



A lifespan perspective on positive affect fluctuations on purpose in life: findings from a 9-year longitudinal study

Jonathan L. Chia^a, Verity Y. Q. Lua^b and Andree Hartanto^a

^aDepartment of Psychology, Singapore Management University, Singapore; ^bDepartment of Psychology, Stanford University, California, USA

ABSTRACT

Existing research has examined how static or average levels of positive affect (PA) influence purpose in life (PIL), but theoretical work suggests PA fluctuations may also play a role, potentially undermining PIL, especially in older adulthood. To this end, the present study examined the longitudinal association of PA fluctuations on PIL and the moderating role of age among 1,294 midlife and older adults in the United States, over a 9-year period (between 2004 and 2014). Results revealed a conditional effect of PA fluctuations on PIL – particularly among older individuals, and greater PA fluctuations were associated with a poorer sense of purpose over time. This effect persisted even after accounting for individual differences in affective disposition. Findings from the current study deepen our understanding of the intricate relationship between PA fluctuations and PIL across the lifespan, with particular emphasis on the vulnerabilities that emerge in older adulthood.

ARTICLE HISTORY

Received 13 February 2025
Accepted 16 July 2025

KEYWORDS

Positive emotion stability;
purpose in life; longitudinal
study; relative variability
index

The construct of purpose in life (PIL) has received considerable attention in psychological research due to its profound implications for overall well-being and quality of life (e.g. Cohen et al., 2016; Pinquart, 2002). Among its various antecedents, positive affect (PA) presents itself as a promising modifiable target, with the literature suggesting it as one of the strongest predictors of PIL (e.g. Chen et al., 2020; Hicks et al., 2010). While extant literature has robustly evinced the concurrent and shorter-term effects of PA on PIL (e.g. Hicks et al., 2010; King et al., 2006), its longer-term impact remains a question, with previous studies reporting mixed findings (e.g. Chen et al., 2020; King et al., 2006).

Several theoretical perspectives (e.g. Meaning Maintenance Model, self-regulation; Clore et al., 2001; Heine et al., 2006) suggest that *fluctuations* in PA – rather than merely its static or average levels (e.g. Chen et al., 2020; Hicks et al., 2010; King et al., 2006) – as being particularly important for the development and maintenance of PIL over time. For instance, individuals often strive for coherence and predictability in their experiences to maintain a sense of meaning and purpose. Therefore, fluctuations in PA caused by situational factors may potentially disrupt an individual's capacity to derive a sense of purpose (Orehek et al., 2011; Schwarz, 2010). From the lifespan perspective, this negative association between PA fluctuations and PIL may be exacerbated

with age, with fluctuations in PA being experienced as disruptive to PIL in older adulthood (e.g. Heckhausen & Schulz, 1995; Krause & Rainville, 2020; Röcke et al., 2009).

Drawing on data from a 9-year study of midlife and older adults in the United States, this research investigated how age influenced longitudinal associations of PA fluctuations and PIL. Findings from the current study offer novel insights into the mechanisms through which emotional experiences shape an individual's sense of purpose into older adulthood, contributing to the growing literature emphasizing the importance of not only the presence of positive emotions but also its stability in maintaining psychological well-being across the lifespan.

Positive affect and purpose in life

PIL is a prominent construct in psychology, widely recognized as an indicator of living a 'good life' and overall psychological well-being (e.g. King et al., 2006; Lua et al., 2024; Wong & Fry, 1998). Often considered synonymous with meaning in life (e.g. Chen et al., 2020; Diener et al., 2011; Galek et al., 2015), PIL has been conceptualised as the sense that life is meaningful (e.g. Reker et al., 1987; Ryff & Keyes, 1995) and guided by personally valued goals (e.g. King & Hicks, 2021; Klinger, 1977). Importantly, PIL is not merely an aspirational endpoint

or state to be achieved; rather, it functions as a dynamic construct with wide-ranging downstream benefits that impact various domains of human functioning. For instance, individuals with higher levels of PIL tend to exhibit superior physical health (Cohen et al., 2016; Kim et al., 2022; Pinquart, 2002), stronger social relationships (Pinquart, 2002) and enhanced cognitive health (Lewis et al., 2017; Sutin et al., 2022). Additionally, PIL fosters greater resilience, helping individuals better cope with setbacks and adversities (Scheier et al., 2006) and is associated with lower levels of depression and anxiety symptoms (Boreham & Schutte, 2023; Pinquart, 2002). These findings underscore the multifaceted benefits of PIL, highlighting it as a crucial psychological resource that promotes both mental and physical well-being. Thus, identifying factors that foster PIL represents an important scientific question with practical implications, making this inquiry not only theoretically relevant but practically significant.

Among the different antecedents of PIL proposed in the literature, PA stands out as particularly influential, often posited as one of its strongest predictors (e.g. Chen et al., 2020; Hicks et al., 2010; Nakamura et al., 2022). Several mechanisms underpinning this relationship have been suggested. According to the literature on goal-pursuit, positive and negative emotions may serve as goal-relevant feedback, informing individuals of their progress in valued life areas (e.g. Carver & Scheier, 1990; Orehek et al., 2011). From this perspective, PA may signal substantive progress toward valued goals, which, in turn, contributes to a stronger sense of purpose and direction in life (Emmons, 2003; McKnight & Kashdan, 2009). Beyond its role in signalling progress, PA may also influence PIL through cognitive broadening. According to Fredrickson's broaden-and-build theory (Fredrickson, 1998, 2001; Fredrickson & Branigan, 2001), positive emotions expand an individual's attentional focus, enabling a shift from narrow, immediate concerns to a broader, more global perspective. In this way, PA helps individuals perceive their day-to-day lives as part of a larger, more meaningful whole, fostering a sense of coherence and purpose (King et al., 2006). In other words, PA enables individuals to situate their lives within a broader life narrative, reinforcing the belief that their life is meaningful and has purpose on a grand scale. Consistent with these notions, cross-sectional studies repeatedly report PA as one of the strongest correlates of PIL (e.g. Chen et al., 2020; King et al., 2006, 2006), with effect sizes typically in the medium range.

Although earlier research has demonstrated concurrent associations between PA and PIL (e.g. King et al., 2006) and the short-term causal influence of PA on PIL in experimental contexts (e.g. Hicks et al., 2010; King et al.,

2006), its longer-term effects remain uncertain. Some studies have failed to observe a significant long-term association (e.g. King et al., 2006), with others indicating a prospective impact (e.g. Chen et al., 2020). While the long-term influence of static and average levels of PA on PIL is still under question, existing literature suggests that *fluctuations* in PA may be implicated in the development and maintenance of PIL over time. Additionally, it appears that these associations may intensify with age.

