Wisdom Gained? Assessing Relationships between Adversity, Personality and Well-Being among a Late Adolescent Sample

Eranda Jayawickreme and Nicole W. Brocato

Wake Forest University

Laura E. R. Blackie

University of Nottingham

Accepted for publication in *Journal of Youth and Adolescence.* Published by Springer Verlag. This article may not exactly replicate the final version published in the Springer Verlag journal.

Author Note: Eranda Jayawickreme, Department of Psychology, Wake Forest University; Nicole W. Brocato, Office of Institutional Research, Wake Forest University; Laura E. R. Blackie, School of Psychology, University of Nottingham.

Acknowledgments: This publication was made possible through the support of grant #87 from the Templeton Religion Trust awarded to Jayawickreme & Blackie. This publication was also supported by grant #24322 from the John Templeton Foundation awarded to Jayawickreme. The opinions expressed in this publication are those of the authors and do not necessarily reflect the views of the Templeton Religion Trust. Correspondence concerning this article should be addressed to Eranda Jayawickreme, Wake Forest University, Department of Psychology, 415 Greene Hall, P.O. Box 7778, Winston-Salem, NC, 27109. E-mail: jayawide@wfu.edu

Abstract

How do late adolescents make sense of stressful life events they have experienced in their lives? College students (N = 1225) reported the stressful events they had experienced in their lifetime up until the present survey, and indicated whether they considered each stressful event to be a turning point and/or an opportunity for wisdom. Students also completed measures of personality and well-being. We hypothesized that the tendency to interpret stressful events as turning points or opportunities for wisdom would explain the associations between three personality characteristics (Openness to Experience, Extraversion, and Emotionality) and well-being. We used a multi-step ESEM approach in which we first assessed the measurement structure of our items before testing partial and complete structural models. We tested partial and structural models according to extant guidelines associated with the evaluation of indirect effects models. We did not find support for the indirect effects model, but Openness was associated with the tendency to view stressful events as turning points, and Openness and Extraversion were associated with the tendency to view stressful events as leading to wisdom, as well as with increased well-being.

Keywords: wisdom, adversity, personality, well-being

Wisdom Gained? Assessing Relationships between Adversity, Personality and Well-Being among a Late Adolescent Sample

How do late adolescents make sense of stressful life events they have experienced in their lives? One of the unfortunate realities of life is that most people will have to contend with stressful life events at various points of their lives. Given that people have a strong need to see their lives as consistent and coherent (Clausen, 1995), such events can thus be challenging, as their impact (both psychological and physiological) can be long-lasting, and lead to shifts in identity and meaning (Sutin, Costa, Wethington, & Eaton, 2010a, 2010b). Some individuals may perceive such events as a turning point— a life event associated with a major life change. The impact of this turning point can be constructed as either positive or negative; the critical point is that the event (for better or worse) has made the individual change the course of their life. It is also possible that such events may also be identified as an opportunity for gaining wisdom or learning new insights about oneself, others, or the world in general. The present research attempts to replicate and extend past research (Sutin et al., 2010a, 2010b) by assessing the personality predictors of these two ways of perceiving stressful life events as turning points and/or lessons learned as well as assess their associations with well-being.

Growth Following Adversity

For many people, Nietzsche's (1889/1998) claim, 'That which doesn't kill me makes me stronger', now repeated on bumper stickers and in popular music songs, holds great intuitive resonance. The notion that stressful and even traumatic life events can strengthen individuals'

character has been the subject of recent psychological investigation. This topic of research has been referred to as "altruism born of suffering," "stress-related growth," and "benefit finding" (Helgeson, Reynolds, & Tomich, 2006; Park & Fenster, 2004; Staub & Vollhardt, 2008). The most frequently used model, however, is posttraumatic growth (Tedeschi & Calhoun, 2004), which measures the potentially transformative and positive impact of adverse and traumatic events on individuals' personalities (see Blackie, Jayawickreme, Tsukayama, Forgeard, Roepke, & Fleeson, 2016; Jayawickreme & Blackie, 2014). Posttraumatic growth is most commonly measured in the five domains of improved relationships, increased personal strength, identification of new possibilities in one's life, spiritual growth and greater appreciation of life (Tedeschi & Calhoun, 1996). It is frequently reported—up to 83% of individuals who have survived life-threatening illnesses, natural disasters, and transportation accidents report at least one such positive change (Affleck, Tennen, Croog, & Levine, 1987; Affleck, Tennen, & Rowe, 1991; McMillen, Smith & Fisher, 1997; Sears, Stanton, & Danoff-Burg, 2003).

Of relevance to the current article, researchers have focused on understanding how individuals can experience benefits from the experience of stressful life events by investigating the role of psychological mechanisms such as meaning making (Park, 2010; Roepke, Jayawickreme & Riffle, 2013; Wong, Reker, & Peacock, 2006). Some theorists, such as Pals and McAdams (2004) have even argued that the revision of one's life narrative is critical to enabling individuals to make sense of the traumatic event, and is the catalyst for subsequent positive changes to the individuals' thoughts and behaviors. Furthermore, some psychologists conceive of the life story as one aspect of personality with an important role in the construction of one's identity (McAdams, 2001). In this account, there are particular kinds of narrative sequences that individuals may use to make sense of the impact of stressful life events, which make the gaining

of such insight more or less likely. In life narrative research, for example, *redemptive narratives* are characterized by a transition from a negative life scene to a positive life scene in an individual's narrated life story. In contrast, *contamination narratives* are characterized by a move from a positive life scene to a negative life scene. Thus, the redemptive narrative is the most likely to result in an increased perception of wisdom. In a redemption narrative, the negative situation described in the scene has to change into a positive situation (e.g. "an individual who is experiencing relationship problems and difficulties managing their mood, chooses to make important changes in his life, leading to improvements in his relationships with family members and his overall well-being"). In this narrative sequence it is important that the positive outcome is perceived as the direct result of a negative or stressful event (McAdams et al., 2001, p. 478). Thus, how an individual interprets a negative situation in the course of their life story has significant implications for whether that individual finds benefits from the stressful life event or not. According to this perspective, post-traumatic growth may be an expression of a redemptive narrative generated by the experience of stress or adversity and is more likely to occur in individuals with psychological traits such as generativity (the concern for and commitment to promoting the well-being of future generations) and among those who are low in depression, and high in self-esteem and satisfaction with life (McAdams & de St. Aubin, 1992). For example, in one study, adults who were selected specifically based on their high levels of generativity were found to report significantly more redemption imagery in their narratives compared to adults low in generativity (McAdams & Bowman, 2001).

Turning Points and Gaining Wisdom

With regards to individuals in late adolescence, McLean and Thorne (2003) specified two different types of meaning-making relevant to how individuals respond to stressful events: *lesson*

learning, in which one learns a specific lesson from an event that can guide future behavior in similar situations; and *gaining insight*, in which a broader lesson is learned from an event that can apply to others domains of life beyond the specific event. McLean (2005) has since noted that there is often a kind of transformation in the understanding of oneself or others (e.g., "I realized that I was an independent person") involved in the acquisition of insight. Moreover, McLean and Thorne (2003) conceived of *lessons learning* as a developmentally less advanced form of meaning. Their model, however, does not specify which individual differences make it more likely that individuals will find insight in times of challenge or difficulty. These meaning-making processes have also been found to be important in fostering well-being across time. For example, Tavernier & Willoughby (2012) found that although adolescents' well-being prior to a stressful event was unrelated to post-stress meaning-making, this meaning-making was related to increases in well-being over time. It is therefore not an individual's prior level of adjustment that seems to be important, but individual differences in specific personality traits that may play an important role in facilitating the meaning making process.

