RESEARCH ARTICLE

WILEY

A longitudinal investigation of the meaning-making model in midlife adults who have experienced trauma

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Abstract

Introduction: Park and Folkman's (1997) meaning-making model posits that distress from traumatic events stems from discrepancies between one's global meaning framework and appraised situational meaning of the traumatic event, with meaning making diminishing these discrepancies and thus bolstering well-being. The current study investigates this supposition over a 19-year span in mid-life adults.

Methods: We selected participants from the Midlife in the United States (MIDUS) study who had indicated the experience of a negatively impactful traumatic event (N = 1687). We hypothesized that increased positive reappraisal (a type of meaning making) would have an indirect effect on positive and negative affect through the three dimensions of meaning in life (significance, coherence, and purpose).

Results: All direct and indirect effects were significant and supported hypotheses.

Conclusion: Results suggest that the assertions of the meaning-making model hold true over a period of nearly two decades among mid-life adults who have experienced traumatic events.

KEYWORDS
adjustment, meaning, meaning making, midlife, trauma

1 | INTRODUCTION

Most individuals will experience a stressful event that meets the Diagnostic and Statistical Manual fifth edition's (DSM-5; American Psychiatric Association, 2013) Criterion A for a Posttraumatic Stress Disorder (PTSD) diagnosis (Kilpatrick et al., 2013); however, the extent to which these potentially traumatic events induce distress varies. A growing body of literature has examined how individuals adjust to traumatic events by applying the meaning-making model (Park & Folkman, 1997; Park, 2010), which conceptualizes adjustment to traumatic and stressful events through the lens of how individuals make sense of and derive meaning from distressing situations.

The experience of trauma has implications for outcomes in midlife, including decreased well-being, lack of emotional regulation, and poorer health (Infurna et al., 2015). Park et al. (2015) posit that both childhood and adult trauma contribute to health outcomes in midlife and older adults. Such effects can often accumulate for these populations (Ogle et al., 2014; Park et al., 2015). Aspects of the meaning-making process have been shown to be relevant to midlife adult populations (e.g., Cox & McAdams, 2014), but comprehensive research investigating the long-term effects of meaning making toward adjustment to traumatic events in the context of aging in midlife to older adulthood remains an area of need. Using data drawn from the Midlife in the United States (MIDUS) project (Brim et al., 1999; Ryff et al., 2007, 2015), the present study sought to test assertions of the meaning-making model in a large national sample of midlife adults over the course of nearly two decades.

1.1 | The meaning-making model

Park's (2010) meaning-making model sought to consolidate an existing body of literature examining the role of meaning and sense-making in adjustment to distressing events into an empirically testable model. The model supposes that individuals have global meaning systems which are composed of their central understandings of how the world works, highly subjectively valuable life goals, and subjective sense of their own life's meaning and purpose. In this model, global meaning provides a framework for individuals to make sense of the world around them and engage with important pursuits in their lives. Each situation individuals experience is viewed through the lens of their global meaning system, contributing toward individuals' initial understandings of the meaning of each situation (i.e., what the situation says about the world, oneself, etc.).

The meaning of most situations can typically fit into the perspective allowed by one's global meaning system. However, some initial appraised meanings are substantially discrepant from one's global meaning system. Park (2010) asserted that this discrepancy between appraised meaning of a situation and one's global meaning system can also account for distress induced by traumatic or stressful events. For example, consider an individual who holds a fundamental belief as part of their global meaning framework that if one exercises, then they will not experience serious health issues. This person exercises every day and then experiences a life-threatening heart attack at a young age. Their initial appraised meaning of the event (i.e., "I had a heart attack, even though I engage in daily exercise") would be highly discrepant from their larger belief about how the world works (i.e., "If I exercise daily, then I will not experience health issues"). Within the meaning-making model, it is this discrepancy, rather than the objective circumstances of the event itself, that causes traumatic distress. Park's model only accounts for distress induced by discrepancies between situational meaning and global meaning systems, but it is worth noting that other extant literature suggests that events can be experienced as traumatic through the creation of a significant discrepancy with an existing schema or through reinforcing negative schemas that align with individuals' pre-existing negative worldviews (cf., Resick, 2001; Resick et al., 2017).