Age, positive affect fluctuations and purpose in life

According to both bottom-up (situational) and top-down (personological) accounts, it appears that fluctuations in PA could play a crucial role in shaping one's PIL over time. According to the Meaning Maintenance Model (Heine et al., 2006), individuals strive for coherence and predictability in their experiences to sustain a sense of meaning and purpose. Hence, fluctuations in PA as a result of situational factors may create emotional variability and unpredictability, potentially disrupting an individual's ability to derive consistent meaning from life's events (Orehek et al., 2011; Schwarz, 2010). That is, when emotions oscillate, it may become harder to maintain a steady narrative of purpose, as the swings in affect may signal an inconsistent emotional reality. Thus, PA fluctuations could serve as a destabilizing force in maintaining a coherent sense of purpose over time. Through the lens of individual differences in self-regulation, those who experience frequent swings in PA may struggle with regulating their emotions effectively, and this emotional instability may disrupt their ability to maintain a consistent emotional state conducive to sustain engagement in meaningful activities. For instance, periods of heightened PA may lead to increased motivation and focus necessary for goal pursuit, while subsequent drops could diminish said motivation and lead to disengagement (e.g. Clore et al., 2001; Fishbach & Labroo, 2007). Over time, the experience of emotional volatility may create a cyclical pattern of engagement and disengagement, hampering the ability to consistently pursue and derive purpose from goal-directed activities (e.g. Eakman, 2014). In line with these perspectives, literature has demonstrated the importance of emotional stability for well-being (e.g. Gruber et al., 2013; Kuppens et al., 2010), with research on psychological adjustment and well-being suggesting that optimal psychological function not only involves the predominance of positive emotions over negative ones (Diener et al., 2003; Fredrickson & Losada, 2005) but also the maintenance of emotional stability (Houben et al., 2015; Kuppens et al., 2007). As such, by focusing exclusively on static or average levels of PA in relation to

PIL (e.g. Chen et al., 2020; King et al., 2006), previous studies may have overlooked the nuanced influence fluctuations in PA could have in shaping one's sense of purpose over time.

While we postulate that PA fluctuations may negatively impact the formation and maintenance of a sense of purpose over time, several theoretical accounts suggest that this association is likely to intensify with age. Individuals' ability to exert control over their environment and achieve developmental goals tends to decline in older adulthood due to a variety of age-related constraints, such as reduced physical capacities and narrower social roles (e.g. Heckhausen & Schulz, 1995; Heckhausen et al., 2010; Walsh et al., 2016). As primary control strategies – aimed at altering external circumstances – become less effective with age, older adults may increasingly rely on secondary control strategies, such as emotion regulation, to adapt to situations (Heckhausen, 1997; Scheibe & Carstensen, 2010). Indeed, as compared to younger individuals, older adults tend to exhibit better emotional regulation (Röcke et al., 2009; Scheibe & Blanchard-Fields, 2009). Yet, this reliance on emotion regulation may conversely render older adults more vulnerable to the destabilizing effects of PA fluctuations. That is, emotional variability could be particularly disruptive for older adults, who are more dependent on maintaining emotional stability to preserve their well-being and sense of purpose.

Moreover, according to the socioemotional selectivity theory (SST; Carstensen et al., 1999), older adults tend to prioritize emotionally gratifying experiences in the present rather than focusing on growth and future-oriented goals due to perceptions of limited remaining time. Consequently, these mood-enhancement goals may lead older adults to become more sensitive to positive information and less sensitive to or avoidant of negative information (Carstensen & Mikels, 2005). Consequently, sudden fluctuations in PA are being perceived as more jarring and disruptive to their sense of purpose. In contrast, younger individuals, with their broader future orientation, may be better equipped to manage PA fluctuations as they are less preoccupied with emotional goals and instead focus on anticipated future-positive outcomes (Robinson & Ryff, 1999; Webster & Ma, 2013) and growth-related endeavours (e.g. Carstensen et al., 1999).

Beyond their heightened focus on positivity, the greater attention on meaning and purpose in later life may also shape how emotional experiences relate to PIL. According to Erikson's (1959) theory of psychosocial development, the final life stage of older adulthood may be characterized by the conflict between integrity and despair. During this life stage, individuals engage in deep

introspection as they seek to reconcile disparities between their life goals and accomplishments. Successfully resolving this crisis fosters a sense of integrity and meaning, while failure results in despair (Erikson, 1959; Krause & Rainville, 2020). As the quest for meaning intensifies during late adulthood, and given the role of PA as an index of successful goal pursuit (e.g. Cloninger et al., 2001; Eakman, 2014), older adults may be more sensitive to PA fluctuations in their appraisal of a purposeful and meaningful life. In other words, as the urgency to establish a sense of purpose escalates with age, instability of PA in older adulthood may exacerbate the tension between life goals and achievements, undermining one's PIL and heightening the negative correlations between PA variability and PIL.

The present study

Drawing on various theoretical frameworks, the stability of PA appears to play a critical role in the construction and maintenance of PIL, particularly in older adulthood. Specifically, PA fluctuations are expected to undermine PIL (e.g. Eakman, 2014; Heine et al., 2006), with this negative impact potentially intensifying with age (e.g. Carstensen et al., 1999; Heckhausen & Schulz, 1995). To this end, the aims of the present study were twofold. First, we examined how fluctuations in PA may be associated with PIL longitudinally. Second, we examined the effects of age on PA fluctuations and PIL associations. Through its twofold aim, this study seeks to offer new insights into the complex interplay between PA and PIL across the lifespan.

Method

Participants

Data for the current study was drawn from the longitudinal midlife in the United States study (MIDUS) 2 (2004–2006) survey, MIDUS 2 Daily Stress Project (2004–2009) and MIDUS 3 (2013–2014) survey studies. The MIDUS 2 survey was administered to participants before the start of the MIDUS 2 Daily Stress Project and contained measures regarding participants' demographic information (e.g. age and socioeconomic status), personality traits and baseline levels of wellbeing (e.g. PIL). Next, participants completed the MIDUS 2 Daily Stress Project, which spanned over the course of an 8-day period. During which, participants provided daily data regarding their daily affect and stress experiences. Several years after completing the MIDUS 2 studies, participants were contacted again to complete the MIDUS 3 survey, which contained measures similar to

Table 1. Descriptive statistics of study sample.