Related to McLean and Thorne's (2003) distinction, Sutin et al. (2010a) identified two specific subjective interpretations: *turning points* and *wisdom gained* (or *lessons learned)*. A turning point is defined as "a specific episode or series of episodes [that] appears to alter or redirect the ongoing flow of the life course" (Pillemer, 1998, p. 76). Bruner (1994) has noted that turning points contribute to the development of an individual's identity. The narrative construction of turning point memories is arguably more important than what actually happened in the past, because research has shown that it is the individual's interpretation of the experience that leads to greater self-understanding (McLean & Pratt, 2006). Turning points are thus "forks in the road" that reflect a significant psychological shift or change for the individual's life. The

types of the life events that may prompt a turning point range from the seemingly innocuous to the objectively traumatic. As a result, a turning point may not in itself denote the presence of a significant adverse or traumatic life event, and could even represent a positive change in an individual's life. For example, Wethington (2003) found that perceiving turning points at work were associated with personal growth, promotions, and moving into better jobs. Sutin et al. (2010a) however, found that individuals' trait-level of emotionality predicted the likelihood of perceiving a particular event as a turning point, and the mental act of perceiving turning points was longitudinally associated with increased emotionality over time. Sutin et al. interpreted this finding as indicating that individuals high in emotionality have difficulty in coping with stressful life events and are therefore more likely to interpret stressful events as negative turning points or in the form of contamination narrative sequences.

A second way to find meaning from a stressful life event is to gain wisdom by learning a lesson from the experience. Wisdom has been characterized by increased concern for different perspectives, self-transcendence and intellectual humility (Grossman, Gerlach, & Denissen, 2016; Jayawickreme & Blackie, 2016; see also Sternberg, 1990 for a more detailed discussion). When an individual contemplates why an adverse life event happened and what can be learned from the experience, some of the positive outcomes associated with wisdom may be identified over time (Jayawickreme & Blackie, 2016; Blackie & Jayawickreme, 2014).

It should be noted that the types of events that individuals define as stressful, as well as the manner in which they respond to them, changes across the lifespan (Aldwin et al., 1996). This ability to learn lessons from experience takes shape in late adolescence and increases across the lifespan (Sutin et al., 2010a), and emotionally stable (e.g. low in emotionality), extraverted, and open individuals narrate memories saturated with themes related to personal growth and

meaningful relationships (Bauer et al., 2005). Of relevance here, in a middle adulthood sample, Sutin et al. (2010a) found that prospectively, individuals high in emotionality perceived a stressful life event as a turning point, whereas extraverts claimed to have learned a lesson from it. Moreover, perceiving the event as a negative turning point was associated with increases in emotionality, whereas learning a lesson from the event was associated with increases in extraversion and conscientiousness.

The Present Study

This study is a replication of and expansion upon Sutin et al.'s (2010a; 2010b) work. The goal of the present study was to examine respondents' tendency to view stressful events as turning points or leading to wisdom in a large late adolescent sample. This study was a replication of Sutin et al.'s work in that it examined the associations among personality characteristics and the tendency to view stressful events as turning points or leading to wisdom. This study was an expansion of Sutin et al.'s work in that self-reported well-being was also included in the analyses, and our analytical methods employed structural equation modeling methods to test whether the meaning-making strategy employed by participants functioned to mediate the relationship between personality and well-being.

Thus, our research questions examined whether characteristics of the person were associated with the tendency to interpret stressful events as a turning points or leading to wisdom, and whether those interpretations were associated with well-being. We were specifically interested in whether the effects of personality on well-being were direct effects or if they were indirect effects that were explained by the direct effects on well-being of the tendency to view stressful events as turning points or leading to wisdom. Figure 1 displays this key research question.

Because our key research question was focused on determining whether the association between personality characteristics and well-being was direct or indirect, we based our research questions on extant guidelines for assessing indirect effects (e.g., Baron & Kenny, 1986; Frazier, Tix, and Barron, 2004; Holmbeck, 1997; Hoyle & Smith, 1994). Consistent with those guidelines, our first question asks whether our predictor variable (personality characteristics) has a direct effect on our outcome variable (well-being). Our next research question asks whether the effects of the predictor (personality characteristics) on the outcome (well-being) can be modeled as indirect effects associated with our mediator variables (the tendency to view stressful events as turning points or leading to wisdom). Our final two research questions examined components of the indirect-effects model: (a) whether the predictor (personality characteristics) is associated with the mediator (tendency to view stressful events as turning points or leading to wisdom), and (b) whether the mediator (tendency to view stressful events as turning points or leading to wisdom) is associated with the outcome (well-being).

We addressed the following research questions and hypotheses in the present study:

1) Are the personality characteristics of openness, extraversion, and emotionality associated with well-being? In this question, we assess whether the personality characteristics can be modeled as predictors that have direct effects on the outcome of well-being. We hypothesized that the traits of extraversion and emotionality would be most strongly related to well-being, in light of past research (Jayawickreme et al., 2012) showing that extraversion is positively related to well-being and emotionality is related to lower levels of well-being.
2) Does the tendency to interpret stressful events as turning points or opportunities for wisdom explain the associations between three personality characteristics (openness to

experience, extraversion, and emotionality) and well-being? This second research question asks whether, in contrast to the first research question, the effects of personality characteristics on well-being are indirect, rather than direct (for similar appraisal models in clinical psychology, see Ehlers & Clark, 2000, and also Zalta et al. 2014). The full path diagram for this research question is available in Figure 1. Given that extraverted people are both most likely to perceive stressful life events as opportunities for wisdom (Sutin et al., 2010) and report high levels of subjective well-being (Jayawickreme, Forgeard, & Seligman, 2012), and people high in emotionality are both most likely to perceive stressful life events as turning points (Sutin et al., 2010a) and report lower levels of subjective well-being (Jayawickreme et al., 2012), we expected that lower levels of well-being would be associated with the tendency to view stressful events as turning points, which itself would be associated with a tendency toward emotionality. Likewise, we expected higher levels of well-being to be associated with a tendency to view stressful events as leading to wisdom, which would itself be associated with a tendency toward extraversion.

3) As a corollary to Research Questions 1 and 2: Is there an association between personality characteristics and the tendency to view stressful events as turning points? Sutin et al. (2010a) found that individuals high in emotionality perceived stressful life events as turning points, whereas extraverts perceived an opportunity for wisdom from them. Although she obtained these findings in a sample of middle-aged adults, we hypothesized that we would obtain similar results in our young adulthood (or college) sample. Following Bauer et al.'s, (2005) findings, we also hypothesized that openness to experience would be associated with a tendency to perceive stressful life events as

leading to wisdom. We speculate that the characteristics associated with openness to experience (open-mindedness, divergent thinking) would lend themselves to perceiving adverse or challenging life events as opportunities for wisdom (see Forgeard, Mecklenburg, Lacasse, & Jayawickreme, 2014).

4) As a corollary to Research Questions 1 and 2: Are perceptions of stressful life events as turning points or leading to wisdom differentially associated with students' current level of well-being? Given that we hypothesized in Research Question 2 that emotionality is associated with both lower levels of well-being and a tendency to view stressful events as turning points, we hypothesized for this question that the tendency to view stressful events as turning points would be associated with lower levels of well-being. Additionally, given that we hypothesized in Research Question 2 that extraversion would be associated with both higher levels of well-being and a tendency to view stressful events as leading to wisdom, we hypothesized for this question that the tendency to view stressful events as leading to wisdom would be associated with higher levels of well-being.

Method

Participants

The undergraduate student body of Wake Forest University (with the exception of students who were studying abroad) was invited to participate in an online survey about personality and well-being over the course of the 2013-2014 academic year. Approximately 4,800 students were invited to participate. This study was part of a larger, multi-wave research study conducted in collaboration with the Office of Campus Life at Wake Forest University. The

research study included a number of questionnaires not relevant to the current investigation, and which are not reported here.