Park's (2010) model delineates the further processes that can be expected following the experience of distress produced by discrepant situations. The model outlines that the experience of a discrepant situation catalyzes a meaning-making process that is designed to alter either one's global meaning framework to fit with the meaning of the situation (referred to as *accommodation*) or reframing the meaning of the event to cohere with one's global

meaning system (referred to as *assimilation*). Successful accommodation or assimilation can occur through a variety of ways (e.g., positive reappraisal of the situation) that fall under the umbrella term of "meaning made." When meaning has been successfully made, one's global meaning is restored or enhanced, which includes greater sense of one's overall life as meaningful (i.e., greater presence of meaning in life) than would be expected in the absence of meaning made. Park's model posits that this restoration of global meaning results in greater adjustment to the stressor, including lower psychological distress and greater psychological well-being. While the meaning-making model has many suppositions, it is testing this process of meaning making over time leading to greater psychological adjustment through increased meaning in life that is of primary concern to our study.

1.2 | Meaning in life

Frankl (1985) is often credited as bringing the construct of meaning in life to the attention of the social sciences through his seminal work *Man's Search for Meaning*. While this galvanized scholars toward conducting research on this construct, a consensus definition of meaning in life remained elusive for decades. Several definitions of meaning in life prioritized aspects of comprehension of oneself and the world (e.g., Antonovsky, 1987, 1993), the extent to which one is oriented to greater life goals (e.g., Emmons, 2003), and/or the degree to which one perceives their life as mattering or holding importance (e.g., Crumbaugh & Maholick, 1964). In recent years, prominent scholars have endeavored to consolidate these conceptualizations through a tripartite definition of meaning in life (George & Park, 2016; Heintzelman & King, 2014; Martela & Steger, 2016; Steger, 2009). This contemporary understanding of meaning in life characterizes the construct by (a) significance (i.e., a sense that one's life matters and holds inherent value), (b) coherence (i.e., one's overall sense of understanding of themselves and the world around them), and (c) purpose (i.e., a larger sense of directedness in the pursuit of important life goals). Following their endorsement of this definition of meaning in life, George and Park (2016) called for research examining the meaning-making model using all three dimensions, noting that it would be "important to examine how violations of meaning frameworks (e.g., occurrence of [an] event that is inconsistent with belief) and subsequent meaning maintenance efforts (e.g., assimilation, affirmation; Park, 2010; Proulx & Inzlicht, 2012) may differentially relate to the subconstructs" of significance, coherence, and purpose (p. 217). It is thus of interest to examine the mediating role that all three dimensions may play between meaning making and psychological adjustment following distressing events. In the case of such research, it is crucial to differentiate between meaning making as a process and meaning in life as a construct. In short, meaning in life is the extent to which one experiences their life as holding meaningfulness, while meaning making is an umbrella term for an assortment of processes through which individuals seek to make sense of their experiences within their larger life narrative. Meaning making is proposed within Park's (2010) model to result in greater life meaningfulness, but the two are distinct psychological experiences.

1.3 | Empirical evidence of the meaning-making model for traumatic events

A substantial amount of empirical evidence has accumulated on the meaning-making model's application to the context of trauma (for a review, see Park, 2013). Among other areas, scholars have established the relevance of meaning-making processes to bereavement (Holland et al., 2006), cancer survival (Park et al., 2008), natural disasters (Dursun et al., 2016), and collective trauma (e.g., the 9/11 terrorist attacks; Park et al., 2012; Updegraff et al., 2008). However, given there are many assertions in the meaning-making model, only a fraction of these studies have explicitly investigated the mediating role of meaning in life. In one example, Park et al. (2008) examined a sample of individuals who had been diagnosed with cancer and found that over the course of approximately one year, positive reframing (a form of meaning making in which one deliberately focuses on potential upsides of a

negative event or trauma) predicted meaning in life and, in turn, psychological distress and well-being in expected directions.

There is still a need, however, to address the impacts of meaning making over long periods of time. Krause (2005) found that experiences of traumatic events in early adulthood have implications for diminished levels of meaning in life in older adults, pointing to the importance of long-term impacts of trauma over the course of the lifespan. Researchers have yet to establish the applicability of the meaning-making process over such extended periods of time. For example, Steger et al. (2015) demonstrated that military distress had a significant indirect effect on PTSD symptoms and stress-related growth through global meaning violation and meaning in life in a sample of Vietnam veterans. While this represents a model germane to the mediating role of meaning in life, the study was cross-sectional, precluding the authors from drawing conclusions about the temporal sequence of these processes. Some longitudinal investigation of the role of meaning making among a general mid-life adult sample showed that meaning making in individuals' life stories predicted subjective well-being and emotion regulation 2–3 years later (Cox & McAdams, 2014; Cox, 2015). However, it is worth noting that participants in these samples had not necessarily experienced traumatic or stressful events, and there is still a need to expand the length of such longitudinal studies to provide insight into how these processes unfold over the lifespan into later adulthood.

