constructs include, but are not limited to: the Affect Balance Scale (Bradburn 1969), the Positive and Negative Affect Schedule (Watson et al. 1988), the Satisfaction With Life Scale (Diener et al. 1985), and the Delighted-Terrible Scale (Andrews and Withey 1976). Other means of measuring hedonic well-being include the Subjective Happiness Scale (Lyubomirsky and Lepper 1999), which does not assess affective or cognitive evaluations of life experience, but subjective assessment of whether one is a happy or unhappy person. In contrast, many operationalizations of eudaimonic well-being include a multidimensional assessment of personal actualization, such as autonomy, self-acceptance, competency, relatedness, intrinsic motivation, and life purpose. Common measures of these constructs include, but are not limited to: the Scales of Psychological Well-Being (PWB; Ryff and Keyes 1995; Ryff and Singer 1998) and the Basic Psychological Needs Scale (Gagne 2003; Kasser et al. 1992). Other means of measuring eudaimonic well-being include the Flourishing Scale (Diener et al. 2010), which was designed to capture a number of psychological theories of well-being, including those by Ryff and Keyes (1995) and Ryff and Singer (1998) and the self-determination theory of Deci and Ryan (2000, 2008), and the Meaning in Life Questionnaire (Steger et al. 2006), which measures the presence and search for meaning.

The predominance of these two traditions suggests that positive psychology might benefit from a "Big Two" model of well-being. The current analysis explores the relationships between common measures of well-being in order to assess whether the naturally emerging relationships are best explained by a Big Two (hedonia vs. eudaimonia) or another, yet to be discovered framework. Some of the common measures of well-being are

not clearly hedonic or eudaimonic (e.g., life satisfaction, as will be discussed); as such, an exploratory approach allowing the data to drive the nature of the framework and allowing for the possibility of a newly emerging structure of well-being is optimal.

To advance this process of clarifying the naturally emerging structure of well-being, a variety of indicators of well-being were included is this study. Some of these were more clearly hedonic (e.g., positive emotion, happiness) or eudaimonic (e.g., meaning presence). However, other popular indicators of well-being were included to also provide the possibility that a new structure, beyond the Big Two would emerge.

2 Conceptualizations of Well-Being

Philosophers and psychologists provide many differing conceptualizations of well-being; however, these conceptualizations often can be seen as reflecting two distinct, but related philosophies: hedonism and eudaimonism (McMahan and Estes 2011). Hedonia has been defined as the subjective experience of "pleasure and enjoyment, and the absence of pain and discomfort", whereas eudaimonia has been defined as "using and developing the best in oneself" (Huta 2013, p. 201).

2.1 The Hedonic Tradition

The hedonic tradition has a long history and is most commonly associated with the ancient philosophy of Aristippus and Epicurus. According to this tradition, the only intrinsic good is pleasure and avoidance of pain. Hedonism from this perspective is closely linked to the more modern concept of utilitarianism in that virtue is considered a means of achieving happiness. Therefore, experiences or activities are sought for the sake of pleasure; they are a means to an end.

In more recent, but related theorizing, a common view among hedonic psychologists is that well-being consists of subjective happiness and concerns the experience of pleasure and displeasure (Ryan and Deci 2001). This modern perspective overlaps with the ancient focus on enhancing pleasure and avoiding pain.

However, in practice, many researchers from the hedonic perspective use assessment of subjective well-being (SWB; Diener 1984) in defining well-being. The SWB construct consists of three components: positive affect, negative affect, and life satisfaction (Andrews and Withey 1976). Happiness is thus considered according to this view as experiencing high positive affect, low negative affect, and satisfaction with life. According to Diener (1994), SWB refers to "the global experience of positive reactions to one's life, and includes all of the lower-order components such as life satisfaction and hedonic level. Life satisfaction refers to a conscious global judgment of one's life" (p. 108).

The life satisfaction items on the most common life satisfaction scale (Pavot and Diener 1993) do not specify the source of the satisfaction (e.g., "I am satisfied with my life"). As a result, this satisfaction could result from judgments based on hedonia (e.g., "I have a lot of fun in my life") or eudaimonia (e.g., "I have meaning and purpose"). Thus, life satisfaction is neither clearly hedonic, nor clearly eudaimonic.

Although life satisfaction and hedonic level (i.e., affect) are highly correlated due to their mutual influences, they are distinct components of the higher order SWB construct. Life satisfaction is a global summary of one's life circumstances, whereas hedonic level consists of ongoing reactions to life events.

Nevertheless, the SWB construct has consistently been used in the research literature as a measure of hedonic well-being (Linley et al. 2009; e.g., Keyes et al. 2002), not as an overlapping construct including elements of hedonia and eudaimonia. Indeed, as noted by Kristjansson (2012), "life satisfaction accounts are rarely seen in isolation anymore but appear in conjunction with hedonistic accounts, manifested in measures of so-called *subjective well-being*" (p. 90). Accordingly, Ryan and Huta (2009) suggest that SWB is opposed to eudaimonia only if it is considered exclusively as a product of hedonia.