Demographic Variables	<i>M (SD) or %</i>	Range
Age	57.17 (12.28)	33–84
Gender (% Female)	57%	–
Ethnicity (% White)	93%	–
Education	7.41 (2.46)	1–12
Marital Status (% Married)	73%	–

Note. $N = 1,294$. Education was rated on a scale of 1 (No school) to 12 (Ph.D, ED, D, MD, LLB, LLD, JD or other professional degree).

the MIDUS 2 baseline survey. Detailed information regarding these individual projects may be found online (<http://midus.wisc.edu/>). Due to the nature of relative variability index computed for PA (for details, see *Measures*; Mestdagh et al., 2018), individuals who had incomplete daily PA information (e.g. missing data on one of the days) and/or provided consistent daily PA ratings (i.e. no variability over the 8 days of assessment) were excluded, similar to previous studies (e.g. Buecker et al., 2024). The resultant sample consisted of 1,294 individuals. Descriptive statistics of the study sample may be found in Table 1, and the zero-order correlations of variables used in the study may be found in the Supplementary Material (Table S1).

Measures

Purpose in life

PIL was assessed in both MIDUS 2 and MIDUS 3 surveys using the 3-item purpose in life subscale from the Psychological Wellbeing Scale by Ryff and Singer (1998; e.g. 'I sometimes feel as if I've done all there is to do in life'). Responses were recorded on a scale from 1 (*Strongly agree*) to 7 (*Strongly disagree*), with higher scores indicating greater PIL. PIL measured at MIDUS 3 was treated as our outcome variable, while PIL measured at MIDUS 2 was treated as a baseline covariate in our analyses, so as to account for between-person differences in PIL and isolate the longitudinal effects of PA variability on PIL.

Daily positive affect and positive affect fluctuations

Daily PA was measured using 13 items during the MIDUS 2 Daily Stress Project. Participants were asked how much of the time today they felt various emotions (i.e. *good spirits, cheerful, extremely happy, calm and peaceful, satisfied, full of life, close to others, like you belong, enthusiastic, attentive, proud, active and confident*; $\alpha_{\text{between}} = .97$; $\alpha_{\text{within}} = .85$). Responses were recorded on a scale from 0 (*None of the time*) to 4 (*All of the time*), with higher scores reflecting greater PA. An average daily PA score was derived by averaging responses across the items.

PA fluctuations are the key predictor of interest in the current work. PA fluctuations were calculated using daily PA scores measured in the MIDUS 2 Daily Stress Project. Specifically, PA fluctuations were computed using the *relative variability index*, in line with previous variability research (e.g. Buecker et al., 2024; Klein et al., 2023). Inherent to measurements with bonded response formats (e.g. Likert scales and feeling thermometers), ranges of possible variability scores are determined by the mean (Mestdagh et al., 2018). This may lead to misleading conclusions where the variability of a state over time is confounded by its average across all occasions. To mitigate this problem, the relative variability index of PA fluctuations was computed. This index was calculated as the ratio of variability to the maximum possible variability based on the mean (Mestdagh et al., 2018):

$$SD_r = \frac{SD_i}{\max\left(\frac{SD_i}{M_i}\right)}$$

where $\max\left(\frac{SD_i}{M_i}\right)$ indicates the maximum variability given mean M_i for individual i . That is, PA variability used in this study captures the average deviation from one's mean level of PA (i.e. M_i) considering the maximum possible variability given said mean. The relative variability index is designed to remove the structural relationship between intra-individual mean and variability, thereby preventing the variability measure from being confounded by the mean.¹ Values range from 0 to 1, from lower to greater variability.

Daily negative affect and negative affect variability

Average daily negative affect (NA) was measured in the MIDUS 2 Daily Stress Project. Respondents indicated the extent to which they experienced various negative emotions (i.e. *restless or fidgety, nervous, worthless, so sad nothing cheer you up, everything was an effort, hopeless, lonely, afraid, jittery, irritable, ashamed, upset, angry and frustrated*; $\alpha_{\text{between}} = .89$; $\alpha_{\text{within}} = .82$) each day. Responses to the 14 items were recorded on a scale from 0 (*None of the time*) to 4 (*All of the time*), with higher scores reflecting greater NA. A daily NA score was derived by averaging responses across the items. Similar to the average daily PA score, average daily NA was derived by averaging daily NA scores over the 8 days of data. Higher scores indicate greater average daily NA.

NA variability was computed from daily NA data using the aforementioned relative variability formula (Mestdagh et al., 2018). Of note, however, it was not included as a covariate in our main analyses. Relative variability indexes may inflate variability estimates when the average values are extremely close to the scale's

bounds (for details, see Mestdagh et al., 2018). Hence, as participants in the current study typically reported no daily NA experienced during the 8-day assessment period ($M_{\text{average daily NA}} = .19$, $SD_{\text{average daily NA}} = .22$), in contrast to daily PA ($M_{\text{average daily PA}} = 2.72$, $SD_{\text{average daily PA}} = .68$), interpreting estimates of NA variability surrounding the lower bound of zero warrants caution. With that said, we have included NA variability as a covariate in our sensitivity analyses to ascertain the influence of PA variability and the moderating effect of age on PIL with and without accounting for daily NA fluctuations.

Baseline PA and NA

Baseline PA and NA were assessed in the MIDUS 2 survey using an abbreviated version of the Positive and Negative Affect Schedule (PANAS; Watson et al., 1988). Given some previous work suggesting longitudinal associations between PA and PIL (e.g. Chen et al., 2020), baseline PA and NA were used as covariates in our analyses. Four items measured PA (e.g. enthusiastic, attentive, proud and active) and five items measured NA (e.g. afraid, jittery, irritable, ashamed and upset). Respondents rated the frequency to which they experienced each affective state over the past 30 days on a 5-point Likert scale ranging from 1 (*All of the time*) to 5 (*None of the time*). Items were recorded so that higher scores on the PA subscale indicate greater levels of positive emotions, while higher scores on the NA subscale indicate greater levels of negative emotions.

Concurrent PA and NA

Previous work reported associations between concurrent affect and PIL (e.g. King et al., 2006). As such, concurrent PA and NA were used as covariates in our analyses to isolate the longitudinal effects of PA fluctuations on the outcome of PIL. Concurrent PA and NA were assessed in the MIDUS 3 survey using the same abbreviated version of the PANAS (Watson et al., 1988) used in the MIDUS 2 survey.

Age

Extant literature seem to suggest that age may moderate the relationship between PA fluctuations and PIL. As such, we examined its potential moderating role in our analysis. Participants' age, as recorded in the MIDUS 2 survey, was included as a key variable in our analyses.

Personality and optimism

Individual differences in participants' dispositional tendencies (e.g. optimism and personality traits) may be associated with PIL (e.g. Lauriola & Iani, 2017; Steger et al., 2006). Hence, we controlled for individual

differences in participants' levels of optimism and their big five personality traits (i.e. conscientiousness, openness to experience, extraversion, agreeableness and neuroticism), measured at MIDUS 2 survey, in our analyses.