A total of 1320 students participated in the first wave of the study, which is the only wave of data analyzed in this current study. In this sample of 1320, the first-wave records for 95 students were blank due to participant non-response and were therefore deleted from the sample. These participants completed the consent form, but failed to answer any of the questionnaires. We used the resultant sample of 1225 respondents for our multiple imputation. As we explain below when we discuss our multiple imputation methods, we used this sample of 1225 for our imputations because larger samples yield less biased imputation results. In this set of 1225 respondents, 676 reported experiencing a stressful event at some point in their lives. Because our research questions focused on interpretations of stressful life events, our structural models were based on this sample of 676. Demographics for this sample are presented in Table 1. The participants' ages ranged from 17 to 24 years with an average of 19.92 and a standard deviation of 1.26.

Measures

Participants completed a comprehensive questionnaire consisting of 37 existing measures as well as items designed by the researchers. As mentioned above, most of these measures were not relevant for this study. The measures used in this study were: the HEXACO-60 personality inventory (Ashton & Lee, 2009), the Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen & Griffin, 1985), a retrospective inventory of stressful life events, and two items assessing respondents' tendencies to interpret stressful life events as either turning points or leading to wisdom.

HEXACO-60. The HEXACO-60 is a personality questionnaire that asks participants to report on their dispositional levels of the traits of extraversion, agreeableness, conscientiousness, emotionality, openness to experience, and honesty-humility through a series of statements. Participants indicated their level of agreement with on a 5-point Likert scale from 1 (*strongly disagree)* to 5 (*strongly agree)*. The HEXACO-60 has been shown to have has good reliability, accommodates a broad set of personality variables, and good self-other agreement when informants are asked to assess a target person's personality (Ashton & Lee, 2007; 2009). We used only the items that measured extraversion, emotionality and openness to experience because our research questions focused on those three dimensions.

Satisfaction with Life Scale (SWLS). The SWLS asks participants to rate their agreement from 1 (*strongly disagree*) to 7 (*strongly agree*) with five items (Ex. "In many ways my life is close to my ideal."). Part research has shown that the SWLS has good reliability, some degree of autonomy from other well-being constructs such as positive affect and depression, and good self-other agreement when informants are asked to assess a target person's satisfaction with life (Pavot & Diener, 1993; Pavot et al., 1991).

Stressful life events. Participants were asked the following question: "We would now like you to think about your entire life (growing up, as well as adulthood). Listed below are a number of difficult or stressful things that sometimes happen to people. If you have experienced any of the events on this list, please select the event." The following events were adapted from the Life Events Checklist (Gray, Litz, Hsu, & Lombardo, 2004). We further added two life events that were likely to be relevant to our sample: parents divorced and financial hardship. We note that Gray et al. (2004) developed their checklist to target the experience of potentially traumatic life events. We are aware that the term "traumatic" has specific clinical implications,

but as discussed in our introduction, we were more interested in participants' subjective interpretation of negative or stressful life events more broadly; we therefore included in our analyses all participants who identified experiencing one of these events.

1. Loss of a loved one
2. Diagnosed with a chronic or acute illness
3. Victim of a violent or abusive crime
4. Serious accident or injury
5. Disaster (including natural disasters – flood, hurricane and fires, explosions, or transportation accidents)
6. Financial hardship
7. Combat or exposure to a war zone
8. Parents separated or divorced
9. I have not experienced any of these events

Tendency to view events as turning points and leading to wisdom. For each of the events participants selected, participants provided a yes/no response to both of the following questions, which were adapted from the questions used by Sutin et al. (2010a):

1. Turning point item: Sometimes people think of things like this as a "turning point" when their lives change direction. Is that true for you about this event or situation?
2. Wisdom item: Sometimes things like this lead to new ideas or wisdom. Is that true for you about this event or situation?

These items were coded as a 1 if participants responded *yes* and as a 0 if participants responded *no* for each life event endorsed by a participant. To capture the tendency to view events as turning points or leading to wisdom, we averaged these items. Averaging the items put

them on a scale from 0 to 1 without giving higher scores to participants who reported more stressful events. Thus, a participant who only reported one stressful event could have the same score as a participant who reported 5 events. Because large differences in variables' variances can cause problems with model convergence (Kline, 2015, pp. 81-82; Muthén & Muthén, 2015), we multiplied the averages by 5 so that the variances of these variables would be closer in size to the variances of the other variables in this study.

Statistical Analyses

Sutin et al.'s (2010) original statistical analyses of these research questions relied on logistic regression. We used structural equation modeling (SEM) methods to evaluate our research questions because the exploration of relations among latent variables measured with self-report items is a data analytic task that is well suited to the SEM family of models. We conducted our SEM analyses with M*plus* software version 7.4 (Muthén & Muthén, 2015). To appropriately condition our data and guide the many decisions needed for these analyses, we relied on procedures outlined by Enders (2010) and Kline (2015). In the following section, we outline the main steps taken in preparing our analyses.

Data conditioning. Based on the recommendations of Kline (2015), we ensured that all items had some variance, checked the normality of our item distributions, examined our correlation matrix for highly correlated items, calculated tolerance and variance inflation factors, and checked for outliers.

We conducted these procedures using SAS software (version 9.4; SAS Institute, 2014). We found that the distributions for the individual items were non-normal, but that all items had variance. Because many of our items were also ordinal and had a limited number of response options (Rhemtulla, Brosseau-Liard, & Savalei, 2012), we used the WLSMV (a diagonally

weighted, least-squares) estimator when estimating models in M*plus* to appropriately account for the non-normal and ordinal nature of much of our data (Asparouhov & Muthén, 2010; Li, 2015). To identify possible outliers, we created summed scores for participants' responses to each of the scales in this study (i.e., one summed scale for each of the HEXACO, SWLS, DSAT, etc.) and screened the summed scores for those that were 3 or more standard deviations above or below the mean; according to this heuristic, there were no outliers in the data set (i.e., no cases had scores that were more than 3 standard deviations above the mean). We did not find any items that met Kline's (2015) suggested cutoffs of >10.0 for VIF and <.10 for tolerance, nor did we find any items sufficiently correlated ($r > .90$) to indicate possible collinearity.

Missing data. Data was missing throughout the items analyzed in this study. In our initial sample of 1225 respondents, missingness rates for individual variables ranged from 0% to 49.1% The average missingness rate was 1.2% for the HEXACO items, 34.6% for the SWLS items, and 26.5% for the turning point and wisdom variables. Missingness for the demographic items ranged between 0% and 49.1%. We calculated the overall rate of missing data as 10%, and presumed that the data were missing at random. We chose to presume that the data were missing at random for two reasons. First, our data were highly unlikely to have been missing completely at random. Second, sensitivity analyses to assess whether the data were missing not at random would have been complex, inconclusive, and made stringent assumptions about that were not appropriate for our data (e.g., that they were normally distributed; Enders, 2010).

We used the multiple imputation method for data missing at random suggested by Enders (2010) to impute missing observations using M*plus* software version 7.4 (Muthén & Muthén, 2015). We chose multiple imputation over the use of full information maximum likelihood estimator because multiple imputation would allow us to analyze the data with a diagonally-

weighted least squares estimator (WLSMV), which produces less biased parameter estimates than maximum likelihood when data are ordinal and non-normal (Asparouhov & Muthén, 2010; Li, 2015).

To conduct the multiple imputation procedure, we used an unrestricted variance/covariance model (Asparouhov & Muthén, 2010), and imputed 50 data sets to maximize statistical power (Enders, 2010). We also used the full, initial data set of 1225 respondents so as to minimize biases introduced by the imputation procedure (Asparouhov & Muthén, 2010).

For the models analyzed over imputed data sets using the WLSMV estimator (i.e., the measurement and structural models in the *Results* section), M*plus* provides parameter estimates that are averaged over the data sets and standard errors that are based on Rubin's (1987; as cited in Muthén & Muthén, 2015) formula for combining variances within and between imputation sets.