This approach to well-being may be problematic, however, because SWB includes pure measures of hedonia (positive and negative affect) along with life satisfaction which may include elements distinct from hedonia. One can make similar points about some items in the most common measure of flourishing (Diener et al. 2010). Some of the items in the Flourishing Scale are clearly eudaimonic (e.g., "I lead a purposeful and meaningful life"), but others could potentially reflect judgments based on hedonic considerations. For example, the seventh item states, "I am optimistic about my future." This optimism could reflect meaning and purpose (eudaimonia), or instead could reflect anticipation of great parties and fun in the future. A similar concern could be expressed regarding the third item, which evaluates whether one is "engaged and interested in my daily activities." Interest can result from hedonic experiences, so this item could sometimes tap hedonic elements. Our evaluation of the flourishing and life satisfaction scales does not need to diminish their value as measures, a value demonstrated by the many interesting results they have produced, but it does raise questions about their exact location in the taxonomy of well-being.

2.2 The Eudaimonic Tradition

The eudaimonic tradition that has recently come to the fore with the advent of positive psychology has roots in Aristotelian philosophy. According to this tradition, "happiness is activity in accordance with virtue" and virtue is a state of character (Aristotle c. 330 BCE/1925, p. 263). Eudaimonism contrasts with hedonism in that virtue is not pursued for the sake of pleasure, it is the end achieved by living a virtuous life in accordance with reason—pleasure is a byproduct of exercising good character.

The term eudaimonia is often translated as "happiness", but Aristotle is clear in distinguishing happiness as a state or kind of feeling, from eudaimonia, which is a certain type of activity that carries feeling with it. Specifically, "virtue is a state of character concerned with choice, lying in a mean," that is, carrying out virtuous acts at the right time, with reference to the rights objects, towards the right people, with the right motive, and in the right way—moral excellence (Aristotle c. 330 BCE/1925, p. 39). In the Nicomachean Ethics (Aristotle c. 330 BCE/1925), Aristotle describes eudaimonia as the life of moral virtue and practical wisdom, concerned with the feelings that arise from our bodily nature, ultimately resulting in well-being.

Similar to definitions of SWB, researchers' conceptualizations of eudaimonia are often implied by the measures they use. Many researchers from the eudaimonic perspective use assessment of PWB in defining well-being. For example, a common measure of PWB is the multidimensional model proposed by Ryff and Keyes (1995) that assess six distinct components of positive psychological functioning: self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, personal growth (cf. Keyes et al. 2002). Interestingly, some of these researchers have posited that the SWB model is limited in scope in comparison to the PWB model in defining and assessing positive functioning, and is often a poor indicator of healthy living (Ryff and Keyes 1995). Proponents of the SWB conceptualization have retorted, however, that although the positive characteristics included

in the PWB model may lead to feelings of SWB, they are fundamentally without worth unless they help individuals create more satisfying lives for themselves; that is, they argue that the quintessential criterion in assessing well-being, positive functioning, and health is SWB, because it allows individuals rather than experts to decide what is important and enables them to evaluate their lives according to their own values and standards (Diener et al. 1998). Overall, in contrast to SWB there is no single theory or approach that captures eudaimonic well-being and thus it appears that those not relying on an explicit affective component tend to fall into the eudaimonic well-being category (Kashdan et al. 2008; cf. Waterman 2008). Again, one could question whether some of these constructs belong fully in the eudaimonic category. For example, one of the more common measures of meaning includes both an indicator of presence of meaning and an indicator that one is searching for meaning (Steger et al. 2006). Searching for meaning may not represent merely an absence of meaning however; it may instead represent a presence of dysphoria and deeper problems. As such, searching for meaning may not fit well within the construct of eudaimonia.

2.3 Life Satisfaction

As discussed, the SWB construct as defined by Diener (1984) can be considered a combination of the hedonic and eudaimonic conceptualizations of well-being, in that it encompasses both feeling happy (affect), and being happy (life satisfaction) which could result from either immediate pleasure, eudaimonic right living, and/or possibly a belief that one's life is consistent with one's ideals, whether those be ethical ideals or otherwise. As noted by Kashdan et al. (2008) the results of numerous studies suggest that hedonic and eudaimonic processes work in tandem. Thus, the importance of precise terminology when labeling constructs needs to be underscored—"Blurring the lines between predictors of well-being and well-being itself runs the risk of further confusion" (Kashdan et al. 2008, p. 229). Therefore, distinguishing life satisfaction from SWB in relation to hedonic and eudaimonic conceptualizations of happiness is important for enhancing our overall understanding of well-being.

As distinct from SWB, life satisfaction is sometimes equated with the term "happiness" in the research literature and considered one of the most well-established indicators of well-being and positive functioning (Suldo et al. 2006). Indeed, life satisfaction is one of the three definitions of "happy" provided by Shin and Johnson (1978). As these authors note, there are three main uses of the term "happy": (1) a feeling, like physical pleasure or a pleasant mood, which are hedonic in nature and thus different from the core meaning of satisfaction; (2) an expression, used to convey a feeling or describe a welfare aspect of a life experience, which does not imply that one has any particular feeling (not hedonic); and (3) an evaluation, an appraisal of one's overall quality of experience, which takes into account various aspects of an individual's total condition (i.e., global life satisfaction).