Baseline optimism was measured using an adapted version of the Revised Life-Orientation Test (Scheier et al., 1994) in the MIDUS 2 survey. Participants rated how much they agreed to six statements (e.g. '*In uncertain times, I usually expect the best*', '*I hardly ever expect things to go my way.*' [reversed]) on a 5-point scale ranging from *Disagree a lot* to *Agree a lot*. A composite score of optimism was calculated by summing the ratings on each item after appropriate items were reversed, and composite scores were coded such that higher values indicated higher levels of optimism.

Personality traits were measured during the MIDUS 2 survey. To capture participants' big five personalities, participants responded to self-descriptive adjectives by indicating how well each adjective described them on a 4-point Likert scale ranging from *Not at all* to *A lot*. Conscientiousness was measured using four items (e.g. '*Organized*' and '*Hardworking*'), openness to experiences with seven items (e.g. '*Broad-minded*' and '*Adventurous*'), extraversion with five items (e.g. '*Outgoing*' and '*Lively*'), agreeableness with five items (e.g. '*Warm*' and '*Sympathetic*'), and neuroticism with four items (e.g. '*Moody*' and '*Nervous*'). Responses were recorded on a 4-point scale, from 1 (*A lot*) to 4 (*Not at all*). Scores were computed by averaging responses on each item in the sub-scale, and composite scores were calculated such that higher scores indicated higher levels of that trait.

Transparency and openness

Analyses were conducted in R (4.2.1; R Core Team, 2022). The analysis code can be accessed at <https://osf.io/knpfy/>. The data supporting the findings of this study may be found online at <https://www.icpsr.umich.edu/web/NACDA/series/203>. This study was not preregistered.

Results

Main analyses

To examine the longitudinal effects of PA fluctuations on PIL, several regression models were specified, with covariates added in a stepwise fashion (Table 2). Adjusting for baseline PIL (Model 1), PA variability significantly predicts subsequent PIL ($B = -1.26$, $\beta = -0.06$, $p = .048$). In order to ascertain the robustness of this finding and account for between-person differences in affective

disposition, covariates of individual differences in affective disposition (i.e. average daily PA and NA, baseline as well as concurrent PA and NA; Model 2) as well as personality and optimism (Model 3) were added to the model; the longitudinal negative impact of PA fluctuations on PIL remained significant ($B_{\text{Model 2}} = -1.62$, $\beta_{\text{Model 2}} = -0.07$, $p_{\text{Model 2}} = .016$; $B_{\text{Model 2}} = -1.56$, $\beta_{\text{Model 2}} = -0.07$, $p_{\text{Model 3}} = .020$). Next, to examine how age may impact associations between PA fluctuations and PIL, age was added as to the model (Model 4). The main effects of PA variability and age were entered simultaneously in the same step, followed by the addition of the PA variability $\times$ Age interaction term in a subsequent step.

The interaction term of PA fluctuation $\times$ Age was significant ($B = -.181$, $\beta = -0.090$, $p = .001$). Simple slopes analysis indicated that while non-significant at younger ages, associations between PA variability and PIL became negative and significant with age (i.e. 57.44

years old and above; Figure 1, Table 3). Of note, across models with lagged PA (i.e. Models 2, 3 and 4), lagged PA did not significantly predict subsequent PIL ($p > .05$).

Sensitivity analysis

Participants in the current study reported daily NA averages close to zero during the 8-day assessment period ($M_{\text{average daily NA}} = 0.19$, $SD_{\text{average daily NA}} = 0.22$), in contrast to daily PA ($M_{\text{average daily PA}} = 2.72$, $SD_{\text{average daily PA}} = 0.68$). The lower variability in daily NA relative to daily PA is in line with previous work (e.g. Spindler et al., 2016). Computing estimates of NA variability with near-zero average warrants further caution (Mestdagh et al., 2018). As such, we have left out NA fluctuations in our earlier analytic models. With that said, as part of our sensitivity analyses, we re-specified Model 4 and added NA fluctuations to our model as a covariate to examine how its inclusion might alter the

Table 2. Regression models of positive affect variability predicting purpose in life.

Model	Predictor	Covariates	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>	Adjusted <i>R</i> ²	ΔR^2
1	PA Variability		-1.264	0.638	-.056	-1.982	.0478	.241	-
2	PA Variability	Baseline PIL	.533	.031	.490	17.246	<.001	.264	.022
		Average daily PA,	-1.624	0.671	-0.073	-2.418	.016		
		Average daily NA,	.485	.032	.444	15.061	<.001		
		Lagged PA,	.003	.203	.001	.017	.987		
		Lagged NA	-.326	.646	-.018	-.505	.614		
		Concurrent PA	-.072	.175	-.016	-.413	.680		
		Concurrent NA	.614	.263	.088	2.329	.020		
3	PA Variability		-.491	.257	-.068	-1.908	.057	.305	.041
			.780	.161	.178	4.828	<.001		
			-1.563	0.669	-0.070	-2.336	.020		
		Baseline PIL,	.425	.033	.389	12.940	<.001		
		Average daily PA,	-.182	.203	-.036	-.895	.371		
		Average daily NA	-.376	.638	-.021	-.590	.555		
		Lagged PA	-.243	.178	-.054	-1.362	.174		
		Lagged NA	.800	.276	.115	2.901	.004		
		Concurrent PA	-.471	.255	-.065	-1.847	.065		
		Concurrent NA	.684	.160	.155	4.264	<.001		
		Optimism,	.123	.026	.167	4.772	<.001		
		Neuroticism	.106	.193	.020	.551	.582		
		Conscientiousness	.611	.233	.080	2.625	.009		
		Openness	.593	.214	.091	2.771	.006		
4	PA Variability Age PA Variability $\times$ Age	Extraversion	-.178	.222	-.029	-.801	.423	.332	.027
		Agreeableness	.084	.219	.012	.382	.702		
			-1.389	0.657	-0.062	-2.12	.035		
			-0.048	0.009	-0.162	-5.51	<.001		
			-0.181	0.055	-0.090	-3.26	.001		
		Baseline PIL,	.403	.032	.368	12.419	<.001		
		Average daily PA,	-.073	.201	-.014	-.366	.715		
		Average daily NA	-.362	.626	-.020	-.579	.563		
		Lagged PA	-.176	.175	-.039	-1.009	.313		
		Lagged NA	.581	.273	.084	2.131	.033		
		Concurrent PA	-.448	.250	-.062	-1.791	.074		
		Concurrent NA	.604	.158	.137	3.826	<.001		
		Optimism,	.137	.025	.185	5.395	<.001		
		Neuroticism	.002	.190	.001	.015	.988		
		Conscientiousness	.485	.230	.064	2.106	.036		
		Openness	.566	.210	.087	2.698	.007		
		Extraversion	-.183	.219	-.030	-.839	.402		
		Agreeableness	.111	.216	.016	.515	.607		

Note. PA = positive affect; PIL = purpose in life; NA = negative affect; *B* = unstandardized regression coefficient; *SE* = standard error; β = standardized regression coefficient.