Structural equation modeling (SEM). We based our SEM approach on the recommendations of (in alphabetical order): Asparouhov and Muthén (2009), Kline (2015), Marsh, Morin, Parker, and Kaur (2014), and the M*plus* supplemental literature (e.g., discussion board postings and website supplemental materials).

We used a multi-step approach in which we first analyzed measurement models before we analyzed structural models, similar to the four-step approaches developed by Hayduk and Glaser (2000) and Mulaik and Millsap (2000) and summarized by Kline (2015). Those approaches suggest that researchers: (1) perform exploratory factor analyses (EFA), (2) perform independent-clusters-model confirmatory factor analyses (ICM-CFA) in which each item loads

onto only one factor, (3) add at least one structural component to the CFA model, and (4) test the full structural model.

Our approach differed from this four-step approach in that we used exploratory structural equation modeling (ESEM) instead of EFA and ICM-CFA. ESEM is an integration of CFA, EFA, and SEM that allows the measurement components the models to be in either EFA or CFA format while still providing structural modeling features and goodness-of-fit statistics (Asparouhov & Muthén, 2009; Marsh et al., 2014). Instead of only using an EFA measurement format in the first of the four modeling steps we proposed, we retained an EFA measurement format for the HEXACO items in all the models we estimated. Allowing the measurement components of these models to remain in an EFA format is in contrast to traditional SEM methods, which require that the measurement components of SEMs be in ICM-CFA format. When working with multiple and complex measures such as the measures in this study, the EFA component of ESEM can be used to allow items to load on multiple factors which are then rotated, thereby reducing the model fit problems and inflated latent variable correlations often associated with ICM-CFA (Asparouhov & Muthén, 2009; Marsh et al., 2014). As we discuss below, however, ESEM does not eliminate the fit problems associated with complex models, and more research is still needed on evaluating fit in ESEMs.

One noteworthy caveat for working with ESEMs is that factors in the ESEM that are modeled using an EFA format must be treated as a unit in any structural models; the individual factors cannot be treated as unique exogenous or endogenous variables or regressed on each other (Muthén & Muthén, 2015). We used target rotation for the EFA portions of the models (Asparouhov & Muthén, 2009).

Model identification and scaling. Throughout the paper, we refer to *pattern coefficients* rather than the more common *factor loadings* because the former term is more precise and refers only to the unique regression coefficient associated with regressing a specific item on a specific factor. In contrast, the term *factor loadings* refers to all the ways in which items can be directly and indirectly associated with factors. Examples of indirect item-factor associations include: an item is not regressed on a given factor, but has a correlated uniqueness with an item that is; also, an item is not regressed on a given factor, but is regressed on a second factor that is correlated with the given factor.

For the ICM-CFA portions of the models, we chose to fix the pattern coefficient for the first item to 1. The EFA portions of the models were identified through the rotational method and through setting the residual variances of the latent factors to 1.

Two of our latent variables were measured with single-item indicators: tendency to interpret adverse events as turning points, and tendency to interpret adverse events as building wisdom. For these two latent variables, we used the suggestions of Kline (2015) and Little (2013) and fixed the pattern coefficients for each item to 1 and set the residual variances for the items to 20% of their total variance. We used the item variances from the imputed data (i.e., and not the variances from the unimputed data). Kline and Little both suggest that the percentage of the variance allocated as residual variance should be based on extant reliability literature. Unfortunately, there have not yet been quantitative psychometric studies of these items. We chose 20% under the reasoning that in a best-case scenario, these items would be reliable.

Goodness-of-fit statistics and indices. Consistent with Kline's (2015) recommendations, we evaluated model fit at the level of both overall model fit and item-level fit. We began by evaluating global fit using Yu's (2002) guidelines for non-normal, categorical outcomes:

RMSEA should be .05 or lower; CFI should be at least .95, and WRMR should not much more than 1.0. In keeping with Kline's (2015) recommendation, we also determined that chi-square tests of model fit should be non-significant, although we recognized that non-significance was unlikely given this study's sample size.

We ultimately used these fit guidelines very flexibly because: (a) the guidelines proposed by Yu were based on models that included only 15 variables and 3 factors and were also more stringent than previous cutoff recommendations (e.g., the .90 recommended by Hu & Bentler, 1999), (b) there is limited research on fit for both ESEMs (Marsh et al., 2009) and WLSMV analyses of imputed data (Asparouhov, 2015) and (c) (c) we have 37 variables in our study (30 HEXACO items, 5 SWLS items, one turning point average, one wisdom average), which is large enough to potentially distort fit statistics and indices (Kenny & McCoach, 2003, Marsh et al., 2009). Furthermore, Kline (2015) cites literature demonstrating that even large violations of the cutoffs for fit criteria and indices may not signify model misfit. In analyzing model fit, we therefore followed Kline's (2015) and Marsh et al.'s (2009) recommendations to use an eclectic approach, to supplement analyses of global fit with examinations of item-level fit, and to use our best judgment. Throughout the presentation of our results, we do not report chi-square *p*-values or RMSEA confidence intervals for any of our models because these are not available in M*plus* for analyses conducted with imputed data.

We evaluated fit at the item level by examining correlation residuals (i.e., the difference between the observed and model-estimated item correlations). M*plus* can be used to generate correlation residuals when both items in a pair are ordinal (i.e., categorical). When one or both items is continuous, those residuals must be hand-calculated (Asparouhov, 2016). Using Kline's (2015) suggestion, correlation residuals greater than .10 were considered possible indicators of

model misfit for the items in those correlations. Because there is no established cutoff for how many correlation residuals can exceed .10, we used our judgment and the patterns of residuals to make determinations about model fit.

Sample size and parameter estimate bias. We conducted sample size analyses in M*plus* to determine whether our sample was large enough for our model's parameter and standard error estimates to be relatively unbiased (i.e., biases of <.1; Muthén & Muthén, 2002).

We conducted sample size analyses on two models in our study: the original EFA model with all HEXACO items in Step 1, and the final structural model we proposed as an alternative to our original hypothesis (Figure 7). We chose these models because they were the models with the most (Step 1) and fewest (Figure 7) items in our study and because they were the models with the most (Figure 7) and fewest (Step 1) estimated structural components.

We used Muthén and Muthén's (2002) article on Monte Carlo simulation studies to guide our methods and our interpretations of the results. We generated simulations with 4 different sample sizes: 676 (our analyzed sample size), 1225 (the size of the sample from which the analyzed sample was drawn), 2000, 2500, and 3000. In all cases we used 5000 replications.

For the EFA portions of both models (i.e., the full model in Step 1 and the HEXACO portion of the model in Figure 7), none of the sample sizes we modeled yielded unbiased parameter or standard error estimates. According to Asparouhov and Muthén (2009), Monte Carlo studies do not always produce accurate results for EFAs, particularly when sample sizes are large and the items cross-load onto multiple factors, both of which are true for our study.

For the ICM-CFA (i.e., SWLS, turning point, and wisdom items) and structural portions of the Figure 7 model, we found that our actual sample size of 676 was sufficient to generate a model with unbiased parameters and standard error estimates. The exception to this finding was

the path coefficient from the Emotionality factor to the Well-being factor, possibly because this path coefficient was so small.

Overall, these findings seem to show that our sample size was sufficiently large to produce models with unbiased parameter and standard error estimates, although the methodological challenges associated with Monte Carlo studies of EFAs leaves unclear the question of what sample size would be needed to produce unbiased parameter estimates in the EFA portions of our models.

Results

In this section, we begin by presenting descriptive statistics for the item responses. We then present the ESEM results following the four-step approach we described above: (1) models in which all items are modeled with EFA, (2) models with a partial CFA structure, (3) partial structural models, and (4) full structural models.

Descriptives. Of the 1225 total participants, 676 (55.18%) reported experiencing a adverse life event at some point in their lives. The models provided below are based on that sample of 676. The total number of adverse life events reported was 1335. Event types and frequencies are displayed in Figure 2 The means and variances for the continuous variables (the turning point and wisdom variables) for both the original and imputed data sets are presented in Table 2.