As noted by McCall (1975): "Unlike pleasure, happiness is not episodic. Feelings of pleasure and pain are episodes, and can occur both in the context of a happy life, and in the context of an unhappy life. We must distinguish 'feeling happy now' from 'being happy'" (p. 232). Similarly, Shin and Johnson (1978) note:

> While the concept of happiness carries a variety of meanings, many social scientists have failed to understand the important distinction between those divergent meanings and the proper criteria for their use. As a result, they have mistakenly identified happiness with feelings of pleasure, and thus have misunderstood the value of the term as an important conceptual tool for assessing the quality of life through the eyes of the

> beholder. When the term is used in an evaluative context, it simply refers to being happy and requires an appraisal of the overall conditions of one's existence. (p. 490–491)

Indeed, life satisfaction overlaps with the abstract meaning-imbued nature of eudaimonia (Kashdan et al. 2008).

2.4 The Current Study

Although the whole debate between hedonic and eudaimonic conceptualizations of well-being cannot be resolved herein, it is necessary to clarify the structure of well-being, and within this structure, the association of life satisfaction and other indicators of well-being with these two conceptualizations in order to establish their proper use in academic research. Indeed, a considerable amount of research has examined the hedonic and eudaimonic conceptualizations of well-being and their relationship; however, less research has examined the specific association of life satisfaction (independent from SWB), other indicators of well-being and their relationship with hedonism and eudaimonism in understanding the overall structure of well-being.

As noted, life satisfaction is most commonly associated with the hedonic psychology conceptualization of well-being in that it is part of the SWB construct as defined by Diener (1984). Moreover, researchers have begun to equate measures of life satisfaction with the assessment of the hedonic dimension of happiness (e.g., Delle Fave et al. 2010). Thus, the purpose of the current study is to examine whether this association is appropriate based on the nature of the life satisfaction construct's relationship to hedonic and eudaimonic conceptualizations of well-being through the development hierarchical factor structures.

2.5 Study Hypotheses

Hypothesis 1 The results will support the philosophical distinction between hedonic well-being (e.g., positive emotion, and happiness) and eudaimonic well-being (e.g., meaning presence). In particular, the hedonic items are expected to load together early in the extraction process.

Hypothesis 2 Life satisfaction includes eudaimonic elements, so life satisfaction will show relationships to both hedonic and eudaimonic well-being. This suggests that operationalizations of SWB from the hedonic perspective should include measures of hedonic well-being or subjective happiness, but not life satisfaction.

Hypothesis 3 The Bass-Ackward method's exploratory nature will contribute additional information regarding well-being that was not anticipated by the other hypotheses.

3 Method

3.1 Participants

Participants were 355 young adults aged 16–25 (88 males, 267 females). The mean age of participants was 16.96 years (SD = 1.11). Participants were 75.2 % female; most were Caucasian (80.8 %), followed by Pakistani (6.8 %), Indian (2.5 %), Mixed ethnicity (2.0 %), African, Chinese, and Arab (1.1 % each), Caribbean and Bangladeshi (0.8 % each), Iranian and Nepalese (0.6 % each), Filipino, Turkish, Afghan, and Latino (0.3 % each), and participants who chose not to indicate their ethnicity (0.6 %).

3.2 Measures

1. *Satisfaction With Life Scale* (SWLS; Diener et al. 1985) is a 5-item self-report measure of global life satisfaction. Respondents are required to respond to each item (e.g., "I am satisfied with my life") using a 7-point Likert scale (Strongly Disagree to Strongly Agree). Scoring consists of summing the items for a total score that ranges from 5 to 35; higher scores are representative of higher global life satisfaction. The SWLS has been demonstrated to have strong internal reliability ($r = 0.87$) and moderate temporal stability ($r = 0.82$, two-month test–retest reliability) (Diener et al. 1985). The SWLS has been shown to correlate with appropriate criterion measures (see Diener et al. 1985; Pavot et al. 1991). Further, the SWLS has been demonstrated to correlate meaningfully and in hypothesized directions with other related measures and constructs (see Neto 1993). Construct validity has been provided among young adults through differentiation between life satisfaction and health status (see Arrindell et al. 1999). The SWLS is appropriate for use with both adolescents and adults and is beneficial in that scores can be interpreted in terms of absolute and relative life satisfaction (see Proctor et al. 2009 for a review; Pavot and Diener 2008, 1993). Overall, research supports the SWLS as a psychometrically sound brief measure of life satisfaction.
2. *Flourishing Scale* (FS; Diener et al. 2010) is an 8-item self-report measure of flourishing (social-psychological prosperity). Respondents are required to respond to each item (e.g., "I lead a purposeful and meaningful life") using a 7-point Likert scale (Strongly Disagree to Strongly Agree). Scoring consists of summing the items for a total score that ranges from 8 to 56; higher scores are representative of individuals with many psychological resources and strengths. The FS has been demonstrated to have good internal reliability ($r = 0.87$) and moderate temporal stability ($r = 0.71$, one-month test–retest reliability). The FS has been found to have high convergence ($r = 0.78$ and $r = 0.73$) with similar PWB measures. Overall, the FS yields a good assessment of self-reported PWB.
3. *The Scale of Positive and Negative Experience* (SPANE; Diener et al. 2010) is a 12-item self-report measure of positive and negative experience. The measure is made up of two subscales each consisting of six items: six positive experiences (pleasant, happy, joyful) and six negative experiences (unpleasant, sad, afraid). Respondents use a 5-point Likert scale response format (Very Rarely or Never to Very Often or Always) to indicate to what extent they have experienced each feeling during the past 4 weeks. The positive and negative scales are scored separately by summing the items for a total positive score (SPANE-P) and total negative score (SPANE-N), each ranging from 6 to 30; higher SPANE-P scores are indicative of high positive feelings and higher SPANE-N scores are indicative of high negative feelings. The measure can be used to derive an overall affect balance score by subtracting the SPANE-N score from the SPANE-P score for a total balanced score (SPANE-B) that ranges from −24 to 24. The SPANE has been demonstrated to have good internal reliability for the P ($r = 0.87$), N ($r = 0.81$), and B ($r = 0.89$) scales and moderate temporal stability ($r = 0.62$, $r = 0.63$, $r = 0.68$, one-month test–retest reliability). The SPANE has also been found to have high convergence with other measures of emotion, well-being, happiness, and life satisfaction. Overall, the SPANE has several advantages to other similar measures in that it allows respondents to reflect on the full range of emotions and feelings that they might experience, both bad and good, and captures them without provenance, arousal level, or ubiquity, making the scales universally applicable.

