



Coping Styles as Mediators Between Purpose in Life and Cognitive Function: A Longitudinal Study

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Abstract

This study tests associations between purpose in life and coping, and whether coping mediates the association between purpose and cognitive function. Longitudinal data from the Midlife Development in the United States (MIDUS) study were used to investigate associations between purpose at MIDUS I and coping at MIDUS II ($N = 2386$). Emotion-focused and problem-focused coping were tested as mediators between purpose and cognitive function (memory, executive function, global cognition) at MIDUS III. Higher purpose was associated with more problem-focused and less emotion-focused coping. Coping partially mediated the association between purpose and cognitive function. Emotion-focused coping partially mediated (14.3%) the effect of purpose on cognitive function. Problem-focused coping partially mediated (16.7%) the association of purpose on episodic memory, but not executive function or global cognition. These findings provide new evidence for links between purpose and coping and suggest coping is one mechanism linking purpose with better cognitive function.

Keywords

cognition, coping, executive function, memory, purpose

Introduction

A sense of purpose in life is a critical component of psychological well-being that refers to a sense of a goal-oriented direction in life (Ryff, 1989). Greater purpose is linked with better cognitive function and healthier cognitive aging (Sutin, Luchetti, & Terracciano, 2021). Purpose, for example, is associated with better memory and verbal fluency (Sutin, Luchetti et al., 2021; Sutin, Luchetti, Stephan, Strickhouser et al., 2022), better executive function and composite cognitive function (Lewis et al., 2017), fewer cognitive failures (Sutin, Aschwanden et al., 2023), slower cognitive decline (Kim et al., 2019), lower risk of incident dementia (Boyle et al., 2010; Sutin, Aschwanden et al., 2021), and, even after dementia onset, fewer behavioral and psychological symptoms of dementia (Sutin, Luchetti, Stephan, & Terracciano, 2022). Less work has addressed the mechanisms that link purpose with long-term cognitive function. Some potential pathways (e.g., affect and stress arousal) may overlap with other multisystemic regulation paths associated with cognitive aging (McEwen & Seeman, 1999; Zilioli et al., 2015). Although some research has examined possible psychosocial mechanisms, such as affect (Dewitte et al., 2021), other dimensions of self-regulation, such as coping, may also play a

role. The present study examines the association between purpose and coping styles, and whether coping is one mechanism between purpose and cognitive function.

Self-regulation is a psychological process that helps manage thoughts, feelings, and actions (Bandura, 1991). Coping, in particular, is a dynamic process that helps adjust to specific demands or conflicts that exceed the resources needed to prevent, manage, and mitigate stress (Lazarus & Folkman, 1984). Cognitive appraisal processes contribute to the identification of stress severity and evaluation of available resources and coping strategies to deal with stress (Tomaka et al., 1997). Among the

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frameworks used to explain the role of coping in stress appraisal and response processes, one of the earliest and most popular theories is the Transactional Model of Stress and Coping, which proposes that coping is a dynamic cognitive behavioral effort strategy that evaluates whether one has the necessary internal (e.g., personality) or external (e.g., social support) resources necessary to manage situational stress demands (Lazarus & Folkman, 1984). Coping responses reflect whether one's resources exceed (i.e., challenge evaluations) or fall short of (i.e., threat evaluations) these demands, and these evaluations are essential in determining appropriate stress response strategies. As such, coping is a key mechanism in the stress evaluation and response process that can indirectly affect both short-term and long-term health outcomes (DeLongis & Holtzman, 2005; Horiuchi et al., 2018; Schuster et al., 2003). Consistent exposure to stress and the inability to appropriately appraise and cope with it contribute to sensitized and elevated physiological stress response systems that increase future disease burden (McEwen & Seeman, 1999). In contrast, adaptive coping may mitigate stress and is associated with reduced risk of disease, including cognitive impairment (Arenaza-Urquijo et al., 2020; McEwen & Seeman, 1999).