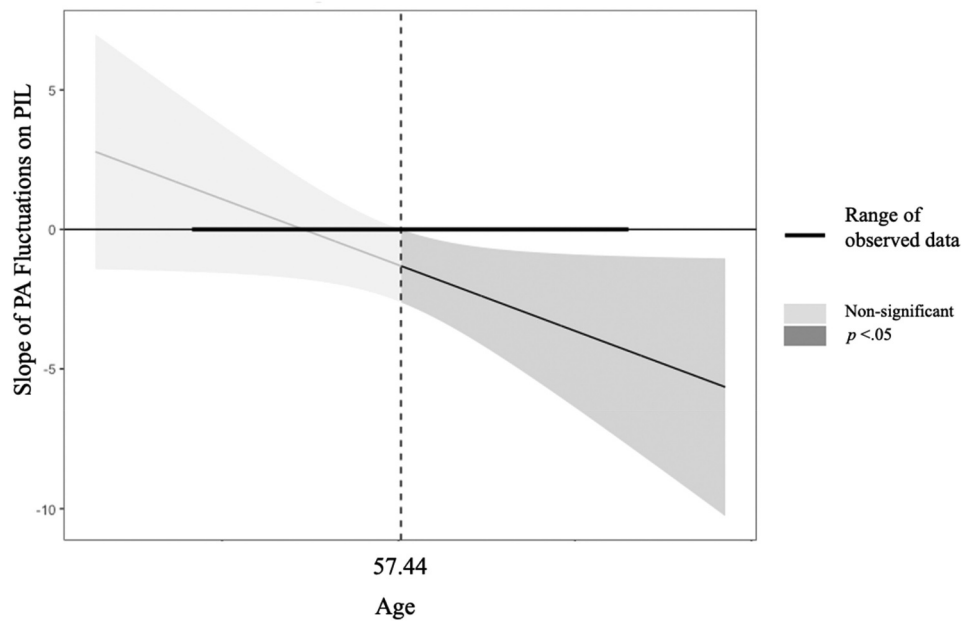


Figure 1. Johnson–Neyman plot of the conditional slope of positive affect fluctuations on purpose in life. *Note.* PA = positive affect; PIL = purpose in life. The plot shows the regression coefficient of PA variability on PIL measured at MIDUS 3 at different values of age. For participants aged 57.44 and above, the slope of the relationship between PA variability and PIL was significant and negative.

Table 3. Conditional effects of positive affect fluctuations on purpose in life.

Level of Moderator	Age	<i>B</i>	<i>SE</i>	<i>P</i>
One <i>SD</i> below mean	44.40	.232	1.00	.816
At the mean	57.17	−1.09	0.67	.104
One <i>SD</i> above mean	66.79	−2.41	0.90	.007

Note. All simple slope regression coefficients (*B*) are unstandardized.

observed findings. The Age $\times$ PA fluctuation remained significant ($B = -.210$, $\beta = -.104$, $p = .002$). The NA of PA variability on the outcome of PIL remained significant ($B = -1.34$, $\beta = -.06$, $p = .045$). These findings indicate that although PA and NA fluctuations were modestly correlated ($r = .20$; Table S1 in supplementary materials) – individuals who experienced greater PA fluctuations tended to report greater NA fluctuations – the effect of PA variability on PIL was not fully accounted for by NA fluctuations and individual differences in affective disposition.

Discussion

This study investigated the longitudinal effects of fluctuations in PA on PIL and the moderating role of age among midlife and older adults in the United States, over a 9-year period. Findings from this study suggest that fluctuations in PA negatively impact PIL over time, particularly among older individuals (e.g. around 57 years and older). Among younger individuals, the potentially destabilizing effects of PA on PIL did not appear to be significant. Of note, these effects were observed after accounting for important covariates, such as baseline PIL, personality, trait

optimism and individual differences in affective disposition. Together, findings from the current study appear to corroborate with the extent of literature. That is, while fluctuations in PA may impact PIL – through both bottom-up (e.g. Heine et al., 2006; Orehek et al., 2011) and top-down influences (e.g. Clore et al., 2001; Fishbach & Labroo, 2007) – this effect may only become substantive in older adulthood. In other words, the psychological landscape that characterizes older adulthood (e.g. Increased sensitivity to positive information, emphasis on emotional goals and greater reliance on secondary control; Carstensen & Mikels, 2005; Heckhausen et al., 2010; Krause & Rainville, 2020) may create conditions in which fluctuations in PA may be perceived as more jarring and disruptive to the formation and maintenance of a sense of purpose over time.

Although corroborating with existing literature, findings from this study also represent a critical departure from previous research. While previous studies focused on static and average levels of PA in relation to PIL (e.g. Chen et al., 2020; King et al., 2006), the present study examined fluctuations in PA and its effects on PIL. This dynamic approach allows for a more nuanced

understanding of how variability in positive emotions may impact individuals' perceptions of purpose over time, highlighting the significance of PA stability in the formation and maintenance of PIL over time as opposed to simply PA in abundance. Additionally, this study contributes to the understanding of age-related differences in emotional regulation and well-being. While older adults may be better at regulating emotions on average (e.g. Röcke et al., 2009; Scheibe & Blanchard-Fields, 2009), fluctuations in these emotions may prove more detrimental for a sense of PIL. Apart from expanding our theoretical understanding of the construction and maintenance of PIL across the lifespan, findings from this study hold important practical implications. From a societal and policy perspective, these findings suggest the potential value of creating familiar environments that foster emotional stability and purposefulness (e.g. Nezelek, 2007), especially for older adults. Community programs that encourage intergenerational connections (Peacock & O'Quin, 2006), volunteerism (Greenfield & Marks, 2004), and participation in meaningful activities (Hooker et al., 2020) may also provide opportunities for older adults to reaffirm their sense of purpose and reduce the emotional disruptions that may undermine it. By fostering these emotionally supportive environments, a more resilient and purposeful aging experience may be promoted.

Constraints on generality

Although the present study has notable strengths, such as its use of a relative variability index, longitudinal design and large sample, there were limitations. For instance, participants were asked to recall events and emotions that had occurred in the past 24 h, which could introduce recall bias (Ottenstein and Lischetzke, 2020; Scollon et al., 2011). Emotional experiences may be forgotten or inaccurately reported, particularly when subtle fluctuations in mood are concerned. This reliance on retrospective reporting may have led to an underestimation or distortion of the true variability in PA, potentially weakening the observed relationship between PA fluctuations and PIL. Future studies could address this limitation by employing real-time data collection methods, such as ecological momentary assessment (EMA), which prompt participants to record their emotions in the moment, thus providing a more accurate and granular account of daily affective changes. By reducing the reliance on memory, EMA could offer a clearer picture of how daily PA fluctuations contribute to changes in purpose over time.