4. *Meaning in Life Questionnaire* (MLQ; Steger et al. 2006) is a 10-item self-report measure of the presence of, and the search for, meaning in life. Respondents are required to respond to items from the Presence (e.g., "I understand life's meaning") and Search (e.g., "I am looking for something that makes my life feel meaningful") subscales using a 7-point Likert scale (Absolutely Untrue to Absolutely True). The two subscales are scored separately by summing the items for a total score, each ranging from 5 to 35; higher scores are representative of individuals who both feel great meaningfulness and are engaged in further search to understand life's meaning. Both subscales of the MLQ have been demonstrated to have good internal reliability ($r = 0.81$–0.92) and temporal stability ($r = 0.70$ MLQ-P and $r = 0.73$ MLQ-S, one-month test–retest reliability). The MLQ has been demonstrated to correlate meaningfully ($r = 0.61$–0.74) and in hypothesized directions with other well-being and psychological variables. Overall, the MLQ yields a reliable, structurally sound measure of the presence of meaning and the search for meaning.
5. *Basic Psychological Needs Scale* (BPNS; Gagne 2003; Kasser et al. 1992) is a 21-item self-report measure of innate basic psychological needs. This general needs satisfaction scale was adapted from a measure of need satisfaction at work scale (Ilardi et al. 1993). Respondents are required to respond to each item using a 7-point Likert scale (Not At All True to Very True) across three psychological needs: (1) Autonomy (7 items, e.g., "I feel like I am free to decide for myself how to live my life"); (2) Competence (six items, e.g., "Often, I do not feel very competent"); and (3) Relatedness (eight items, e.g., "I really like the people I interact with"). Scoring consists of averaging item responses for each domain to create three subscale scores. Scores range from 7 to 49 (autonomy), from 6 to 42 (competence), from 8 to 56 (relatedness), and from 21 to 147 (total score); higher scores are representative of greater satisfaction. Internal reliability for the BPNS-general version has been reported at .68, .75, .85, and .90 for the Autonomy, Competence, Relatedness, and total scores, respectively (Wei et al. 2005). Overall, the BPNS-general version yields a good assessment of basic psychological needs.
6. *Subjective Happiness Scale* (SHS; Lyubomirsky and Lepper 1999) is a 4-item self-report measure of global subjective happiness. Respondents are required to respond on a 7-point Likert scale. Two items ask respondents to characterize themselves using both absolute ratings (Not a Very Happy Person to A Very Happy Person) and ratings relative to peers (Less Happy to More Happy), whereas the other two items offer brief descriptions of happy and unhappy individuals and ask respondents the extent to which each characterization describes them (Not At All to A Great Deal). Scoring consists of summing the items for a total score that ranges from 4 to 28; higher scores are representative of higher global subjective happiness. The SHS has been demonstrated to have high internal reliability ($r = 0.79$–0.94) and moderate temporal stability ($r = 0.55$–0.90, three-weeks to one-year test–retest reliability). The SHS has been found to have moderate convergence ($r = 0.36$–0.60) with similar constructs. Overall, the SHS yields a good assessment of self-reported subjective happiness.

3.3 Procedure

The study questionnaire was placed online via an advertisement and link for the study placed on an Internet site providing information to students studying A-Level Psychology within the United Kingdom. The study web page invited anyone aged 16 and over to

participate and informed those interested that no identifying information was collected and that all participation was voluntary.

Overall, this recruitment procedure resulted in 565 individuals accessing the questionnaire as posted on the study web page. Of the 565 individuals who began the questionnaire, 68 dropped out after completing the demographic information, 108 failed to complete the survey battery (i.e., 2 completed only the SWLS, 50 completed only the SWLS and FS, 51 completed only the SWLS, FS, SPANE, and MLQ, 5 completed only the SWLS, FS, SPANE, MLQ, and BPNS), 29 were over the age of 25, and 4 individuals did not indicate their age; there were 4 dropouts that resulted in partial measure completion. As recommended by Birnbaum (2004), those who dropped out were removed before analysis. Therefore, a total of 356 individuals were retained for data analysis once participants over age 25 or not indicating age were also removed; 63 % of the total sample.