Cognitive styles that emphasize control, goal-direction, and self-regulation are closely related to problem-focused coping, a style that relies on objective and analytic approaches to identify and mitigate stress (Lazarus & Folkman, 1984). Problem-focused coping uses logic-based approach strategies, including active coping, positive reinterpretation, planning, and distraction (Carver et al., 1989). Thus, individuals who use problem-focused strategies tend to exhibit more resilience to stress and better psychological health (Kaiseler et al., 2009; Nowack, 1989). Related research suggests that purpose contributes to better physical health outcomes through active coping strategies (Smith & Zautra, 2000) and may promote better psychological adjustment through problem-focused approach strategies, including more problem-solving and less avoidance and rumination (Cho et al., 2014; Lohani et al., 2022). These strategies are correlated with better resilience, lower perceived stress, and greater cognitive hardiness (Nowack, 1989; Nygren et al., 2005). Higher purpose also promotes a 'big picture' focus on life. The ability to discern situational from global meaning helps build positive, flexible cognitive frameworks that promote acceptance, agency, and self-regulation, all of which are integral to adaptive coping (Park, 2010). A greater sense of purpose and meaning in life are also linked with proactive coping strategies and can influence self-regulative processes like positive emotion and future-oriented cognition (Malin et al., 2019; Miao & Gan, 2019). The effect of meaning on shared self-regulatory mechanisms that promote adaptive coping may better support physical and mental health during times of stress (Eisenbeck et al., 2022; O'Suilleabhain et al., 2024). Thus, purpose may be a coping resource that protects the self from stress, which has led some researchers to suggest purpose as a 'tertiary' process during transactional stress (Park, 2010; Park & Folkman, 1997; Vos, 2016). In this extended model, the impact of stress is minimized

by finding meaning and purpose within the experience. As such, purpose may directly influence primary appraisal processes by assigning situational meaning to a stress event, which in turn affects secondary processes like coping. Discrepancies between appraisals and meaning-ness can affect stress response intensity (e.g., automatic (physiological arousal), deliberate (coping), cognitive (schema integration), & emotional (affect regulation)) and subsequent reevaluations.

Emotion-focused coping uses emotional regulation and support-seeking strategies, including denial and emotional venting, to minimize demands from psychological stress that exceed one's available resources (Carver et al., 1989; Kopp, 2009; Lazarus & Folkman, 1984). Emotion-focused coping is not simply an emotional reaction, but rather a volitional outcome of the transactional stress process (Aldwin, 2007). Emotion-focused coping tends to be a maladaptive response that exaggerates negative emotions, heightens arousal, and increases health risks (e.g., Penley et al., 2002). Prior research suggests that people with lower purpose may use more emotion-focused coping strategies during bereavement than people with higher purpose (Stevens et al., 1987). Recent research also suggests less problem-focused coping and more emotion-focused coping may be linked with worse cognitive performance (Lee et al., 2023). Thus, coping might be a potential mechanism linking purpose with later cognitive outcomes.

In summary, there is evidence to suggest that purpose and coping are related (Malin et al., 2019; Miao & Gan, 2019). At present, the association between greater purpose in life and better cognitive functioning is well established (Kim et al., 2019; Lewis et al., 2017; Sutin, Aschwanden et al., 2023; Sutin, Aschwanden et al., 2021; Sutin, Luchetti, Stephan, Strickhouser et al., 2022; Sutin, Luchetti, & Terracciano, 2021). Since coping has been shown to mediate the association between purpose and psychological and physical health outcomes (Cho et al., 2014; Lohani et al., 2022; Smith & Zautra, 2000), it is possible that coping could also be one mechanism that explains the link between purpose and cognitive health outcomes. However, to our knowledge, no study has yet tested this mediation model.

The purpose of this study is to examine the longitudinal association between purpose in life and coping strategies, and whether such strategies mediate the association between purpose in life and better cognitive outcomes. We hypothesize that higher purpose will be positively associated with problem-focused coping (H1) and that higher purpose will be negatively associated with emotion-focused coping (H2). We also hypothesize that higher problem-focused coping and lower emotion-focused coping will partially mediate the association between purpose and cognitive function (H3).

Methods

Participants and Procedure

Participants were from MIDUS, a national longitudinal study of midlife health and wellbeing in adults living in the United

Table 1. Descriptive Statistics and Characteristics of Study Sample.

Coping: Problem-focused	38.14 (6.00)
Coping: Emotion-focused	21.95 (5.38)
Purpose in life	17.07 (3.33)
BTACT: Composite score	0.02 (0.69)
BTACT: Episodic memory	0.04 (0.97)
BTACT: Executive function	-0.11 (0.72)
N	2,386
Age range (years)	33–83
Age mean (SD)	54.37 (10.98)
Female	56.7%
Male	43.3%
Ethnicity: Spanish/Hispanic descent	2.7%
Race: Black/African American	3.0%
Race: Otherwise-identified	3.5%
Race: White	93.5%
Education: Less than high school	3.7%
Education: High school/equivalent	23.2%
Education: Undergraduate degree	30.1%
Education: Advanced degree	18.8%
ADL	1.79 (0.88)
Smokes regularly	
Yes	31.7%
No	68.3%
Drinking (past month)	
Never	0.6%
<1 day/week	42.9%
1 or 2 days/week	24.7%
3 or 4 days/week	13.8%
5 or 6 days/week	7.8%
Every day	10.3%
Health locus of control (self)	6.06 (0.87)

Note. BTACT = Brief Test of Adult Cognition by Telephone.
ADL = Intermediate Activity of Daily Living.