ESEM steps 1 and 2: Assessing the measurement structure of HEXACO items, SWLS items, and turning point and wisdom averages. The goal of this step was to assess the factor structure of the items included in this study. We first used only an EFA format and allowed all the items to load onto all the factors. We needed this step because we were unsure of whether the turning point and wisdom items would load onto the factors designated for them or

cross-load onto other factors. We also wanted to ensure that the SWLS and HEXACO items formed distinct factors.

After modeling the items by using an EFA measurement format for all the items, we conducted a set of models in which the SWLS, turning point, and wisdom items were modeled with an ICM-CFA format. We needed to conduct these models because we needed to be able to treat the endogenous factors as unique entities, something we could not do if we retained an EFA structure for them.

All these models also included correlated uniquenesses for HEXACO items that were originally designed to form facets within the HEXACO dimensions. (Ashton & Lee, 2009). The items were originally designed to measure a total of 12 facets: four facets within each of the three personality dimensions. In our largest models--before we deleted several items as explained below--we added a total of 24 correlated uniquenesses. We chose to add correlated uniquenesses instead of modeling the items with a hierarchical factor structure because the latter approach using an ESEM method would have required that we allow all 30 of the HEXACO items to load onto latent factors representing all 12 of the facets, thereby vastly increasing the number of parameters estimated.

We started with fully-EFA ESEMs that varied in the number of content factors included and whether they included factors designed to capture method effects associated with negative wording (as in Hyland, Boduszek, Dhingra, Shevlin, & Egan, 2014; Molina, Rodrigo, Losilla, & Vives, 2014; Supple, Su, Plunkett, Peterson, & Bush, 2012; Wouters, Booysen, Ponnet, & Baron Van Loon, 2010). We did not find any evidence that factors which were included to capture method effects actually did so; instead, they appeared to capture a random collection of items with low (i.e., <.3) pattern coefficients.

We also found that the two items representing the tendency to view events as turning points or leading to wisdom did not load onto either (a) a single adversity factor or (b) two individual factors. Instead, the turning point item loaded at low levels on the Openness and Well-being factor while the wisdom item loaded at a low level on the Openness factor. We also found that a number of HEXACO items cross-loaded at low levels onto the factors intended to represent the tendency to view events either as turning points or leading to wisdom. We therefore decided to follow our original theoretical model and included separate factors for each of the turning points and wisdom averages items. In the *Discussion* section, we consider possible implications of the cross-loading patterns we found in these models.

Across both the fully-EFA models and the models that used ICM-CFA formats for the turning point, wisdom, and SWLS items, we found that the HEXACO and SWLS items formed the factors they were designed to measure, but this step also began to reveal some problematic cross-loadings of the HEXACO items onto the Well-being factor. We needed the HEXACO and Well-being factors to be conceptually and empirically distinct, and so we ultimately deleted five HEXACO items because they either (a) had large pattern coefficients for the Well-being factor while having pattern coefficients of equal or lesser size on their intended factor, or (b) they had multiple correlation residuals for the SWLS items that were larger than .10. In addition, all these items seemed conceptually similar to the SWLS items in that they measured some form of mood or satisfaction level.

The five HEXACO items we deleted were: 4 (*I feel reasonably satisfied with myself overall*), 22 (*On most days, I feel cheerful and optimistic*), 52 (*I sometimes feel that I am a worthless person*), 11 (*I sometimes can't help worrying about little things*), and 35 (*I worry a lot*

less than most people do). Items 4, 22, and 52 were designed to measure extraversion, and items 11 and 35 were designed to measure emotionality.

Our final measurement model excluded HEXACO items 4, 22, 52, 11, and 35, and included a total of six factors that were modeled with a combination of EFA and CFA measurement formats: an EFA format was used for the three HEXACO dimensions (Openness, Extraversion, and Emotionality), and a CFA format was used to model one factor for the Well-being dimension, one factor for the tendency to view stressful events as turning points (which we subsequently refer to as the "Turning Points" factor), and one factor for the tendency to view stressful events as wisdom-building (which we subsequently refer to as the "Wisdom" factor). Despite the large number of items and factors, the global fit statistics and indices nearly met our most stringent global fit guidelines: $X^2(388) = 746.44$; RMSEA = .04; CFI = .95; WRMR = .89. Of the 496 correlation residuals, only 6 were equal to or greater than .10. The residuals lacked any obvious pattern, and so we concluded that this model provided an adequate fit to the data. Standardized pattern coefficients[1] for this model are presented in Table 3, and latent factor correlations are presented in Table 4. In Table 3, items are bolded when their standardized pattern coefficients are at least .71, the minimum size needed for a factor to explain at least half of the variance in that item ($.71^2 = .504$, or 50.4%; Kline, 2015). When items do not have standardized pattern coefficients that are at least .71, they may either be better explained by multiple factors (i.e., be complex indicators) or they may simply not be explained well by the model. The results in Table 3 show that the pattern coefficients for the HEXACO are modest in size; only five of them are at least .71, and most range between .30 and .68. This overall pattern

[1] Throughout the *Results* section we present standardized results using STDYX standardization, an M*plus* standardization method that is based on all variables in the model; in the case of the models in this article, this method is equivalent to STDY standardization (Muthén & Muthén, 2015).

of modest pattern coefficients is similar to the results Marsh et al. (2010) found when they modeled all six dimensions of the HEXACO using ESEM and data from an adult sample.

Research Question 1: Partial structural model regressing Well-being on Personality. Our first partial structural model corresponds to Research Question 1: Are the personality characteristics of openness, extraversion, and emotionality associated with well-being? This question is also the first step in testing our indirect effects model; in this step, we assess whether the predictor variables (the personality characteristics represented by the Openness, Extraversion, and Emotionality factors) have direct effects on the outcome variable (the Well-being factor). This model is represented in Figure 3; the figure shows that the measurement model for the Turning Points and Wisdom factors are retained, but no structural paths are associated with these factors. This model's global fit statistics and indices nearly met our most stringent global fit guidelines: $X^2(390) = 759.60$; RMSEA = .04; CFI = .94; WRMR = .91. Analyses of item-level fit did not reveal obvious patterns of problematic correlation residuals, and so we concluded that this model provided an adequate fit to the data.

The standardized path coefficients for this model are presented in Table 5. According to those results, the standardized path coefficients from Openness and Extraversion to Well-being (-.12 and .48, respectively) are statistically significant, while the standardized path coefficient from Emotionality to Well-being (.07) is not. In other words, participants who were more open and extraverted had higher levels of well-being, but higher levels of Emotionality were not associated with well-being. Although the Openness and Extraversion path coefficients are statistically significant, it is not clear whether they are large enough to be meaningful; the Extraversion factor appears to explain about 23% of the variance in the Well-being factor (because $.48^2 = .23$), and the Openness factor explains only 1.4% of the variance in the Well-

being factor ($.12^2 = .014$). Although it is possible that 1.4% of explained variance could be a meaningful effect, the lack of relevant literature leaves the interpretation of this path coefficient open for further research.

Research Question 2: Full indirect-effects model regressing Well-being on Turning Points and Wisdom, and Turning Points and Wisdom on Personality. According to the guidelines for assessing indirect effects, our next step was to answer Research Question 2: Does the tendency to interpret stressful events as turning points or opportunities for wisdom explain the associations between three personality characteristics (openness to experience, extraversion, and emotionality) and well-being? We estimated the full direct-effects model by regressing the Well-being factor on the Turning Points and Wisdom factors, and the Turning Points and Wisdom factors on the Personality factors. This model is represented in Figure 1. We were unable to estimate this model because it returned negative residual variances for at least one factor. Negative residual variances are conceptually impossible and mean that the model is misspecified (Kline, 2015). For the same reason, we were also unable to estimate indirect effects models when we modeled the Turning Points and Wisdom factors in separate models. We therefore concluded that in our study, the effects of personality characteristics on well-being cannot be modeled as indirect effects associated with the tendency to view stressful events as turning points or leading to wisdom.