3.4 Overview of Data Analysis

Of the 356 retained surveys, one contained an identifiable response pattern (i.e., selection of all 1 s). As recommended by Birnbaum (2004), this individual was removed before analysis. Therefore, a total of 355 individuals were retained for data analysis. For individuals with missing items the scale total score was summed and divided by the number of items completed; reverse-scored items were reversed before calculation. A search for identical records was conducted in order to identify multiple submissions (Birnbaum 2004). No identical records were found.

Respondent IP addresses were stored by the online system in the survey results. Examination of the IP address locations for the retained 355 participants revealed that 81.69 % were from locations across the UK. The remaining 18.31 % were from locations in the USA (10.42 %), Pakistan (4.23 %), Europe (1.41 %), and the rest of the world (2.25 %—including the Middle East, Canada, and the Caribbean).

An examination of the scoring distribution of all measures was conducted in order to assess for outliers and to test for multivariate normality. Stem-and-leaf box plot analysis of variable total scores revealed 15 minor outliers (1.5 × interquartile range (IQR) outside the central box), but no major outliers (3.0 × IQR outside the central box), and therefore no further scores were excluded from the data (Wuensch 2012). Further, none of the variables included departed significantly from normality; skewness and kurtosis were all within acceptable limits (i.e., values of two standard errors) with the value of each variable ranging from −.852 to .031 for skewness and −.862–.512 for kurtosis (Tabachnick and Fidell 2001).

Goldberg (2006) has developed a method of component analysis that helps clarify the relationships between latent variables. His technique is growing in popularity (Kushner et al. 2011; Rentfrow et al. 2011). The technique uses a new type of diagram showing relationships between variables in different extractions. The extraction and rotation method he recommends, orthogonal varimax, might initially create resistance from some researchers because these particular procedures seem to have become less popular in recent years in part because orthogonality does not often fit the theoretical framework of researchers. However, Goldberg makes a strong case that the whole set of procedures, which he refers to as Bass-Ackward, provides great benefit in clarifying relationships between latent variables and the amount of variance accounted for by each latent variable. Oblique (non orthogonal) rotations, in contrast, do not clarify the amount of independent variance independently accounted for by each latent variable. Goldberg argues the "orthogonal factor scores have the advantage of parsimony when used in multiple-

regression analysis to predict important criteria and they encourage the development of factor markers that are maximally unrelated to each other" (p. 353). Although an oblique rotation variation of the Bass-Ackward method has also been developed (Waller 2007), it is not well established to the extent that the same research groups are inconsistent in their use of orthogonal and oblique rotations in the Bass-Ackward method (e.g., Bagby et al. 2013; Kushner et al. 2011). Furthermore, orthogonal rotations provide more consistency in the location of maximum loadings of items between extractions, and thus provide a clearer narrative of the nature of construct emergence and are therefore the method of choice here.

The Bass-Ackward top down factor analytic technique developed by Goldberg (2006) was used to investigate the relationship between the variables. Thus, orthogonal extraction and rotation processes were conducted for one component, two components, three components, and so on moving from abstract to more specific constructs at each level.

The correlations shown on the linking lines in the resulting diagram represent relationships between components from one extraction (e.g., five component extraction) with those of an adjacent extraction (e.g., six component extraction). These clarify the hierarchical relationships between latent variables in the different analyses; path coefficients of .35 or stronger are provided (see Fig. 1). One common standard used is to extract a factor for each eigenvalue greater than one (Kaiser 1960)—in this case 12 factors would be extracted. Alternatively, the scree plot leveling method suggested stopping after five components had been extracted (Cattell 1966) and those results are shown in Table 2. Although both of these methods have been criticized for over-extracting factors, the scree method tends to be more accurate (Henson and Roberts 2006). That said, our main purpose was not to find a stopping point based on purely statistical norms, but to clarify relationships between variables in a manner consistent with meaningful theory development. This is illustrated in the Bass-Ackward summary diagram of seven components in Fig. 1. This approach is consistent with the intent of the method's originator, Goldberg (2006), who said:

> An appealing characteristic of these top down factor representations is that one need not commit oneself in advance to the optimal number of factors to extract and rotate. Instead, one can continue down into the hierarchy until one reaches a level at which no new interesting factors appear. (p. 353)

The seventh extraction was the point at which almost all the major questionnaires had separated, except that happiness and affect which remained indistinct. When eight components were extracted, no new meaningful components emerged. The added component at that point was a poorly defined combination of some BPNS items, some affect items, and a flourishing item, none of which had high loadings. Thus, that extraction is neither described in the results section nor included in the figure.

4 Results

The intercorrelations between the study variables are presented in a correlation matrix in Table 1. Life satisfaction was significantly correlated in the expected direction with each of the study variables. The item loadings for the five component rotation solution are presented in Table 2. A diagram of the correlations between the components at adjacent levels of extraction up to seven components is presented in Fig. 1.