States (<https://midus.wisc.edu/>). MIDUS I ($N = 7108$; age range 24–75 years) started in 1995–1996 and had follow-up waves in 2004–2006 ($n = 5555$; MIDUS II) and 2013–2014 ($n = 3683$; MIDUS III). The data used in this study are from the MIDUS core survey and the Cognitive Project. Research protocols and informed consent for MIDUS were approved by the University of Wisconsin Institutional Review Board. All participants who reported purpose in life at MIDUS I, coping at MIDUS II, and completed the cognitive assessment at MIDUS III were included in the analysis ($N = 2386$; Table 1). No other exclusionary criteria were applied in this study. Attrition analyses were conducted in SPSS using Pearson Chi-Square tests for categorical variables and independent samples t-tests for continuous variables (see Supplemental Material, *Results: Attrition Analysis*). Participants who were not included in the analyses were more likely to be older, male, score lower on score higher on emotion-focused coping, and score lower on all cognitive measures. These findings were consistent with overall MIDUS sample attrition, documented elsewhere (Radler & Ryff, 2010; Song et al., 2021).

Measures

Purpose in Life. Purpose was measured at MIDUS I with the 3-item version of the Purpose in Life index from the Psychological Well-Being (PWB) scale (Ryff, 1989; Ryff & Keyes, 1995). Scale items are *I live one day at a time and don't really think about the future*; *Some people wander aimlessly through life, but I am not one of them* (reverse scored); and *I sometimes feel as if I've done all there is to do in life*. Items were rated on 7-point Likert scale from 1 (*strongly agree*) to 7 (*strongly disagree*). The sum was taken across items; higher scores indicated greater sense of purpose in life. Possible scores for purpose ranged from 3 to 21. Reliability for the 3-item Purpose in Life index was $\omega = 0.537$.

Coping. Problem-focused and emotion-focused coping were measured with items from the COPE scale administered in MIDUS II (Carver et al., 1989; Kling et al., 1997). Problem-focused coping was measured with 12 items (e.g., *I try to grow as a person as a result of the experience*; *I try to come up with a strategy about what to do*) from three COPE subscales (Positive Reinterpretation and Growth, Active Coping, Planning). Emotion-focused coping was measured with 12 items (e.g., *I get upset and let my emotions out*; *I admit to myself that I can't deal with it and quit trying*) from three COPE subscales (Denial, Focus on and Venting of Emotion, Behavioral Disengagement). Items were reverse coded as needed and computed as the sum of values of items in each scale. For items with missing values, the mean taken across items for cases with valid responses. Possible scores ranged from 12 to 48 for each measure. Higher scores indicated greater use of that particular coping style. Reliability for coping was $\omega = 0.901$ for problem-focused coping and $\omega = 0.821$ for emotion-focused coping. Inter-wave reliability and correlations for MIDUS II and MIDUS III coping are in Supplemental Material (Tables S1 and S2).

Cognitive Function. Episodic memory, executive function, and total cognitive function was measured using the Brief Test of Adult Cognition by Telephone (BTACT; Tun & Lachman, 2008). The BTACT cognitive battery was administered via telephone interviews at MIDUS II and MIDUS III. BTACT components included immediate and delayed recall, number series, category fluency, and digits backward. Composite scores for episodic memory (immediate and delayed recall; range 0–15) and executive function (digits backward, range 0–7; category fluency (animals), range 0 to no limit; number series, range 0–5; and backwards counting, sum of 100 minus last number reached plus number of errors) were calculated as a standardized mean of z-scored BTACT dimensions (Lachman et al., 2010), and a composite global BTACT score (range 0–8) was computed for total cognitive function by combining the composite episodic memory and executive function scores and computed into a standardized z-score. Average z-scores for BTACT dimensions generally ranged

between -1 and 1 . Higher scores indicated better cognitive function. BTACT materials are available at <https://www.brandeis.edu/psychology/lachman/instruments/index.html>.