In all, the abovementioned gaps in the extant literature point toward a need for research that longitudinally examines the long-term influence of meaning making over time. Examining the meaning-making model in a large representative adult population with diversity respect to age that has experienced traumatic or stressful events is thus of interest, as the effects of meaning making could potentially have long-term implications across the lifespan in the wake of a variety of potentially traumatic or stressful events.

1.4 | The present study

The assertions of Park's (2010) meaning-making model have already been examined in some contexts (e.g., Steger et al., 2015); however, several matters remain to be illuminated. One unresolved matter is that researchers have yet to thoroughly test this assumption using the three components of meaning in life, despite calls to do this (George & Park, 2016). Also, it remains unclear if the link from meaning making to adjustment through meaning in life generalizes to a general adult population over the lifespan, as there is a dearth of research of meaning making over extended periods of time beyond a few years. Thus, the current study aimed to provide a longitudinal analysis of the meaning-making model in a mid-life to older adult population over an extensive time period to bring further understanding to the long-term impacts of trauma on meaning and well-being. We sought to do this by using data drawn from the MIDUS project to test the meaning-making model over an approximately 19-year period among a mid-to-later life adult sample that has experienced trauma. In line with the meaning-making model and consideration of the above findings, we hypothesize that for individuals who have experienced trauma, tendency to engage in meaning making (i.e., positive reappraisal) would predict psychological adjustment (i.e., positive and negative affect), and this relation would be mediated by meaning in life (i.e., significance, coherence, and purpose). Specifically, we expected that positive reappraisal would predict higher levels of positive affect and lower levels of negative affect through meaning in life variables.

2 | METHODS

2.1 | Participants and procedure

Participants were drawn from the MIDUS study, which currently involves three waves of survey administration that span the course of nearly 20 years (MIDUS I: 1995–1996; MIDUS II: 2004–2006; MIDUS III:

2013–2014; Brim et al., 1999; Ryff et al., 2007, 2015). The project focuses on healthy aging in mid-life among a diverse age group (range at MIDUS I = 25–74 years; MIDUS II = 34–84 years; MIDUS III = 42–93 years) and measures an array of constructs relevant to this topic. All sampling procedures and codebooks with every item administered across the three waves are available from the project's website (http://midus.wisc.edu/). Demographics, including race/ethnicity, educational attainment, income, relationship status, and average age at each time point are presented in Table 1. As our study focused on adjustment to the experience of traumatic events, we selected a subset of participants from the MIDUS sample. To be included in our sample, participants had to have indicated that they (a) experienced at least one potentially traumatic event by Wave 2, (b) had initially been negatively or highly negatively affected by the event(s), and (c) had responses spanning across all three time points. The MIDUS II questionnaire asked a series of questions about several potential traumatic events, and for each event, whether or not one has experienced it in their lifetime (e.g., "Check the appropriate boxes next to any of the following experiences you have had – ever physically assaulted"). If yes, the participant was then asked to what extent the event affected the participant, which was coded on a scale of 1 = very negatively to 5 = very positively. We included events in our analysis that were similar to events asked about in the Life Events Checklist for DSM-5 to represent potential Criterion A events (e.g., natural disaster, physical/sexual assault, unexpected/sudden death of a loved one; LEC-5; Gray et al., 2004). The potentially traumatic events we included in the analysis were the experience of death of a parent or sibling, death or near-death of a child, physical or sexual assault, losing a home to natural disaster, and experiencing combat (we present trauma frequencies in Table 2). In our sample, we only included those who endorsed that they were 1 = very negatively or 2 = negatively affected by the event to account for presence of distress after a potentially traumatic event. We opted to include this wide array of events to capture any potentially trauma-affected individual, and note that such a sampling procedure also captures individuals who may have experienced more general stress after an event rather than meet Criterion A for PTSD. That said, the meaning-making model is also of interest in terms of its efficaciousness in situations of distress that are less severe (Park, 2013).

Traumatic events were specified to have happened at any time before MIDUS II where meaning in life was measured in our model. As the items designed to assess positive reappraisal appeared to measure a tendency to engage in positive reappraisal, rather than the extent to which one is currently engaged in positive reappraisal over traumatic events, we considered it appropriate to allow for the positive reappraisal variable to precede the experience of traumatic events. However, for an individual to have undergone positive reappraisal to instill a sense of meaning in life (as proposed in our model), the traumatic event must precede the measure of life meaningfulness. For this reason, we mandated that individuals must have experienced a traumatic event at any time before Wave 2, given that the measure of meaning in life variables occurred at Wave 2. This subsetting procedure resulted in a sample of 1728 participants from the original 3,293 that completed all three waves.