The component analyses were conducted at both the item level and again at the scale level. The item level analyses are the focus here, but the main messages of both analyses

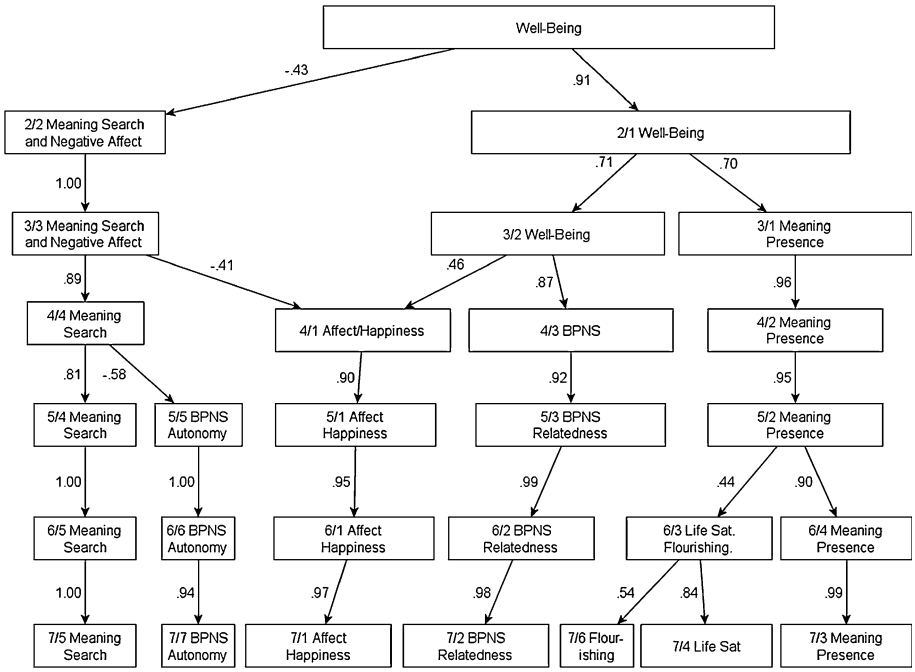

Fig. 1 Hierarchical relationships between latent variables for seven extraction and rotation processes. *BPNS* Basic Psychological Needs Scale, *Happiness* Subjective Happiness Scale, *Life Sat.* life satisfaction

were similar. In neither case did a simple Big Two (hedonia vs. eudaimonia) framework naturally emerge, suggesting that well-being is more complex than indicated by this most simple framework. Also, in both the item and scale level analyses, life satisfaction showed a tendency to overlap with hedonic (especially affect) and eudaimonic (especially presence of meaning) indicators of well-being. Also, searching for meaning emerged as the most distinct of all the constructs, and seemed somewhat out of place in this set of constructs.

The results of the item level analysis are shown in Fig. 1. Each horizontal row represents one analysis. In other words, the top row is the single unrotated component. The second row represents the results of a rotated two component solution, and so on. The arrows represent correlations of .35 or greater between constructs.

The first component to separate from the others was a "searching for meaning" component as seen in row two in Fig. 1. This emerged in the two component rotation, though in those early extractions, this component also included negative affect. Thus, it showed its strongest relationship, not with positive indicators of well-being, but instead with negative affect. It also showed some relationship with BPNS autonomy. The searching items never loaded on any other rotated component with a value higher than .30, suggesting that this represents a coherent and distinct latent construct. Thus, these items should be treated as distinct from the other well-being items.

Next, the presence of meaning construct emerged as a distinct construct (see row three in Fig. 1). In the subsequent stages, more hedonic and eudaimonic components separated into distinct components, but, at least initially, the life satisfaction items loaded on both eudaimonia and hedonia. To illustrate this finding, some results from the item level analysis are shown in Table 2. These are the loadings of the five component solution in which

Table 1 Pearson product correlation coefficients between the study variables

Measure	1	2	3	4	5	6	7	8	9	10	11
SWLS	–										
FS	.672	–									
SPANE-Positive	.626	.651	–								
SPANE-Negative	−.469	−.470	−.568	–							
SPANE-Balance	.615	.630	.878	−.893	–						
MLQ-Presence	.550	.657	.534	−.337	.488	–					
MLQ-Search	−.319	−.143	−.275	.340	−.348	−.157	–				
BPNS-Autonomy	.507	.575	.509	−.483	.560	.441	−.250	–			
BPNS-Relatedness	.499	.664	.514	−.413	.522	.416	−.117*	.508	–		
BPNS-Competence	.546	.644	.532	−.449	.552	.563	−.255	.616	.563	–	
SHS	.608	.653	.663	−.548	.681	.553	−.250	.540	.608	.537	–

SWLS Satisfaction With Life Scale, *FS* Flourishing Scale, *SPANE* Scale of Positive and Negative Experience, *MLQ* Meaning in Life Questionnaire, *BPNS* Basic Psychological Needs Scale, *SHS* Subjective Happiness Scale

$N = 355$; All correlations significant at $p < 0.01$, unless otherwise indicated; * $p < 0.05$