Covariates. Self-reported sociodemographic covariates were reported at MIDUS II¹ as part of the core survey data. Due to their known associations with stress and health (APA, 2017a, 2017b), age (in years), sex (0 = male, 1 = female), race (coded into two dummy variables: 1 = black/African American and 1 = otherwise identified including multiracial and unknown, both compared to 0 = white), ethnicity (0 = No Hispanic/Latino ethnicity, 1 = any Hispanic/Latino ethnicity), and education (range from 1 = no school/some grade school (1–6) to 7 = advanced degree) were included as covariates.

Since lifestyle factors and health behaviors are also closely related with subjective and objective cognitive functioning (Anderson et al., 2018; Kalmijn et al., 2002; Liu-Seifert et al., 2014), additional health covariates from MIDUS II were included in follow-up models (Supplement Tables S5 and S6). Activity of Daily Living (ADL) was measured with the 7-item Intermediate ADL scale. Participants were asked, “How much does your health limit you in doing each of the following?” Items included “Lifting or carrying groceries,” “Climbing several flights of stairs,” “Bending, kneeling, or stooping,” “Walking more than a mile,” “Walking several blocks,” “Vigorous activities (e.g., running, lifting heavy objects),” and “Moderate activities (e.g., bowling, vacuuming)” were rated on a scaled that included 1 = *A Lot*, 2 = *Some*, 3 = *A little*, and 4 = *Not at all*. The mean score was calculated after reverse-scoring the items. Higher scores indicated greater difficulty in performing ADL. Other health covariates were smoking status (1 = current smoker, 0 = not current smoker), frequency of alcohol use (“How often did you have at least one drink in the past month?” Ranged from 1 = *Every day* to 6 = *Never drink*), and Health Locus of Control – Self (4 items, ranged 1 = *Strongly agree* to 7 = *Strongly disagree*), calculated as the mean of all items. Item statements included “Keeping healthy depends on things that I can do”, “There are certain things I can do for myself to reduce the risk of a heart attack”, “There are certain things I can do for myself to reduce the risk of getting cancer”, and “I work hard at trying to stay healthy”. Items were reverse coded so that higher scores reflected more perceived control over one’s health.

Statistical Analyses

Analyses were conducted with SPSS Statistics (version 28) and the SPSS PROCESS macro (PROCESS Model 4; Hayes, 2022). H1 and H2 were tested with hierarchical linear regression. Each type of coping at MIDUS 2 was regressed on purpose from MIDUS I, controlling for the covariates. Estimates for effect sizes in regression analysis were reported as Cohen’s f statistic (Cohen, 1998). Cases with missing data were handled using listwise deletion. H3 was tested using a simple mediation with covariates

approach. Bias-corrected confidence intervals for indirect effects were computed using the bootstrap sampling method ($n = 5000$). Purpose in life from MIDUS I was the independent variable, cognition from MIDUS III was the dependent variable, and the coping dimensions at MIDUS II were entered as simultaneous mediators, controlling for the sociodemographic factors. Significance was set to $< .05$. Since McDonald’s omega is considered more robust and less affected by deviations from assumptions than the Cronbach’s alpha reliability index (Kalkbrenner, 2021; Stensen & Lydersen, 2022), reliability (ω) was estimated from factor loadings of a forced single-factor maximum likelihood factor analysis using the OMEGA macro for SPSS (Hayes & Coutts, 2020; McDonald, 1999).

Results

Descriptive statistics are in Table 1. Overall, the majority of participants were in late middle age, female, white, and college educated. On average, participants showed a preference for problem-focused coping strategies than emotion-focused coping strategies, reported elevated purpose in life, and performed average on global cognition and episodic memory, but slightly below average on executive function. Participants were also less likely to be regular smokers, were more likely to be light drinkers, reported fewer ADL limitations, and reported having a greater sense of control over their own health. Correlations between study variables are in Supplement Table S3.

As expected, linear regression (see Table 2) showed higher purpose in life was related with higher scores on problem-focused coping ($r = .200, p < .001$) and lower scores on emotion-focused strategies ($r = -.264, p < .001$). Participants higher in purpose at baseline reported the use of more problem-focused strategies ($\beta = .191, p < .001$) and less emotion-focused strategies ($\beta = -.227, p < .001$) about nine years later, even after accounting for the covariates.