2.2 | Measures

2.2.1 | Meaning making

As positive reappraisal represents a form of meaning making tendency (Park & Folkman, 1997; Park, 2010), we used the four-item secondary control/positive reappraisal subscale of the control strategies scale from MIDUS I. Wrosch et al. (2000) demonstrated the construct validity of the secondary control subscale by showing that it relates to other control strategies (i.e., persistence and lowering aspirations) and well-being in expected directions. The scale has shown acceptable internal consistency reliability in other studies (e.g., $\alpha = 0.78$; Honda & Jacobson, 2005). Among the full MIDUS main random-digit-dialing sample at Time 1, internal consistency reliability was reported as

TABLE 1 Sample demographics (N = 1728)

	Time 1 M(SD)/N(%)	Time 2 M(SD)/N(%)	Time 3 M(SD)/N(%)
Age	46.8 (10.9)	55.7 (10.9)	64.8 (10.9)
Educational attainment			
No school/some grade school	2 (0.1%)	2 (0.1%)	3 (0.2%)
Eighth grade/junior high school	12 (0.7%)	13 (0.7%)	13 (0.7%)
Some high school	66 (3.8%)	47 (2.7%)	54 (3.1%)
GED	22 (1.3%)	17 (1.0%)	19 (1.1%)
High school	417 (24.1%)	395 (22.9%)	389 (22.5%)
Some college	396 (22.9%)	382 (22.1%)	275 (15.9%)
Associate's degree	123 (7.1%)	126 (7.3%)	178 (10.3%)
Bachelor's degree	360 (20.8%)	372 (21.5%)	366 (21.2%)
Some graduate school	64 (3.7%)	65 (3.8%)	40 (2.3%)
Master's degree	180 (10.4%)	213 (12.3%)	234 (13.5%)
Professional degree (Doctorate)	84 (4.9%)	94 (5.4%)	91 (5.3%)
Not specified	2 (0.1%)	2 (0.1%)	9 (0.5%)
Income (Self; Past year)			
$0 or less	205 (11.9%)	343 (19.8%)	498 (28.8%)
$1–$9999	253 (14.6%)	177 (10.2%)	124 (7.2%)
$10,000–$19,999	273 (15.8%)	165 (9.5%)	112 (6.5%)
$20,000–$49,999	643 (37.2%)	438 (25.3%)	261 (15.1%)
$50,000–$99,999	214 (12.4%)	312 (18.1%)	208 (12.0%)
$100,000–$199,999	43 (2.5%)	88 (5.1%)	106 (6.1%)
$200,000+	10 (0.6%)	32 (1.9%)	32 (1.9%)
Not specified	87 (5.0%)	173 (10.0%)	387 (22.4%)
Marital status			
Married	1250 (72.3%)	1252 (72.5%)	1145 (66.3%)
Separated	29 (1.7%)	27 (1.6%)	25 (1.4%)
Divorced	227 (13.1%)	219 (12.7%)	236 (13.7%)
Widowed	51 (3.0%)	100 (5.8%)	209 (12.1%)
Never married	171 (9.9%)	127 (7.3%)	112 (6.5%)
Not specified	–	3 (0.2%)	1 (0.1%)
Sex			
Male	711 (41.1%)		
Female	1017 (58.9%)		
Race/ethnicity			
White	1585 (91.7%)		
Black/African American	46 (2.7%)		

(Continues)

TABLE 1   (Continued)

	Time 1 M(SD)/N(%)	Time 2 M(SD)/N(%)	Time 3 M(SD)/N(%)
Native American or Aleutian Islander	5 (0.3%)		
Asian or Pacific Islander	7 (0.4%)		
Multiracial	12 (0.7%)		
Other	23 (1.3%)		

TABLE 2   Trauma type and prevalence (N = 1728)

Trauma type	N	%
Parent died	1465	84.8
Sibling died	496	28.7
Child died	176	10.2
Child experienced life-threatening event	214	12.4
Lost home to fire/flood/etc.	82	4.7
Physically assaulted	199	11.5
Sexually assaulted	263	15.2
Experienced combat	90	5.2
Multiple traumas	884	51.2

acceptable (α = 0.78). Items (e.g., "I rarely give up on something I am doing, even when things get tough") were answered on a 4-point Likert-type scale (1 = "A lot" and 4 = "Not at all") and were recoded so higher scores indicated higher levels of positive reappraisal.