Research Question 3: Partial structural model regressing the Turning Points and Wisdom on Personality. In this question we asked: Is there an association between personality characteristics and the tendency to view stressful events as turning points? Had the model for Research Question 2 converged, we would have answered this question by examining the path coefficients leading from the Openness, Extraversion, and Emotionality factors to the Turning

Points and Wisdom factors. Because we could not generate that model, we instead estimated a partial structural model in which we regressed the Turning Points and Wisdom factors on the Openness, Extraversion, and Emotionality factors; we retained the measurement model for the Well-being factor but did not include any structural paths for it. This model is represented by Figure 4. This model's global fit statistics and indices nearly met our most stringent global fit guidelines: $X^2(390) = 759.60$; RMSEA = .04; CFI = .94; WRMR = .91. Analyses of item-level fit did not reveal obvious patterns of problematic correlation residuals, and so we concluded that this model provided an adequate fit to the data.

Standardized path coefficients are presented in Table 5. The standardized path coefficient from the Openness factor to Turning Points factor is statistically significant (.18), as are the paths from the Openness and Extraversion factors to the Wisdom factor (.19 and .15, respectively). As we noted for the paths associated with the Research Question 1 model, we are unsure of whether these statistically significant paths represent effects of meaningful magnitude. The largest of these three statistically significant paths represents only 4% of the variance explained; we therefore again caution that although the results are statistically significant, we are unsure of whether an effect that explains 4% of variance is meaningful for the variables in this study.

Research Question 4: Partial structural models regressing Well-being on Turning Points and Wisdom. Our final research question asked: Are perceptions of stressful life events as turning points or leading to wisdom differentially associated with students' current level of well-being? As was true for Research Question 3, this research question was a corollary to Research Question 2 and would have been answered by the model for that question had we been able to estimate that model. Because we were not able to estimate the model for Research Question 2, we estimated separate partial structural models for this research question. As we did

for the Research Question 2 model, we faced significant problems in generating these models and were ultimately only able to estimate models when we modeled the Turning Points and Wisdom factors separately and also included paths to Well-being for the Personality factors. The models are represented in Figures 5 and 6. Both models' global fit statistics and indices nearly met our most stringent global fit guidelines: for the Turning Points model, $X^2(389) = 759.60$; RMSEA = .04; CFI = .94; WRMR = .91; the Wisdom model, $X^2(389) = 766.67$; RMSEA = .04; CFI = .94; WRMR = .91. Analyses of item-level fit did not reveal obvious patterns of problematic correlation residuals, and so we concluded that these models provided adequate fits to the data.

Standardized path coefficients for these models are presented in Table 5. Neither of the standardized path coefficients leading from the Turning Points or Wisdom factors to the Well-being factor was significant (-.07 and .03, respectively). These path coefficients were also very small, which, when combined with the lack of statistical significance, led us to conclude that we did not find support for Research Question 4.

Alternative model: Direct-effects model regressing Well-being, Turning Points, and Wisdom on Personality. The failure of the indirect effects model (Research Question 2) coupled with the absence of significant or large path coefficients from the Turning Points and Wisdom factors to the Well-being factor suggests that the most empirically supported model is one in which the Well-being, Turning Points, and Wisdom factors are regressed on the Openness, Extraversion, and Emotionality factors. That model is represented in Figure 7. Given that this model estimated the most parameters and therefore had the fewest degrees of freedom among all the estimated structural models, we were not surprised to find that it provided the best fit to the data: $X^2(388) = 746.44$; RMSEA = .04; CFI = .95; WRMR = .89. Analyses of item-level fit did

not reveal obvious patterns of problematic correlation residuals, and so we concluded that this model provided an adequate fit to the data.

Path coefficients for this model are presented in Table 5. The path coefficients for this model are nearly identical to those in the other models. This model is noteworthy because it is the only model in which we were able to estimate structural paths for all the variables in the models. We were unable to generate complete structural models using the two other configurations we attempted (the indirect effects model for Research Question 2, and the model for Research Question 3 in which the Turning Points and Wisdom factors were treated as exogenous).

Summary of results. This study was an effort to replicate and expand upon Sutin et al.'s (2010) study by using SEM in place of logistic regression and by also including a factor representing Well-being. We hypothesized that the tendency to interpret stressful events as turning points or opportunities for wisdom would explain the associations between three personality characteristics (openness to experience, extraversion, and emotionality) and well-being (Figure 1). We used a multi-step ESEM approach in which we first assessed the measurement structure of our items before testing partial and complete structural models. We tested partial and structural models according to extant guidelines associated with the evaluation of indirect effects models.

In our measurement models (*Results* Steps 1 and 2, Tables 3 and 4), we found that our latent factors were not as empirically distinct as we had anticipated for multiple reasons, primary among which were that several HEXACO items loaded strongly on the Well-being factor and had to be deleted, and the turning points and wisdom items loaded at low levels on several personality factors while not loading strongly on their intended factors.

We found that we were unable to estimate either the indirect effects model (Research Question 2) or the partial structural models in which the Turning Points and Wisdom factors were exogenous (Research Question 4). Instead, we found that the only model we could estimate that included structural paths for all the variables (the Additional Model) was one in which the Turning Points, Wisdom, and Well-being factors were all regressed on the Openness, Extraversion, and Emotionality factors. Based on these results, we concluded that an indirect effects model was not appropriate for the data analyzed in this study.

Across all the models, tests of the path coefficients consistently showed a significant, negative association between the Openness and Well-being factors; a significant, positive association between Extraversion and Well-being factors; and almost no association between the Emotionality and Well-being factors. Tests of the path coefficients were significant and negative for the regression of the Turning Points factor on the Openness factor, and were significant and positive for the regression of the Wisdom factor on the Openness and Extraversion factors.

Summary of findings (Table 5). In support of Research Question 1, we found small, but statistically significant, effects of Openness and Extraversion on Well-being. The effect of Openness was negative and the effect of Extraversion was positive. We did not find support for Research Question 2, which posited an indirect effect of personality on well-being that was mediated by the tendency to interpret stressful events as either turning points or leading to wisdom. In support of Research Question 3, we found that the Openness factor was associated with the tendency to view stressful events as turning points, and we found that the Openness and Extraversion factors were associated with the tendency to view stressful events as leading to wisdom. We did not find clear support for Research Question 4, which stated that the tendency to view stressful events as turning points or leading to wisdom would be associated with well-

being. Although Turning Points and Wisdom were associated with Well-being in the hypothesized directions, the path coefficients were so small that we are reluctant to conclude that those coefficients represent meaningful association. Instead, our additional model (Figure 7) provided some evidence that Openness and Extraversion are associated with Well-being as well as with Turning Points and Wisdom.

Discussion

The goal of the present study was to examine the nature of two distinct responses to stressful life events—perceiving the event as a *turning point* or as *leading to wisdom*—in a large young adulthood sample employing a structural equation modeling approach. Specifically, we tested whether the tendency to interpret stressful events as turning points or opportunities for wisdom explains the associations between three personality characteristics (openness to experience, extraversion, and emotionality) and well-being. Although we did not find evidence for our hypothesized indirect effects model, we did find support for several of our direct effects hypotheses. For example, we found that Openness was associated with the tendency to view stressful events as turning points, and Openness and Extraversion were associated with the tendency to view stressful events as leading to wisdom, as well as with increased well-being. Similar to Sutin et al.'s (2010a) results, many of our results were statistically significant, but small in terms of their real effect. Given that we do not yet know how big a path coefficient needs to be in order to be "meaningful," we strongly urge caution in interpreting the results in this study: our several statistically significant results could be due to our relative large sample size and may not represent meaningful effects.