We next tested whether coping mediated the association between purpose and overall cognitive function (Table 3; supplemental analyses without sociodemographic covariates are in Supplemental Table S4). Consistent with the literature on purpose and cognition, higher purpose at MIDUS I was associated with better cognitive function at MIDUS III about two decades later (B ’s = $.018$ to $.022, p$ ’s $< .001$). More use of emotion-focused coping was associated with worse overall cognition ($B = -.009, p < .001$), whereas problem-focused coping was unrelated to overall cognition ($B = .003, p = .150$). Emotion-focused coping partially mediated the association between purpose and overall cognitive function: Participants with more purpose at baseline were more likely to have better cognitive function if they used less emotion-focused coping ($B = .003, CI [.002, .005]$). Emotion-focused coping accounted for an estimated 14.3% of the total effect of purpose on total cognitive function. Since problem-focused coping

Table 2. Hierarchical Regression Results for Purpose and Coping Strategies.

Variable	B	95% CI for B		SE B	β	t	R ²	Adjusted R ²	f	p
		LL	UL							
Problem-focused: Step 1										
Constant	32.03	30.791	33.262	.630		50.826	.039	.039	.201	<.001
Purpose	.358	.287	.429	.036	.199	9.882				<.001
Problem-focused: Step 2										
Constant	26.708	24.657	28.758	1.045		25.545	.068	.066	.270	<.001
Purpose	.345	.273	.417	.037	.191	9.378				<.001
Age (years)	.052	.031	.074	.011	.096	4.794				<.001
Sex	.587	.113	1.062	.242	.049	2.428				.015
Race: Black/AA compared to white	3.899	2.535	5.263	.696	.111	5.604				<.001
Race: Other compared to white	-.723	-2.138	.692	.721	-.022	-1.002				.316
Ethnicity	.644	-.938	2.226	.807	.017	.798				.425
Education	.360	.194	.526	.085	.088	4.253				<.001
Emotion-focused: Step 1										
Constant	29.170	28.080	30.261	.556		52.443	.069	.068	.272	<.001
Purpose	-.423	-.486	-.361	.032	-.262	-13.239				<.001
Emotion-focused: Step 2										
Constant	26.775	24.995	28.555	.908		29.502	.126	.124	.380	<.001
Purpose	-.367	-.430	-.222	.032	-.227	-11.500				<.001
Age (years)	-.007	-.025	1.714	.009	-.013	-.694				.488
Sex	2.171	1.759	2.582	.200	.200	10.335				<.001
Race: Black/AA compared to white	.626	-.559	1.810	.020	.020	1.036				.300
Race: Other compared to white	1.686	.458	2.914	.057	.057	2.692				.007
Ethnicity	.341	-1.033	1.714	.010	.010	.486				.486
Education	-.366	-.510	-.222	-.099	-.099	-4.982				<.001

Note. CI = confidence interval; LL = lower limit; UL = upper limit; SE = standard error; AA = African American.

was unrelated to total cognition, it could not mediate the association between purpose and cognition (Figure 1).

The pattern was slightly different when cognition was examined separately as episodic memory and executive function. Similar to overall cognition, emotion-focused coping was associated with both episodic memory ($B = -.010$, $p = .005$) and executive function ($B = -.011$, $p < .001$). In contrast to overall cognition, problem-focused coping was associated significantly with better episodic memory ($B = .011$, $p < .001$), but was unrelated to executive function. Both coping styles contributed to the association between purpose and episodic memory: Participants with higher purpose tended to use more problem-focused coping ($B = .004$, CI [.002, .006]) and less emotion-focused coping ($B = .004$, CI [.001, .007]), which were related to better episodic memory. As for overall cognition, emotion-focused coping partially mediated the association between purpose and executive function ($B = .004$, CI [.002, .006]), but since problem-focused coping was unrelated to executive function, it was not a significant mediator. Emotion-focused and problem-focused coping each specifically accounted for 16.7% of the total effect of purpose on episodic memory (Figure 2). Emotion-focused coping partially mediated 18.2% of the total effect of purpose on executive function (Figure 3).

Covariates for Sensitivity Analyses

Sensitivity tests were conducted in which ADL, smoking, drinking, and health control were included in the model to determine whether these additional covariates explained the association between purpose and coping (Supplement Materials, Tables S5 and S6) and accounted for any indirect effects for coping on the association between purpose and cognitive function (Supplement Materials Table S7). Higher purpose remained significantly associated with more problem-focused coping and less emotion-focused coping when ADL, smoking, drinking, and health control were included as additional covariates. Purpose was associated with coping, independent of the inclusion of health covariates in the model. Problem-focused coping was associated with greater locus of health control ($\beta = .202$, $p < .001$). There was one significant change in the mediation models: The path between problem-focused coping to episodic memory became non-significant ($\beta = .007$, $p = .207$) and the indirect pathway between purpose and episodic memory through problem-focused coping became non-significant ($\beta = .003$, CI [-.001, .008]). It is likely that feeling of control over one's health may be an accounting factor for the influence of problem-focused coping on episodic memory, which fits with the theory of Transactional Stress &

Table 3. Indirect Effects of Purpose on Cognition Through Coping Strategies.