2.2.2 | Meaning in life

Meaning in life was measured through items administered during MIDUS II, representing the three dimensions of meaning: significance, coherence, and purpose (George & Park, 2016; Martela & Steger, 2016). All three components of meaning were measured across 7-point Likert-type scales coded from 1 = "Strongly agree" to 7 = "Strongly disagree" and were recorded when necessary so that higher scores reflect higher degree of the underlying construct. Items for significance and coherence were adapted from Keyes' (1998) social well-being scale. Significance was measured through three items (e.g., "I have something valuable to give to the world"), which were summed for a total score (α = 0.70 among the full Time 2 sample). Coherence was measured through the summation of two items, "The world is too complex for me" and "I cannot make sense of what's going on in the world." Purpose was measured through three items (e.g., "I live life one day at a time and don't really think about the future") from the purpose in life subscale of psychological well-being measure adapted from Ryff (1989), which were summed to create a composite score (α = 0.70 among the full Time 2 sample).

2.2.3 | Psychological adjustment

Similar to previous research on psychological adjustment after distressing events or situations (e.g., Ano & Vasconcelles, 2005; de Ridder et al., 2008), we used measures of positive affect and negative affect as indicators of psychological adjustment. Positive and negative affects were measured at MIDUS III using scales adapted from Mroczek and Kolarz (1998) through six items asking about feelings in the past 30 days and were answered on a scale of 1 = "All the time" to 5 = "None of the time." Mean scores of each scale were calculated and recoded so higher scores signified higher levels of positive and negative affect. The internal consistency reliability scores among the full Time 3 sample were acceptable for both positive affect ($\alpha = 0.91$) and negative affect ($\alpha = 0.85$) scales.

2.3 | Analysis plan

To assess the current study's hypotheses, parallel longitudinal mediation path models were conducted separately for each psychological adjustment variable (i.e., positive and negative affects) using Mplus version 8.4 (Muthén & Muthén, 1998–2017). Specifically, we conducted two models with one designed to test the indirect effects of meaning making on positive affect through the three meaning in life variables, and the other designed to test corresponding indirect effects on negative affect. Within the models, the a-path represents the direct effect of positive reappraisal on meaning in life variables, the b-path represents the direct effect of meaning in life on psychological adjustment, and c′ represents the indirect effect of positive reappraisal on psychological adjustment. We also estimated the covariances among the mediators within the path models to account for the known correlations among meaning subscales. A conceptual path analysis model is shown in Figure 1. See Table 3 for bivariate correlations of study variables. The model omitted cases with missing data across predictor variables ($n = 41$), leaving a final analytic sample of 1687 participants.

Before running the path analyses we tested regression assumptions. Positive affect was a normally distributed outcome and negative affect had a floor-effect. Normally distributed outcomes can be modeled using ordinary least squares regression paths in path analysis. Outcomes with floor-effects are most appropriately modeled using censored regression paths in path analyses (Muthén et al., 1998-2017).

The current state-of-the-science method for testing mediation effects, also referred to as indirect effects, is to use the product of coefficients method (MacKinnon et al., 2013). The product of coefficients method is an
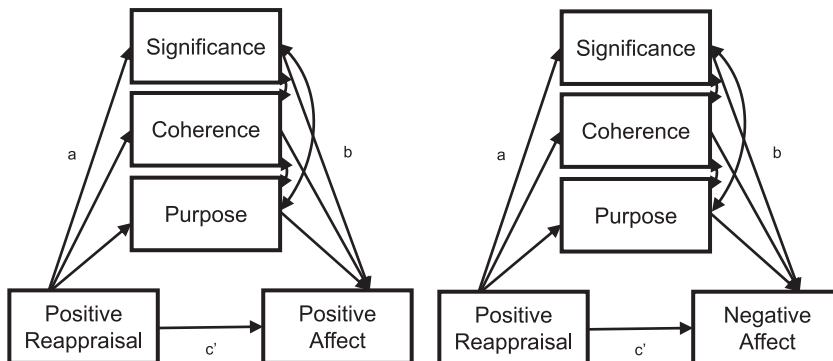

FIGURE 1 Parallel mediation path analysis models assessing positive reappraisal predicting well-being (i.e., positive and negative affects) through meaning in life variables (i.e. significance, coherence, and purpose). a = Direct effect of positive reappraisal on meaning in life variables; b = Direct effect of meaning in life on psychological adjustment; c′ = Indirect effect of positive reappraisal on positive affect

TABLE 3 Bivariate Pearson correlations between study variables

	Positive reappraisal	Significance	Coherence	Purpose	Negative affect
Significance	0.258**	–			
Coherence	0.160**	0.332**	–		
Purpose	0.163**	0.348**	0.301**	–	
Negative Affect	−0.150**	−0.229**	−0.255**	−0.230**	–
Positive Affect	0.258**	0.274**	0.234**	0.210**	−0.604**

Note. Positive reappraisal was measured at Time 1 (MIDUS I). Significance, coherence, and purpose were measured at Time 2 (MIDUS II). Positive and negative affect were measured at Time 3 (MIDUS III).