Another limitation of this study is that the generalizability of the findings may be constrained by the demographic characteristics of the sample. In addition to primarily consisting of midlife and older adults from the United States, our sample reflects the characteristics of WEIRD (Western, Educated, Industrialized, Rich and Democratic) populations that dominate psychological research (Henrich et al., 2010), which may limit the applicability of our findings to more diverse racial/ethnic groups and cultural/national contexts. For instance, cultural differences in emotional regulation (e.g. Ford & Mauss, 2015), the pursuit of meaning (e.g. Oishi et al., 2019) and the perception of aging (e.g. Tsai et al., 2018) may influence the general pattern of associations observed in this study. Thus, future research should replicate these findings in more diverse cultural and national contexts to determine whether the relationship among age, PA fluctuations and PIL holds across different populations. Expanding the study to include younger age groups could also provide additional insights into the developmental aspects of this relationship.

Conclusion

The current study examined the longitudinal impact of PA fluctuations on PIL and the moderating role of age. Results indicated a conditional effect of PA fluctuations on PIL – among older individuals in particular, PA fluctuations were observed to have a detrimental impact on a sense of purpose over time. This effect was observed even after controlling for baseline PIL, personality, optimism and individual differences in affective disposition. Results from this study advance our understanding of the complex interplay between PA fluctuations and PIL across the lifespan, with particular emphasis on the vulnerabilities that emerge in older adulthood. Findings underscore the importance of maintaining PA stability as a key component of purpose, while also pointing to the need for tailored interventions that support individuals in navigating the emotional and existential challenges of aging. Future research should continue to explore these dynamics across diverse populations and settings, further illuminating how emotional variability shapes psychological outcomes like PIL and how these effects evolve over time.

Note

1. While several other methods have been introduced in attempts to deal with the issue of variability confounded

by the mean, such as statistically controlling for the mean in regression analyses, creating flexible parametric or nonparametric models to relate variability to the mean and the using of the coefficient of variation (SDiMi), these approaches carrying various methodological limitations, details of which have been published in detail elsewhere (see Mestdagh et al., 2018).

Disclosure statement

No potential conflict of interest was reported by the author(s).

Open scholarship statement



This article has earned the Center for Open Science badges for Open Data and Open Materials through Open Practices Disclosure. The data and materials are openly accessible at <https://www.icpsr.umich.edu/web/NACDA/series/203>.

References

- Boreham, I. D., & Schutte, N. S. (2023). The relationship between purpose in life and depression and anxiety: A meta-analysis. *Journal of Clinical Psychology*, 79(12), 2736–2767. <https://doi.org/10.1002/jclp.23576>
- Buecker, S., Horstmann, K. T., & Luhmann, M. (2024). Lonely today, lonely tomorrow: Temporal dynamics of loneliness in everyday life and its associations with psychopathological symptoms. *Social Psychological and Personality Science*, 15(2), 170–181. <https://doi.org/10.1177/19485506231156061>
- Carstensen, L. L., Isaacowitz, D. M., & Charles, S. T. (1999). Taking time seriously: A theory of socioemotional selectivity. *American Psychologist*, 54(3), 165–181. <https://doi.org/10.1037/0003-066X.54.3.165>
- Carstensen, L. L., & Mikels, J. A. (2005). At the intersection of emotion and cognition: Aging and the positivity effect. *Current Directions in Psychological Science*, 14(3), 117–121. <https://doi.org/10.1111/j.0963-7214.2005.00348.x>
- Carver, C. S., & Scheier, M. F. (1990). Origins and functions of positive and negative affect: A control-process view. *Psychological Review*, 97(1), 19–35. <https://doi.org/10.1037/0033-295X.97.1.19>
- Chen, Y., Kim, E. S., Shields, A. E., VanderWeele, T. J., & Rodriguez-Blazquez, C. (2020). Antecedents of purpose in life: Evidence from a lagged exposure-wide analysis. *Cogent Psychology*, 7(1), 1825043. <https://doi.org/10.1080/23311908.2020.1825043>
- Clore, G. L., Gasper, K., & Garvin, E. (2001). Affect as information. In J. P. Forgas (Ed.), *Handbook of affect and social cognition* (pp. 121–144). Lawrence Erlbaum Associates, Inc.
- Cohen, R., Bavishi, C., & Rozanski, A. (2016). Purpose in life and its relationship to all-cause mortality and cardiovascular events: A meta-analysis. *Psychosomatic Medicine*, 78(2), 122. <https://doi.org/10.1097/PSY.0000000000000274>
- Diener, E., Oishi, S., & Lucas, R. E. (2003). Personality, culture, and subjective well-being: Emotional and cognitive evaluations of life. *Annual Review of Psychology*, 54(1), 403–425. <https://doi.org/10.1146/annurev.psych.54.101601.145056>
- Diener, E., Tay, L., & Myers, D. G. (2011). The religion paradox: If religion makes people happy, why are so many dropping out? *Journal of Personality and Social Psychology*, 101(6), 1278–1290. <https://doi.org/10.1037/a0024402>
- Eakman, A. M. (2014). A prospective longitudinal study testing relationships between meaningful activities, basic psychological needs fulfillment, and meaning in life. *OTJR: Occupation, Participation & Health*, 34(2), 93–105. <https://doi.org/10.3928/15394492-20140211-01>
- Emmons, R. A. (2003). Personal goals, life meaning, and virtue: Wellsprings of a positive life. In C. L. M. Keyes & J. Haidt (Eds.), *Flourishing: Positive psychology and the life well-lived* (pp. 105–128). American Psychological Association. <https://doi.org/10.1037/10594-005>
- Erikson, E. (1959). *Identity and the life cycle*. International Universities Press.
- Fishbach, A., & Labroo, A. A. (2007). Be better or be merry: How mood affects self-control. *Journal of Personality and Social Psychology*, 93(2), 158–173. <https://doi.org/10.1037/0022-3514.93.2.158>
- Ford, B. Q., & Mauss, I. B. (2015). Culture and emotion regulation. *Current Opinion in Psychology*, 3, 1–5. <https://doi.org/10.1016/j.copsyc.2014.12.004>
- Fredrickson, B. L. (1998). What good are positive emotions? *Review of General Psychology: Journal of Division 1, of the American Psychological Association*, 2(3), 300–319. <https://doi.org/10.1037/1089-2680.2.3.300>
- Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist*, 56(3), 218–226. <https://doi.org/10.1037/0003-066X.56.3.218>
- Fredrickson, B. L., & Branigan, C. (2001). Positive emotions. In Mayne, G. A. & Bonnano, G. A. (Eds.), *Emotions: Current issues and future directions* (pp. 123–151). The Guilford Press.
- Fredrickson, B. L., & Losada, M. F. (2005). Positive affect and the complex dynamics of human flourishing. *American Psychologist*, 60(7), 678–686. <https://doi.org/10.1037/0003-066X.60.7.678>
- Galek, K., Flannelly, K. J., Ellison, C. G., Siltan, N. R., & Jankowski, K. R. B. (2015). Religion, meaning and purpose, and mental health. *Psychology of Religion and Spirituality*, 7(1), 1–12. <https://doi.org/10.1037/a0037887>
- Greenfield, E. A., & Marks, N. F. (2004). Formal volunteering as a protective factor for older adults' psychological well-being. *The Journals of Gerontology Series B, Psychological Sciences and Social Sciences*, 59(5), S258–264. <https://doi.org/10.1093/geronb/59.5.s258>
- Gruber, J., Kogan, A., Mennin, D., & Murray, G. (2013). Real-world emotion? An experience-sampling approach to emotion experience and regulation in bipolar I disorder. *Journal of Abnormal Psychology*, 122(4), 971–983. <https://doi.org/10.1037/a0034425>
- Heckhausen, J. (1997). Developmental regulation across adulthood: Primary and secondary control of age-related challenges. *Developmental Psychology*, 33(1), 176–187. <https://doi.org/10.1037/0012-1649.33.1.176>
- Heckhausen, J., & Schulz, R. (1995). A life-span theory of control. *Psychological Review*, 102(2), 284–304. <https://doi.org/10.1037/0033-295X.102.2.284>
- Heckhausen, J., Wrosch, C., & Schulz, R. (2010). A motivational theory of life-span development. *Psychological Review*, 117(1), 32–60. <https://doi.org/10.1037/a0017668>