	Purpose to coping (path a)	Mediation parameter						Total Effect ^b (path c)	p	Direct Effect ^c (path c')	p	f	R ²
		p	Coping to cognition (path b)	p	Indirect Effect ^a (a × b)	95% CI							
Total cognition													
Purpose													
Problem-focused	.345 (.04)	<.001	.003 (.00)	.150	.001	[-.0004,.002]	.021 (.00)	<.001	.020 (.00)	<.001	.752	.361	
Emotion-focused	-.367 (.03)	<.001	-.009 (.00)	<.001	.003	[.002,.005]	.021 (.00)	<.001	.018 (.00)	<.001	.752	.361	
Episodic memory													
Purpose													
Problem-focused	.345 (.04)	<.001	.011 (.00)	<.001	.004	[.002,.006]	.024 (.01)	<.001	.020 (.01)	<.001	.526	.217	
Emotion-focused	-.367 (.03)	<.001	-.010 (.00)	.005	.004	[.001,.007]	.024 (.01)	<.001	.021 (.01)	<.001	.526	.217	
Executive function													
Purpose													
Problem-focused	.345 (.04)	<.001	-.001 (.00)	.620	-.0004	[-.002,.001]	.022 (.00)	<.001	.022 (.00)	<.001	.703	.331	
Emotion-focused	-.367 (.03)	<.001	-.011 (.00)	<.001	.004	[.002,.006]	.022 (.00)	<.001	.018 (.00)	<.001	.703	.331	

Note. Coefficients are unstandardized coefficients (with standard errors) and *p*-values from the mediation analysis controlling for the covariates. *R*² and Cohen's *f* reported for total effect model.

^aEffect of purpose on cognitive function through the indirect coping path.

^bEffect of the indirect coping path and direct path of purpose on cognitive function.

^cDirect effect of purpose on cognitive function.

Coping, such that secondary appraisal processes inform coping strategies.

Discussion

Purpose in life is associated consistently with better cognitive function. The next step is to identify the mechanisms through which purpose is associated with better cognition. The present research tested coping as one such pathway in a large sample of adults from the MIDUS cohort. As expected, higher purpose was associated with more problem-focused coping (H1) and less emotion-focused coping (H2). These strategies, in turn, were pathways connecting purpose and overall cognitive function. This study provides evidence that emotion-focused coping partially mediated the association between purpose and all cognitive outcomes, whereas problem-focused coping partially mediated the association with episodic memory but not total cognitive function or executive function (partial support for H3).

The associations between purpose and coping cohere with the literature on purpose and greater use of problem-focused coping (Cho et al., 2014) and less use of emotion-focused coping (Stevens et al., 1987). Purpose and coping both shape cognitive schema through internal values and belief systems about goals and commitments, anticipation, managing problems, and responding appropriately to outcomes (Schaefer

et al., 2013). Higher purpose and approach-based strategies are considered assets for coping with stress (Halama, 2014; Kaiseler et al., 2009), and people with more purpose may perceive stressful situations as less threatening and more manageable, serving as both a resource that expends less effort and supports adaptive coping.

Emotion-focused coping was associated with worse cognitive function across all cognitive outcomes. This association is consistent with recent research suggesting that more emotion-focused coping is associated with worse cognition (Lee et al., 2023). Emotion-focused coping may affect cognitive function via emotion-behavioral mechanisms that affect the intensity and type of stress response, leading to increased negative affect and heightened sensitivity to stressors. If an individual cannot adapt (i.e., emotionally-regulate) to the stressor, neurophysiological structures in the brain responsible for higher-order cognition could be injured, resulting in poorer memory and executive function performance over time (Shansky & Lipps, 2013; Wolf, 2003).