Table 2 Five rotated component solution

	Component title				
	Affect/ Happiness	Meaning Presence	BPNS-R (relatedness)	Searching for Meaning	BPNS-A (autonomy)
SWLS 1	.40	.45			
SWLS 2	.41	.31			
SWLS 3	.51	.48			
SWLS 4	.37	.42			
SWLS 5	.33	.41			
FS 1	.31	.66			
FS 2		.37	.59		
FS 3	.35	.43	.36		
FS 4		.35	.45		
FS 5		.33	.32		
FS 6	.41	.41	.33		
FS 7	.34	.51	.36		
FS 8		.38	.43		
SPANE – P1	.67	.31			
SPANE – P2	.64	.31			
SPANE – P3	.57				
SPANE – P4	.61	.32			
SPANE – P5	.53	.31			
SPANE – P6	.40				
SPANE – N1	−.70				
SPANE – N2	−.68				
SPANE – N3	−.63				
SPANE – N4	−.59				
SPANE – N5	−.31				
SPANE – N6	−.45				
MLQ – P1		.78			
MLQ – P2		.80			
MLQ – P3		.78			
MLQ – P4		.81			
MLQ – P5		.66			
MLQ – S1				.82	
MLQ – S2				.86	
MLQ – S3				.80	
MLQ – S4				.78	
MLQ – S5				.74	
BPNS-A1					.48
BPNS-A2	.33				.50
BPNS-A3			.42		.41
BPNS-A4					.64
BPNS-A5			.52		
BPNS-A6	.31		.51		.33

Table 2 continued

	Component title				
	Affect/ Happiness	Meaning Presence	BPNS-R (relatedness)	Searching for Meaning	BPNS-A (autonomy)
BPNS-A7					.68
BPNS-R1			.58		
BPNS-R2			.69		
BPNS-R3			.67		
BPNS-R4			.61		
BPNS-R5			.52		
BPNS-R6			.61		
BPNS-R7			.62		
BPNS-R8			.63		
BPNS-C1					.45
BPNS-C2		.36	.37		
BPNS-C3			.34		
BPNS-C4	.46	.45			
BPNS-C5					.52
BPNS-C6			.35		.46
SHS1 .62	.62	.39	.38		
SHS2 .58	.58	.37	.34		
SHS3 .53	.53	.30	.32		
SHS4	.43		.32		

Note: $N = 355$; Loadings below .30 are not shown; SWLS = Satisfaction With Life Scale; FS = Flourishing Scale; SPANE-N = Scale of Positive and Negative Experience Negative subscale; SPANE-P = Scale of Postive and Negative Experience Postive subscale; MLQ-P = Meaning in Life Questionnaire Presence subscale; MLQ-S = Meaning in Life Questionnarie Search subscale; BPNS-A = Basic Psychological Needs Scale Autonomy; BPNS-R = Basic Psychological Needs Relatedness; BPNS-C = Basic Psychological Needs Competence; SHS = Subjective Happiness Scale

BPNS autonomy and BPNS relatedness are evident. As seen there, the life satisfaction items loaded on both component one, which was primarily hedonic (affect), and component two, which was primarily eudaimonic (meaning presence). Life satisfaction did not emerge as a somewhat recognizable component until the six component extraction (row six in Fig. 1).[1] A somewhat similar result was seen for flourishing, though the flourishing items tended to be more strongly oriented to the eudaimonic components. The life satisfaction and flourishing items eventually separated to form their own components in the seven component solution. This finding helps justify their use as distinct constructs. Nonetheless, one can learn from the order and nature of the emergence of these constructs.

At no point did a simple Big Two (hedonia vs. eudaimonia) framework emerge. In fact, meaning presence and psychological needs formed separate components at the same time (level four) as a more purely hedonic construct first emerged (affect/happiness).

[1] Similarly in the scale level analysis, components emerged for affect/happiness and presence of meaning by the time of the four component solution, but life satisfaction had a loading over 0.50 on each of these, thereby supporting our contention that life satisfaction appears to be associated with both hedonic and eudaimonic components.

In the six component solution, life satisfaction started to emerge as a defining feature of one of the constructs, overlapping somewhat with flourishing, and also with some weak loadings with positive affect items. In the seven and eight component extractions, the flourishing items and the life satisfaction items emerged as distinct constructs. Now, almost all the item groups formed distinct constructs.

5 Discussion

Historical traditions and current theory in well-being research would suggest two major domains of constructs: hedonic and eudaimonic. Hedonic well-being represents immediate pleasure and absence of pain. Eudaimonic well-being, in contrast relates to the life well lived and has roots in Aristotelian philosophy.

In spite of these historical traditions, many well-being studies in positive psychology assess not these Big Two (hedonia and eudaimonia) variables, but instead measure three variables: positive affect, negative affect, and life satisfaction (i.e., SWB). The affect measures assess hedonia, but the life satisfaction measure may indicate both of, or either of, hedonia and eudaimonia. In this analysis, life satisfaction showed relationships with both hedonic and eudaimonic indicators. In fact, life satisfaction and flourishing loaded with eudaimonic variables at several levels of the analyses. This result suggests that life satisfaction and flourishing, though they are at least somewhat distinct constructs, could both function as outcomes that reflect hedonia and eudaimonia. Because life satisfaction overlaps with both hedonia and eudaimonia, this has consequences for a "Big Three" conceptualization of well-being often operationalized in research (i.e., using measures of positive affect, negative affect, and life satisfaction). That is, the Big Three of positive psychology is neither purely hedonic, nor purely eudaimonic, nor a balanced combination of the two, and thus may be lacking as an indicator of either type of well-being. As noted by Lyubomirsky and Lepper (1999), most individuals are capable of reporting to what extent they are happy, "and this judgment is likely not equivalent to a simple sum of their recent levels of affect and their satisfaction with life" (p. 140). Measurement of subjective happiness is often missing in the literature in evaluations of SWB (Lyubomirsky and Lepper 1999).