- Heine, S. J., Prolux, T., & Vohs, K. D. (2006). The meaning maintenance model: On the coherence of social motivations. *Personality and Social Psychology Review: An Official Journal of the Society for Personality and Social Psychology, Inc.*, 10(2), 88–110. https://doi.org/10.1207/s15327957pspr1002_1
- Henrich, J., Heine, S. J., & Norenzayan, A. (2010). The weirdest people in the world? *The Behavioral and Brain Sciences*, 33 (2–3), 61–135. <https://doi.org/10.1017/S0140525X0999152X>
- Hicks, J. A., Cicero, D. C., Trent, J., Burton, C. M., & King, L. A. (2010). Positive affect, intuition, and feelings of meaning. *Journal of Personality and Social Psychology*, 98(6), 967–979. <https://doi.org/10.1037/a0019377>
- Hooker, S. A., Masters, K. S., Vagnini, K. M., & Rush, C. L. (2020). Engaging in personally meaningful activities is associated with meaning salience and psychological well-being. *The Journal of Positive Psychology*, 15(6), 821–831. <https://doi.org/10.1080/17439760.2019.1651895>
- Houben, M., Van Den Noortgate, W., & Kuppens, P. (2015). The relation between short-term emotion dynamics and psychological well-being: A meta-analysis. *Psychological Bulletin*, 141(4), 901–930. <https://doi.org/10.1037/a0038822>
- Kim, E. S., Chen, Y., Nakamura, J. S., Ryff, C. D., & VanderWeele, T. J. (2022). Sense of purpose in life and subsequent physical, behavioral, and psychosocial health: An outcome-wide approach. *American Journal of Health Promotion*, 36(1), 137–147. <https://doi.org/10.1177/08901171211038545>
- King, L. A., & Hicks, J. A. (2021). The science of meaning in life. *Annual Review of Psychology*, 72(1), 561–584. <https://doi.org/10.1146/annurev-psych-072420-122921>
- King, L. A., Hicks, J. A., Krull, J. L., & Del Gaiso, A. K. (2006). Positive affect and the experience of meaning in life. *Journal of Personality and Social Psychology*, 90(1), 179–196. <https://doi.org/10.1037/0022-3514.90.1.179>
- Klein, R. J., Rapaport, R., Gyorda, J. A., Jacobson, N. C., & Robinson, M. D. (2023). Second-to-second affective responses to images correspond with affective reactivity, variability, and instability in daily life. *Experimental Psychology*, 70(1), 14–31. <https://doi.org/10.1027/1618-3169/a000564>
- Klinger, E. (1977). *Meaning & void: Inner experience and the incentives in people's lives*. University of Minnesota Press.
- Krause, N., & Rainville, G. (2020). Age differences in meaning in life: Exploring the mediating role of social support. *Archives of Gerontology and Geriatrics*, 88, 104008. <https://doi.org/10.1016/j.archger.2020.104008>
- Kuppens, P., Oravecz, Z., & Tuerlinckx, F. (2010). Feelings change: Accounting for individual differences in the temporal dynamics of affect. *Journal of Personality and Social Psychology*, 99(6), 1042–1060. <https://doi.org/10.1037/a0020962>
- Kuppens, P., Van Mechelen, I., Nezlek, J. B., Dossche, D., & Timmermans, T. (2007). Individual differences in core affect variability and their relationship to personality and psychological adjustment. *Emotion (Washington, DC)*, 7(2), 262–274. <https://doi.org/10.1037/1528-3542.7.2.262>
- Lauriola, M., & Iani, L. (2017). Personality, positivity and happiness: A mediation analysis using a bifactor model. *Journal of Happiness Studies: An Interdisciplinary Forum on Subjective Well-Being*, 18(6), 1659–1682. <https://doi.org/10.1007/s10902-016-9792-3>
- Lewis, N. A., Turiano, N. A., Payne, B. R., & Hill, P. L. (2017). Purpose in life and cognitive functioning in adulthood. *Aging, Neuropsychology & Cognition*, 24(6), 662–671. <https://doi.org/10.1080/13825585.2016.1251549>
- Lua, V. Y. Q., Ooi, W. M., Najib, A., Tan, C., Majeed, N. M., Leung, A. K. Y., & Hartanto, A. (2024). Think your way to happiness? Investigating the role of need for cognition in well-being through a three-level meta-analytic approach. *Motivation and Emotion*, 48(1), 75–99. <https://doi.org/10.1007/s11031-023-10047-w>
- McKnight, P. E., & Kashdan, T. B. (2009). Purpose in life as a system that creates and sustains health and well-being: An integrative, testable theory. *Review of General Psychology*, 13(3), 242–251. <https://doi.org/10.1037/a0017152>
- Mestdagh, M., Pe, M., Pestman, W., Verdonck, S., Kuppens, P., & Tuerlinckx, F. (2018). Sidelining the mean: The relative variability index as a generic mean-corrected variability measure for bounded variables. *Psychological Methods*, 23(4), 690–707. <https://doi.org/10.1037/met0000153>
- Nakamura, J. S., Chen, Y., VanderWeele, T. J., & Kim, E. S. (2022). What makes life purposeful? Identifying the antecedents of a sense of purpose in life using a lagged exposure-wide approach. *SSM - Population Health*, 19, 101235. <https://doi.org/10.1016/j.ssmph.2022.101235>
- Nezlek, J. B. (2007). A multilevel framework for understanding relationships among traits, states, situations and behaviours. *European Journal of Personality*, 21(6), 789–810. <https://doi.org/10.1002/per.640>
- Oishi, S., Choi, H., Buttrick, N., Heintzelman, S. J., Kushlev, K., Westgate, E. C., Tucker, J., Ebersole, C. R., Axt, J., Gilbert, E., Ng, B. W., & Besser, L. L. (2019). The psychologically rich life questionnaire. *Journal of Research in Personality*, 81, 257–270. <https://doi.org/10.1016/j.jrp.2019.06.010>
- Orehek, E., Bessarabova, E., Chen, X., & Kruglanski, A. W. (2011). Positive affect as informational feedback in goal pursuit. *Motivation and Emotion*, 35(1), 44–51. <https://doi.org/10.1007/s11031-010-9197-2>
- Ottenstein, C., & Lischetzke, T. (2020). Recall bias in emotional intensity ratings: Investigating person-level and event-level predictors. *Motivation and Emotion*, 44(3), 464–473. <https://doi.org/10.1007/s11031-019-09796-4>
- Peacock, J. R., & O'Quin, J. A. (2006). Higher education and foster grandparent programs: Exploring mutual benefits. *Educational Gerontology*, 32(5), 367–378. <https://doi.org/10.1080/03601270600564112>
- Pinquart, M. (2002). Creating and maintaining purpose in life in old age: A meta-analysis. *Ageing International*, 27(2), 90–114. <https://doi.org/10.1007/s12126-002-1004-2>
- R Core Team. (2022). *R: a language and environment for statistical computing* [computer software]. R Foundation for Statistical Computing. <https://www.R-project.org>
- Reker, G. R., Peacock, E. J., & Wong, P. T. (1987). Meaning and purpose in life and well-being: A life-span perspective. *Journal of Gerontology*, 42(1), 44–49. <https://doi.org/10.1093/geronj/42.1.44>
- Robinson M D and Ryff C D. (1999). The Role of Self-Deception in Perceptions of Past, Present, and Future Happiness. *Pers Soc Psychol Bull*, 25(5), 596–608. <https://doi.org/10.1177/0146167299025005005>
- Röcke, C., Li, S.-C., & Smith, J. (2009). Intraindividual variability in positive and negative affect over 45 days: Do older adults