In contrast to emotion-focused coping, problem-focused coping was only associated with episodic memory and was unrelated to executive function. This pattern was surprising because problem-focused coping and executive function depend on similar cognitive control processes, and previous research has found positive associations for problem-focused coping with total cognitive function and executive function

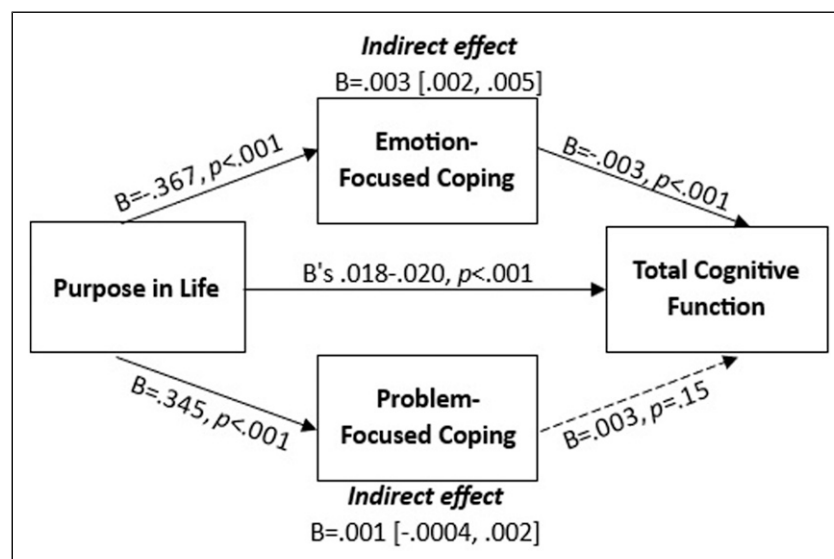


Figure 1. Mediation path diagram for purpose and total cognition through coping.

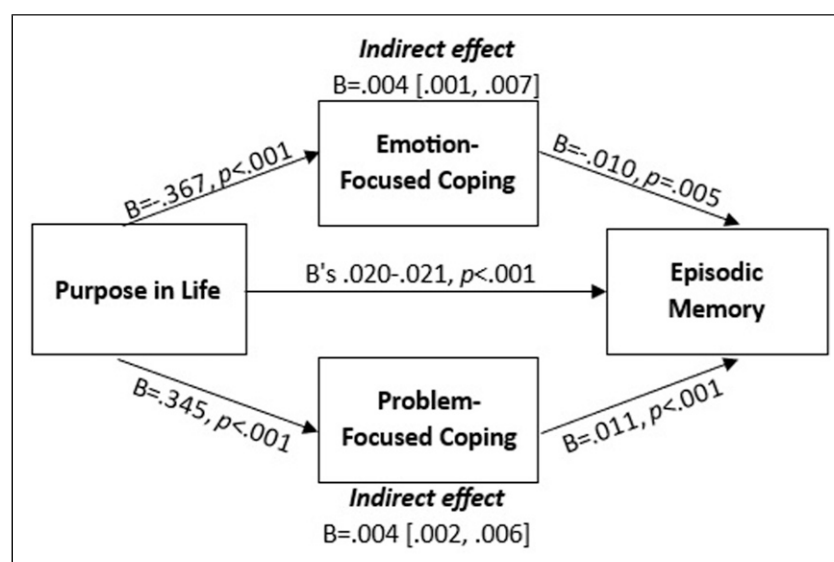


Figure 2. Mediation path diagram for purpose and episodic memory through coping.

(Lee et al., 2023; Suci & Micluția, 2020). Executive function consists of a collection of cognitive processes related to planning and attention, including working memory, inhibition, and cognitive flexibility, whereas episodic memory refers to the ability to encode and retrieve details and associations that comprise memories of past events. Coping with stressful situations includes drawing on knowledge from prior experiences as a reference point to inform stress management choices, in which case emotion-focused coping may contribute to heightened stress reactivity during traumatic or stressful memory recall, as well as impact memory encoding and consolidation in the future (Folkman & Lazarus, 1990; Tyng et al., 2017). Thus, making sense of a stressful event and

deliberately focusing on a sense of purpose can influence how well people cope and recover to stress, influence life narratives, and contribute to stress-related growth (Calhoun et al., 2010). The ability to positively reframe negative memories and experiences and perceive growth and purpose in the experience (e.g., evaluating events as learning experiences, challenges, or situations beyond one's control) could help others find meaning in stressful situations and foster cognitive resilience (Weathers et al., 2016). This may be one reason why problem-focused coping only mediated the association between purpose and episodic memory in this study.