**p < 0.001.

improvement over the causal steps approach (cf., Hayes, 2009), and involves multiplying the a-path and the b-path to estimate the indirect effect. One consideration with the product of coefficients method is that the resulting product will be non-normal, which renders significance tests based on *p*-values, such as the Sobel Test, unreliable (Hayes, 2009). Therefore, statistical significance for the product of coefficients method should be assessed through asymmetrical confidence intervals that do not contain zero (Hayes, 2009). Two types of confidence intervals that can be used are bias-corrected bootstrapped confidence intervals (BC-bootstrap CIs; Preacher, 2015) and Monte Carlo confidence intervals (MCCIs; Preacher & Selig, 2012). BC-bootstrap CIs can be used when all model variables approximate normality, whereas MCCIs can be used when there are violations of the normality assumption. Thus, we used bc-bootstrap CIs in the positive affect model and MCCIs in the negative affect model. The Monte Carlo procedure accounts for the violation of the normality assumption, as this resampling method is shown to have low bias (Preacher & Selig, 2012; Williams & MacKinnon, 2008) and the use of MCCIs to determine significance allowed our analyses to account for negative affect as a censored variable (i.e., non-normally distributed with a floor effect).

3 | RESULTS

3.1 | Positive affect

Table 4 presents unstandardized direct and indirect effects of the mediation model predicting positive affect.

3.1.1 | Direct effects

The direct effect of positive reappraisal on positive affect was positive and statistically significant. Positive reappraisal also positively predicted significance, coherence, and purpose. All meaning in life mediator variables significantly and positively predicted positive affect.

3.1.2 | Indirect effects

Bias-corrected bootstrapped confidence intervals not containing zero of the product of coefficients indicated statistically significant indirect effects of positive reappraisal predicting positive affect through all meaning in life variables. The *R*-squared coefficient for the model on positive affect was 0.153 (*p* < 0.001).

TABLE 4 Results of regression models predicting positive affect

Outcome (raw)	Predictor (raw)	β	B	SE	BCCIs
Direct effects					
Positive affect					
	Significance	0.162	0.032*	0.006	[0.021, 0.043]
	Coherence	0.139	0.032*	0.006	[0.021, 0.044]
	Purpose	0.097	0.022*	0.006	[0.010, 0.234]
	Positive reappraisal	0.178	0.206*	0.028	[0.152, 0.261]
Significance					
	Positive reappraisal	0.245	1.454*	0.133	[1.197, 1.720]
Coherence					
	Positive reappraisal	0.154	0.765*	0.116	[0.525, 0.986]
Purpose					
	Positive reappraisal	0.157	0.822*	0.120	[0.587, 1.061]
Indirect effects					
Positive affect					
	Significance × Positive reappraisal	–	0.045*	0.009	[0.029, 0.066]
	Coherence × Positive reappraisal	–	0.025*	0.006	[0.015, 0.039]
	Purpose × Positive reappraisal	–	0.018*	0.006	[0.008, 0.031]

Note: β = standardized beta; B = unstandardized beta; BCCI = bias-corrected bootstrap confidence interval; SE = standard error.

*BCCIs or MCCIs not containing 0 indicate statistical significance of the unstandardized effects. Models controlled for age and number of traumas endorsed.

3.2 | Negative affect

Table 5 presents unstandardized direct and indirect effects of the mediation model predicting negative affect.

3.2.1 | Direct effects

The direct effects of positive reappraisal predicting all mediator variables, significance, coherence, and purpose, were positive and statistically significant. Positive reappraisal, significance, coherence, and purpose negatively and significantly predicted negative affect.

3.2.2 | Indirect effects

MCCIs not containing 0 indicated statistically significant negative indirect effects of positive reappraisal predicting negative affect through significance, coherence, and purpose. The R-squared coefficient for the model on negative affect was 0.087 ($p = 0.001$).

TABLE 5 Results of regression models predicting negative affect

Outcome (raw)	Predictor (raw)	β	B	SE	BCCIs
Direct effects					
Negative affect					
	Significance	−0.107	−0.022*	0.006	[−0.033, −0.010]
	Coherence	−0.196	−0.047*	0.007	[−0.064, −0.034]
	Purpose	−0.121	−0.028*	0.007	[−0.042, −0.014]
	Positive reappraisal	−0.079	−0.091*	0.029	[−0.149, −0.033]
Significance					
	Positive reappraisal	0.258	1.457*	0.132	[1.197, 1.716]
Coherence					
	Positive reappraisal	0.159	0.765*	0.116	[0.537, 0.992]
Purpose					
	Positive reappraisal	0.163	0.822*	0.121	[0.585, 1.058]
Indirect effects					**MCCIs**
Negative affect					
	Significance × Positive reappraisal	–	−0.032*	–	[−0.051, −0.015]
	Coherence × Positive reappraisal	–	−0.036*	–	[−0.054, −0.021]
	Purpose × Positive reappraisal	–	−0.023*	–	[−0.038, −0.011]

Note: β = standardized beta; B = unstandardized beta; BCCI = bias-corrected bootstrap confidence interval; MCCI = Monte Carlo confidence interval; SE = standard error.