- fluctuate less than young adults? *Psychology and Aging*, 24 (4), 863–878. <https://doi.org/10.1037/a0016276>
- Ryff, C. D., & Keyes, C. L. M. (1995). The structure of psychological well-being revisited. *Journal of Personality and Social Psychology*, 69(4), 719–727. <https://doi.org/10.1037/0022-3514.69.4.719>
- Ryff, C. D., & Singer, B. (1998). The role of purpose in life and personal growth in positive human health. In P. T. P. Wong & P. S. Fry (Eds.), *The human quest for meaning: a handbook of psychological research and clinical applications* (pp. 213–235). Lawrence Erlbaum Associates Publishers.
- Scheibe, S., & Blanchard-Fields, F. (2009). Effects of regulating emotions on cognitive performance: What is costly for young adults is not so costly for older adults. *Psychology and Aging*, 24(1), 217–223. <https://doi.org/10.1037/a0013807>
- Scheibe, S., & Carstensen, L. L. (2010). Emotional aging: Recent findings and future trends. *The Journals of Gerontology Series B*, 65B(2), 135–144. <https://doi.org/10.1093/geronb/gbp132>
- Scheier, M. F., Carver, C. S., & Bridges, M. W. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): A reevaluation of the life orientation test. *Journal of Personality and Social Psychology*, 67(6), 1063–1078. <https://doi.org/10.1037/0022-3514.67.6.1063>
- Scheier, M. F., Wrosch, C., Baum, A., Cohen, S., Martire, L. M., Matthews, K. A., Schulz, R., & Zdzienicka, B. (2006). The life engagement test: Assessing purpose in life. *Journal of Behavioral Medicine*, 29(3), 291–298. <https://doi.org/10.1007/s10865-005-9044-1>
- Schwarz, N. (2010). Meaning in context: Metacognitive experiences. In B. Mesquita, L. F. Barrett, & E. R. Smith (Eds.), *The mind in context* (pp. 105–125). Guilford.
- Scollon, C. N., Koh, S., & Au, E. W. M. (2011). Cultural differences in the subjective experience of emotion: When and why they occur. *Social and Personality Psychology Compass*, 5 (11), 853–864. <https://doi.org/10.1111/j.1751-9004.2011.00391.x>
- Spindler G, Stopsack M, Aldinger M, Grabe H Jörgen and Barnow S. (2016). What about the “ups and downs” in our daily life? The influence of affective instability on mental health. *Motiv Emot*, 40(1), 148–161. <https://doi.org/10.1007/s11031-015-9509-7>
- Steger, M. F., Frazier, P., Oishi, S., & Kaler, M. (2006). The meaning in life questionnaire: Assessing the presence of and search for meaning in life. *Journal of Counseling Psychology*, 53(1), 80–93. <https://doi.org/10.1037/0022-0167.53.1.80>
- Sutin, A. R., Luchetti, M., & Terracciano, A. (2022). The benefits of a sense of purpose in life for healthier cognitive aging. *International Psychogeriatrics*, 34(12), 1015–1017. <https://doi.org/10.1017/S1041610222000837>
- Tsai, J. L., Sims, T., Qu, Y., Thomas, E., Jiang, D., & Fung, H. H. (2018). Valuing excitement makes people look forward to old age less and dread it more. *Psychology and Aging*, 33(7), 975–992. <https://doi.org/10.1037/pag0000295>
- Walsh, K., Scharf, T., & Keating, N. (2016). Social exclusion of older persons: A scoping review and conceptual framework. *European Journal of Ageing*, 14(1), 81–98. <https://doi.org/10.1007/s10433-016-0398-8>
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, 54(6), 1063–1070. <https://doi.org/10.1037/0022-3514.54.6.1063>
- Webster, J. D., & Ma, X. (2013). A balanced time perspective in adulthood: Well-being and developmental effects. *Canadian Journal on Aging/La Revue Canadienne du Vieillessement*, 32 (4), 433–442. <https://doi.org/10.1017/S0714980813000500>
- Wong, P. T. P., & Fry, P. S. (1998). *The human quest for meaning: a handbook of psychological research and clinical applications*. Lawrence Erlbaum Associates Publishers.

Copyright of Journal of Positive Psychology is the property of Taylor & Francis Ltd and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.