A number of our hypotheses were not supported, and possible explanations for some of

our unexpected findings can be found in theory, psychometrics, and methods. Theoretically, examinations into the tendency to perceive stressful events as either turning points or leading to wisdom are relatively new and few in number (Sutin et al., 2010a; 2010b). In fact, the majority of research in this area employs a narrative approach where these constructs are subsequently coded in participants' written responses by trained research assistants. Given this paucity of research, it remains unclear whether respondents understood "turning points" and "wisdom gained" to reflect the theoretical constructs intended by the researchers. The present results also make us uncertain about the practical implications of participants' varying interpretations of "turning points" and "lessons learned" on well-being or other important areas of functioning, such as response to psychological intervention. Although Sutin et al.'s (2010a; 2010b) work began this important task, until more research is done we cannot be sure that we have correctly defined these concepts or developed appropriate guidelines for interpreting the statistical analyses in which they are included. For example, one clear issue with comparing "turning points" with "lessons learned" is that one construct is arguably neutral (a turning point can be positive or negative; Wethington, 2003), and one is more clearly positive (a lesson learned is clearly positive). Thus, it is perhaps not surprising that individuals who have more difficulty coping would endorse "turning points." The construct of a "turning point" therefore seems somewhat problematic because of this vagueness. We also note that our observed results may have been obtained in part as a result of our focus on stressful life events. For examples, were we to ask about peak life experiences, we would have observed more reports of "positive" turning points that would have been related to different personality traits (see Wethington, 2003, for a discussion of positive events and turning points).

From a psychometric viewpoint, the relative originality of the research may also mean

that the items used to measure the tendency to see stressful events and turning points or leading to wisdom may not have been sufficiently validated. As noted earlier, the two items used in this study were adapted from interview items used by Sutin et al. (2010a), and it is unclear whether those interview items underwent thorough psychometric analysis. One possible next step would be to conduct cognitive process or qualitative interviewing for the purposes of better understanding how respondents answer the items used here and in Sutin et al.'s (2010a) interviews. That work could help not only improve the items used to measure the constructs, it could also help with the above-mentioned need to improve our knowledge of these constructs' impact on daily life. These items are certainly also deserving of further measurement model analyses. The dramatic changes in the relatedness of the latent factors measured by these items strongly implies some as-yet-undiscovered measurement structure, such as an unaccounted-for third factor.

In addition to improving the psychometric knowledge base for the turning point and wisdom items, the field also appears to be in need of further psychometric research on well-being and personality measures. We mentioned several times above that the HEXACO items cross-loaded onto our Well-being factor. A review of the HEXACO Extraversion factor suggests some similarity of content in the SWLS items. For instance, both groups of items mentioned self-acceptance and satisfaction (HEXACO Extraversion: "I feel reasonably satisfied with myself overall" and "On most days, I feel cheerful and optimistic"; SWLS item: "I am satisfied with my life"). Future systematic work should focus on the possible overlap of content between different personality measures and well-being scales (see also Mottus, 2016). We note that past work has been cognizant of possible content overlap between these constructs; to provide one example, in a facet-level analysis of the relationship between personality and life satisfaction, Schimmack,

Oishi, Furr, and Funder (2004) noted that their chosen measures (the NEO-PI-R and the SWLS) did not have shared content.

Finally, several methodological differences between our study and Sutin et al.'s (2010a) may help to explain some of our unexpected findings. One very obvious difference is the age of our participants, who were younger than the participants in Sutin et al.'s (2010a) research. The participants in our research may not yet have enough temporal distance from the stressful events they have experienced to clearly categorize them as turning points or leading to wisdom. (This same lack of sufficient time for perspective may also account for part of the collinearity between the Turning Points and Wisdom factors). This study's participants may also have been young enough such that they did not experience either enough stressful events or enough events that are sufficiently stressful to be able to meaningfully distinguish an event that led to wisdom from an event that became a turning point.

Limitations and Future Directions

We note a number of limitations in our present study. First, our sample was collected from a college population, and may not generalize to other late adolescent samples (Arnett, 2016). Second, the study had a cross-sectional design, which precludes causal inference. Third, although we examined two ways of construing stressful life events (turning points and wisdom gained), we did not consider other types of meaning or interpretations that may have occurred. Fourth, these results may not generalize to individuals who suffer from the effects of severe adversity (e.g. leading to PTSD). We note that the relationship between how individuals interpret a stressful event and their well-being may be different from the results obtained in this sample among individuals who have experience severe adversity (Ehlers & Clark, 2000). We should also

note that we did not assess the prevalence of PTSD in this study. Fifth, it is possible that other unmeasured variables could have confounded the reported associations. Sixth, we employed the short questions used by Sutin et al. (2010a; 2010b) to assess how participants interpreted a stressful life event. We acknowledge that coding narratives for these interpretations may have resulted in different findings. However, we also note that the conceptual fuzziness of the two interpretations tested here notwithstanding, the method employed here has the advantage of enabling researchers to easily gain knowledge about how participants interpret adversity, the impact of those cognitions on their lives, and how to change them. Future research should examine the relative benefits and costs of such assessments. Seventh and finally, we note that only about 25% of students approached agreed to fill out the surveys, and this self-selection effect could have impacted our obtained findings.

These limitations and issues notwithstanding, this study along with the original findings from Sutin et al. (2010a) provide some interesting hypotheses for future research. In replication of Sutin et al. (2010a), we found that participants' personality characteristics were related to the likelihood of how they interpreted a stressful event. Recent research into personality psychology has repeatedly demonstrated that personality continues to develop into late adulthood (Roberts & Mroczek, 2008) and in response to significant life events, including leaving university, birth of one's first child, divorce/separation from a loved one and the death of a parent (Specht, Egloff & Schmukle, 2011; Roberts, Caspo, & Moffitt, 2003). Thus, an intriguing possibility for future longitudinal research to investigate is whether the likelihood of using different meaning-making strategies changes or develops alongside the profile of this normative personality development. Furthermore, this study further echoes the importance of considering an individual's personality when examining the likelihood of positive outcomes occurring in response to adverse or

challenging experiences (Jayawickreme & Blackie, 2014). This has important implications for the design of interventions to foster post-traumatic growth, because interventions not tailored with this information in mind are more likely to be ineffective and mismatched to the unique characteristics of some individuals. In summary, we believe that this study provides important insight into how future research on wisdom and identity development should proceed. We hope that future research will continue to tackle these exciting questions, with a particular attention to improved measurement and more robust analysis techniques.

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Table 1

Sample demographics

	Count	Percentage
Gender		
Female	428	63.31%
Male	248	36.69%
Missing	0	0%
Ethnicity		
Hispanic	33	4.88%
Not Hispanic	436	64.50%
Missing	207	30.62%
Race		
Asian	40	5.92%
Black or African American	32	4.73%
Native Hawiian or Other Pacific Islander	1	< 1%
White	392	57.99%
Missing	211	31.21%

Table 2

Descriptive statistics for continuous variables

	Unimputed		Imputed	
Variable	Mean	Variance	Mean	Variance
Turning point average	1.31	3.52	1.30	3.51
Wisdom average	2.28	5.00	2.27	5.04

Table 3

Standardized pattern coefficients for the final fully-EFA ESEM in Step 1 (without HEXACO items 4, 22, and 52)

Measure		Latent factor name					
HEXACO		Openness	Extraversion	Emotionality	Well-being	Turning	Wisdom
Openness items	1	**.77**	-.03	.08			
	7	**.35**	.10	-.07			
	13	**.66**	--	.08			
	19	**.31**	-.01	-.02			
	25	**.62**	-.13	-.06			
	31	**.45**	-.08	-.04			
	37	**.40**	-.19	.04			
	43	**.51**	-.04	-.13			
	49	**.46**	-.10	.12			
	55	**.57**	-.01	-.06			
Extraversion items	10	.08	**.46**	-.01			
	16	--	**.53**	.14			
	28	-.12	**.77**	-.05			
	34	--	**.66**	-.11			
	40	-.02	**.68**	.08			
	46	.06	**.74**	.05			
	58	.09	**.41**	-.17			
Emotionality items	5	-.04	-.03	**.42**			
	17	.05	.14	**.60**			
	23	.02	--	**.52**			
	29	-.01	-.13	**.37**			
	41	--	-.04	**.64**			
	47	--	-.01	**.45**			
	53	-.04	-.10	**.91**			
	59	.01	.07	**.72**			
SWLS							
	1				**.77**		
	2				**.88**		
	3				**.87**		
	4				**.82**		
	5				**.79**		
Turning point average						**.89**	
Wisdom average							.89

Note: "--" are coefficients with values between -.01 and .01.