*BCCIs or MCCIs not containing 0 indicate statistical significance of the unstandardized effects. Models controlled for age and number of traumas endorsed.

4 | DISCUSSION

The current study tested the applicability of Park's (2010) supposition that meaning-making processes influence posttrauma adjustment over time through increased meaning in life with a midlife adult population. Consistent with our hypotheses and previous findings, results supported this assertion of the meaning-making model for all predicting and mediating variables with small, statistically significant effects. Specifically, positive reappraisal positively predicted positive affect with statistically significant indirect effects through all three dimensions of meaning in life (i.e., significance, coherence, and purpose). Likewise, positive reappraisal negatively predicted negative affect through the three mediating meaning in life variables.

Our study's main contributions center around (1) corroborating the role of meaning-making processes among a large sample (N = 1687) of midlife adults post-trauma, (2) providing long-term longitudinal evidence of the meaning-making model over a 19-year span, and (3) being among the first studies to our knowledge to investigate the meaning-making model using the tripartite conceptualization of meaning in life (i.e., significance, coherence, and purpose) commonly endorsed by contemporary scholars (George & Park, 2016; Heintzelman & King, 2014; Martela & Steger, 2016; Steger, 2009). While pre-existing research has supported the supposition investigated in our study in a cross-sectional context (e.g., Steger et al., 2015), our study also expanded this line of literature by investigating these phenomena among a large sample of midlife adults in the United States over a span of nearly 20 years as they approach older adulthood after experiencing a variety of traumatic events. These findings emphasize the role of

meaning making in well-being throughout the lifespan, as its effects appear to be long-term and sustained for many years following traumatic experiences. Emphasizing behavioral health and well-being during midlife is essential to predicting development as individuals transition from younger age into older adulthood (Lachman et al., 2015). Our findings support the notion that bolstering meaning in life through meaning-making processes in midlife can have lasting effects as individuals age into later life stages.

George and Park (2016) noted that the three dimensions of meaning may play differential roles regarding individuals' attempts to engage in meaning-making processes following traumatic situations. For example, George and Park (2017) posited that higher levels of the coherence dimension may benefit well-being by making one's global meaning framework more stable, and therefore, less susceptible to the creation of distress-inducing discrepancies when one encounters potentially stressful situations. Our finding that each of the dimensions accounts for unique variance in posttrauma adjustment in our models does suggest that significance, coherence, and purpose may each have separate mediating roles in accounting for how meaning making may lead to enhanced adjustment following the experience of a traumatic event. Still, our research design and analyses cannot clarify nuances in the exact nature of the roles that each dimension plays in contributing toward enhanced adjustment in the wake of traumatic experiences (i.e., the results cannot tell us explicitly whether or not coherence's benefits to well-being are due to its role in making one's global meaning framework more stable). Further research with a more appropriate design for investigating the kind of role each dimension plays in individuals' lived experiences remains an area that may be fruitful for future empirical examination.

Direct effects within the indirect model, though significant, were small according to Cohen's (1988) guidelines for effect sizes (e.g., a 1-unit change in positive reappraisal had a total direct effect of +0.178 on positive affect, which is considered by Cohen, 1988 to be in the small effect size range of 0.2 or smaller). The interpretation of unstandardized indirect effects' effect sizes, however, is open area of study (Lachowicz et al., 2018; Preacher & Kelley, 2011), so the evaluation of relative indirect effect sizes is less clear. That said, finding statistically significant effects over this extensive timeframe in a large sample is of importance to report. Funder and Ozer (2019) argued that effect size should be viewed relative to the context of each study, noting that small effects are not necessarily negligible, as even a small effect may have great implications for outcomes in the long run. Further, our study involved a large sample, which was likely powered to find such effects. With this in mind, our finding that the meaning-making model was demonstrated over a 20-year time period with detectable significant effects points to a potentially robust role of meaning making over the lifespan in helping bolster well-being and mitigating distress after the experience of trauma. Finally, the direct effect sizes for the different aspects of meaning in life were similar in magnitude, suggesting that each facet of meaning in life provided a unique contribution to the model.