Similarly, it may be worth searching for a eudaimonic indicator that is maximally distinct from hedonia to add to the Big Three in order to achieve a balanced combination. According to Wong (2011) eudaimonia is characterized not only by the pursuit of virtue and excellence, but also by "meaning/purpose, doing good/making a difference, and the resulting sense of fulfillment or flourishing" (p. 70). Moreover, reviews of the literature have indicated that meaning has received less attention in the positive psychology literature than a number of other indicators of well-being and therefore was worthy of inclusion as an indicator in this research (see Hart and Sasso 2011).

In this analysis, the first construct to separate from the others was the searching for meaning construct. Searching for meaning is clearly distinct from hedonia, and though an interesting construct, is probably not an effective indicator of eudaimonic well-being either. It may instead indicate dysphoria, as suggested by the fact that it cross-loaded with negative affect at the earliest levels of the extraction. Davis and Morgan (2008) in a study of people experiencing tinnitus, found that searching for meaning tended to be predicted by negative changes in goals and philosophy of life. If anything, searching for meaning often indicates an absence of well-being. Possibly, the search for meaning reflects both an indicator of distress and also a particular life philosophy, assuming one must have a

conscious awareness of meaning in one's life (e.g., Frankl 1963); however, further research would be required to support this speculation.

The second major construct to separate out in the factor analysis was presence of meaning. This was the first more pure eudaimonic measure to separate from the other items. This finding suggests that meaning presence provides information distinct from the other indicators of well-being. This result is consistent with the historical theorizing which separates hedonic from eudaimonic constructs. However, this clearly distinct status suggests that meaning may deserve specific attention and inclusion as a construct more widely in positive psychology research. The expected distinction between hedonia and eudaimonia (Hypothesis 1) was at least partly supported in these findings. The distinction that emerged earliest and most strongly was the meaning presence indicator suggesting it is the eudaimonic measure that is maximally distinct from hedonia. However, contrary to expectation (Hypothesis 1), the hedonic items did not begin to load together until later in the extraction process at level four.

In Hypothesis 2 it was suggested that life satisfaction would have relationships with both hedonia and eudaimonia, and in fact, one of the most interesting findings is that life satisfaction and flourishing load on presence of meaning at the five construct extraction level and also on the hedonia component. Admittedly, for the Flourishing Scale, only a few of the items loaded with hedonia. Nonetheless, this result suggests that life satisfaction and flourishing, though they are at least somewhat distinct constructs, both function as outcomes that reflect both hedonia and eudaimonia. The Flourishing Scale is intended to be a measure of eudaimonia, but this analysis suggests that it at least partly conflates hedonia and eudaimonia. The effect seems even more evident for life satisfaction, which loads with both meaning presence and affect/happiness in several component extractions. This result suggests that you may need both meaning and happiness in order to experience satisfaction with life at high levels. Thus, the results support a Big Two model suggested in Hypothesis 1, that is, researchers are justified in distinguishing and measuring both eudaimonia and hedonia. However, the analyses extracting even higher numbers of components (i.e., the Bass-Ackward method used) supports further distinctions between different measures of well-being as suggested in Hypothesis 3.

Huta (2013) argues that part of the confusion between hedonia and eudaimonia emerges because each can be measured at different levels. She argues that a eudaimonic orientation to life can be measured, and she provides a scale for doing so. However, she argues that the outcome of a eudaimonic orientation is meaning. An additional implication of the Bass-Ackward analysis (Hypothesis 3) is that researchers wanting to tap diverse indicators of well-being should add a measure of presence of meaning, which Huta proposes is a result of a eudaimonic orientation, and which our analysis indicates has maximal distinctiveness from other indicators of well-being, and in particular from indictors of hedonic well-being. In contrast, life satisfaction may be seen as a superordinate category that reflects an outcome from both, or either, hedonic or eudaimonic well-being. Therefore, it may be more appropriate to use subjective measures of happiness (e.g., SHS) in assessing hedonic well-being rather than SWB which includes measurement of life satisfaction, which is not specifically hedonic, or eudaimonic (Hypothesis 2).

The findings of this study must be considered in light of sample limitations. Specifically, the results are based on a small non-representative self-selected primarily female sample of young adults recruited from a UK A-Level Psychology website. Further, although the majority of participants were from the UK, this sample is not representative of the general UK population with respect to either age or gender and therefore caution should be made in making any generalizations. In order to increase generalizability, future research would

benefit from a larger more representative sample collected using a randomized sampling procedure.

6 Conclusion

Overall, findings of this study support a modified Big Two model of well-being, justifying the distinction between hedonia and eudaimonia but with the caveat that a Big Two alone fails to capture the diversity of well-being indicators. Moreover, the results suggest that life satisfaction and flourishing reflect both hedonic and eudaimonic well-being and that presence of meaning may be a maximally distinct and therefore an ideal indicator of eudaimonia. Findings of this study are important in enhancing our overall understanding of well-being and demonstrate the necessity of using precise terminology in defining constructs in empirical research thereby reducing confusion and further blurring of the lines between hedonic and eudaimonic conceptualizations of well-being. Once these foundational constructs are more clearly defined and used consistently, research findings generated will become more valid, and indicative of a mature field of study.

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