Table 4

Latent factor correlations for the final measurement model from Steps 1 & 2

	Steps 1 & 2: Final measurement model				
	Openness	Extraversion	Emotionality	Well-Being	Turning
Extraversion	.21				
Emotionality	--	.06			
Well-being	-.01	.46	.10		
Turning	.16	.03	.05	-.10	
Wisdom	.24	.16	--	.12	.47

Note: Correlations marked as "--" are correlations with values between -.01 and .01.

Table 5

Summary of standardized parameter estimates for all structural models

	Unstandardized Results			Standardized Results		
	Path coefficient	*p*-value	Residual variance	Path coefficient	*p*-value	R^2
RQ1: Well-being regressed on HEXACO factors						
Well-being on Openness	-.27	.01		-.12	.01	
Well-being on Extraversion	1.11	<.01		.48	<.01	
Well-being on Emotionality	.17	.10		.07	.10	
Variance (un)explained in Well-being			4.07			.23
RQ3: Turning Points and Wisdom factors on HEXACO factors						
Turning Points on Openness	.32	<.01		.18	<.01	
Turning Points on Extraversion	-.11	.26		-.06	.26	
Turning Points on Emotionality	.07	.40		.04	.40	
Variance (un)explained in Turning Points			3.04			.03
Wisdom on Openness	.36	<.01		.19	<.01	
Wisdom on Extraversion	.28	<.01		.15	<.01	
Wisdom on Emotionality	-.01	.95		--	.95	
Variance (un)explained in Wisdom			3.23			.07
RQ4: Well-being on Turning Points and HEXACO factors						
Well-being on Turning Points	-.09	.12		-.07	.12	
Well-being on Openness	-.23	.03		-.10	.03	
Well-being on Extraversion	1.10	<.01		.48	<.01	
Well-being on Emotionality	.18	.08		.08	.08	
Variance (un)explained in Well-being			4.04			.24
RQ4: Well-being on Wisdom and HEXACO factors						
Well-being on Wisdom	.04	.52		.03	.52	
Well-being on Openness	-.29	<.01		-.13	<.01	
Well-being on Extraversion	1.10	<.01		.48	<.01	
Well-being on Emotionality	.17	.10		.07	.09	
Variance (un)explained in Wisdom			4.07			.23
Additional: Well-being, Turning Points, and Wisdom factors on HEXACO factors						
Well-being on Openness	-.26	.01		-.11	.01	
Well-being on Extraversion	1.10	<.01		.48	<.01	

Well-being on Emotionality	.17	.09		.05	.35	
Variance (un)explained in Well-being			4.10			.23
Turning Points on Openness	.28	<.01		.16	<.01	
Turning Points on Extraversion	-.01	.89		-.01	.90	
Turning Points on Emotionality	.08	.36		.05	.35	
Variance (un)explained in Turning Points			3.06			.03
Wisdom on Openness	.40	<.01		.21	<.01	
Wisdom on Extraversion	.21	.03		.11	.03	
Wisdom on Emotionality	-.01	.90		-.01	.90	
Variance (un)explained in Wisdom			3.25			.07

Note: Endogenous (dependent) variables are italicized. "--" indicates values between -.01 and .01.

Figure 1. Hypothesized mediation model

Insert figure

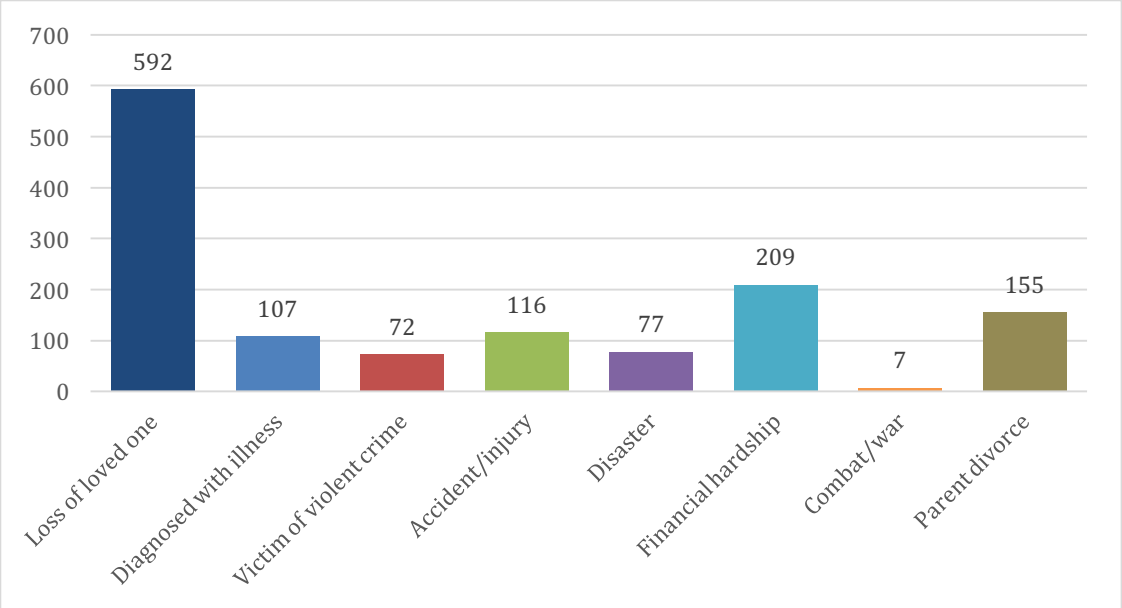

Figure 2. Total number of stressful life events reported

Figure 3. Structural model for Research Question 1: Well-being factor regressed on Openness, Extraversion, and Emotionality factors

Insert figure

Note: Only statistically significant, standardized path coefficients are provided. Paths drawn in dashed lines are paths for which the path coefficient tests were not statistically significant.

Figure 4. Structural model for Research Question 3: Turning Points and Wisdom factors regressed on Openness, Extraversion, and Emotionality factors

Insert figure

Note: Only statistically significant, standardized path coefficients are provided. Paths drawn in dashed lines are paths for which the path coefficient tests were not statistically significant.

Figure 5. Turning Points structural model for Research Question 4: Well-being factor regressed on Openness, Extraversion, Emotionality, and Turning Points factors

Insert figure

Note: Only statistically significant, standardized path coefficients are provided. Paths drawn in dashed lines are paths for which the path coefficient tests were not statistically significant.

Figure 6. Wisdom structural model for Research Question 4: Well-being factor regressed on Openness, Extraversion, Emotionality, and Wisdom factors

Insert figure

Note: Only statistically significant, standardized path coefficients are provided. Paths drawn in dashed lines are paths for which the path coefficient tests were not statistically significant.

Figure 7. Additional full structural model: Well-being, Turning Points, and Wisdom factors regressed on Openness, Extraversion, and Emotionality factors

Insert figure

Note: Only statistically significant, standardized path coefficients are provided. Paths drawn in dashed lines are paths for which the path coefficient tests were not statistically significant.