Our findings have implications for those who are negatively affected by various traumas across the lifespan. Results support the notion that eliminating the discrepancies between one's appraised meaning of traumatic events and one's world beliefs by encouraging meaning-making may benefit posttraumatic populations in reducing psychological distress and bolstering emotional adjustment. One treatment that has shown efficacy for PTSD is Cognitive Processing Therapy (CPT), which is a cognitive-behavioral therapy that helps clients recover from trauma by challenging unhelpful thought patterns and beliefs (Resick et al., 2017). The techniques used in CPT can encourage meaning making by helping clients reconceptualize meaning of a traumatic event. CPT may thus be an appropriate technique to help reduce discrepancies between global beliefs and appraised meaning of traumatic event(s), the supposed source of stress posited by Park's (2010) meaning-making model.

4.1 | Limitations and future directions

While this study provides an extensive longitudinal validation of the well-known meaning-making model among a large midlife sample, there are some limitations. First, our sample was mostly Caucasian (~92%). MIDUS, though intended to be a representative US sample, saw higher rates of participation and retention among White

participants compared to those holding minority racial identities. This is consistent with other forms of longitudinal research and may be due to a number of factors that decrease retention, such as economic and marital status, among racially diverse participants (Radler & Ryff, 2010). Thus, the sample is not wholly representative of the entire midlife population in the United States and elsewhere, and the generalizability of these results must be considered in light of this limitation. Future studies should continue to expand the understanding of how meaning making may play a role in predicting adjustment and well-being posttrauma in more diverse and representative populations over the course of the lifespan.

As is often in the case in data drawn from large-scale data collection processes such as MIDUS, our study was limited by the use of brief face-valid measures to operationalize some of our constructs. While the items chosen appeared sensible for operationalizing the chosen constructs, not all of our measures were designed with our chosen constructs in mind. For example, the item "I cannot make sense of what's going on in the world" appeared appropriate (when reverse-coded) to measure coherence, given coherence has been referred to by Martela and Steger (2016) as "making sense of the world" (p. 533), but merely having this aspect of face-validity is suboptimal relative to the administration of a scale that has undergone a development and validation process demonstrating its construct validity. A questionnaire such as the Multidimensional Existential Meaning Scale (MEMS; George & Park, 2017) may be implemented to more precisely measure the dimensions in a future study. Additionally, our study did not measure meaning making tendency specific to the trauma endorsed; rather, the measure used in MIDUS quantified overall tendencies to engage in positive reappraisal. We were also unable to control for specific type of trauma due to the high endorsement of multiple traumas in our sample. An ideal future study may synthesize the administration of robust measurement techniques that also ask specifically about one's meaning-making processes specific to a particular traumatic event, alongside the collection of a large, longitudinal sample like the one used in the present study. Another limitation is that the potentially traumatic events used for inclusion criteria in our sample involved experiences that do not necessarily meet Criterion A for a PTSD diagnosis. For this reason, some caution is warranted in interpreting our results in the context of PTSD diagnoses or treatment. Further, all data were collected through self-report measures and are subject to corresponding biases (e.g., social desirability, acquiescence, etc.).

Finally, though our study measured outcomes that are often used in delineating the meaning-making model (i.e., positive and negative affect representing adjustment; for a review see Park, 2010), it was beyond the scope of our study to measure additional psychological outcomes that also may be impacted by meaning making after a potentially traumatic event(s), such as PTSD or depression. Future work would benefit from extending the interpretations of the meaning-making model by addressing its impact on such common mental health issues among those who have experienced trauma.

5 | CONCLUSION

The present study adds to the current literature through long-term investigation of a component of the meaning-making model over a span of nearly 20 years among a large US mid-life adult sample that has experienced trauma. Results indicated that meaning making plays a significant role in predicting psychological adjustment over time for midlife adults following traumatic experiences. Findings have implications for trauma survivors as they progress into later adulthood, and re-emphasize the importance of meaning in life posttrauma across the lifespan.

CONFLICT OF INTERESTS

The authors declare that there are no conflict of interests.

ETHICS STATEMENT

Data collection for the MIDUS project is approved by the University of Wisconsin-Madison Education and Social/Behavioral Sciences and Health Sciences Institutional Review Boards (IRBs).

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are from the Midlife in the United States (MIDUS) study and are openly available in the Inter-university Consortium for Political and Social Research (ICPSR) at https://www.icpsr.umich.edu/web/NACDA/series/203, and separately at 10.3886/ICPSR02760.v19 (MIDUS I; Brim et al., 1999), 10.3886/ICPSR04652.v7 (MIDUS II; Ryff et al., 2007), 10.3886/ICPSR36346.v7 (MIDUS III; Ryff et al., 2015).

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PEER REVIEW

The peer review history for this article is available at https://publons.com/publon/10.1002/jclp.23272

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