People with better cognitive functioning tend to be more adept at utilizing problem-focused coping strategies

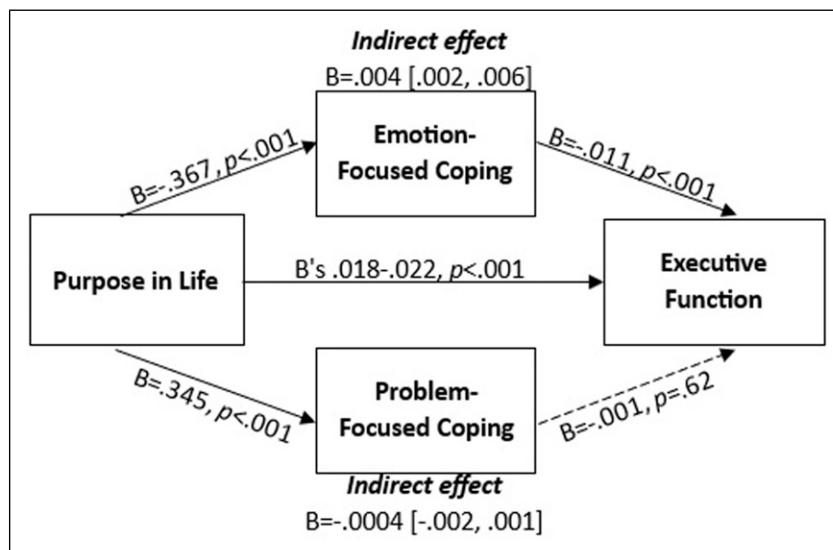


Figure 3. Mediation path diagram for purpose and executive function through coping.

effectively, and it could be that this association is not bidirectional or that problem-focused coping has little to contribute to the model since persons with more purpose and higher executive function already tend to use cognitive strategies that overlap with those used during problem-focused coping. Perhaps internal cognitive resources, like executive function, play a stronger role in primary and secondary appraisal processes that facilitate the adoption and execution of adaptive coping strategies (Oh & Yang, 2022). In a study on acquired brain injury, it was suggested that problem-focused coping strategies may be more adaptive for adults with stronger executive function and less useful for adults with weaker executive function, in which case emotion-focused coping might be more useful (Wolters Gregório et al., 2015). It may also be that other internal psychological resources important to stress processes, such as personality, might play a more influential role in this relationship compared to coping. As such, it may be that the strategies used in problem-focused coping might be more meaningful for supporting episodic memory performance than for supporting executive function.

Notably, the present study identifies another pathway between purpose in life and better cognitive outcomes. Previous work has focused primarily on behavioral (e.g., physical activity; Sutin et al., 2023) and clinical (e.g., hearing; Sutin et al., 2022) mechanisms. But while physical activity and hearing tend to decline with age, coping tends to improve over time due to accumulated life experiences and might represent a crucial resource to adapt to aging-related challenges and stressors (Aldwin, 2007).

This research may have clinical implications. For example, because episodic memory is a good predictor of dementia risk (Boraxbekk et al., 2015), the associations between coping and

memory could extend to dementia risk. Purpose and coping are modifiable factors that can be increased through behavioral interventions that support adaptive coping abilities, lessen the perceived impact of stress, and improve cognitive function. Our findings highlight multiple pathways that may contribute to better cognitive health: Fostering more purpose may support better cognitive function and may also facilitate better cognitive function through adaptive coping, which in turn could help sustain better cognitive function. Cognitive behavioral training (CBT) in stress management fosters better emotional regulation and cognition (Park, 2010). Thus, CBT may be one possible option to enact positive change on purpose and coping through shared cognitive-affective pathways. Given the known effects of purpose and coping on psychological and cognitive function, further investigation is needed to determine whether short-term changes in purpose and coping affect long-term cognitive outcomes.

These findings also have potential implications for lifespan development and individual differences research. MIDUS is an ongoing longitudinal study following adults as they age. While much of the cohort were first assessed during early and later middle-age at MIDUS I, follow-up studies continue to monitor their health and progress. By identifying midlife points of intervention for promoting purpose and adaptive coping, it may be possible to improve longitudinal trajectories for better cognitive health in older adulthood, particularly given the importance of midlife cognitive health for cognitive outcomes in older adulthood (Livingston et al., 2017). Further, deriving new methods to promote purpose-centered coping may also help adults maintain mental and physical health during unprecedented stress experiences, such as life history of adverse childhood experiences or during the COVID-19 pandemic (Eisenbeck et al., 2022; O'Suilleabháin et al., 2024).

Strengths, Limitations, and Future Directions

This study had several strengths, including the large sample size, the longitudinal design, and the inclusion of two coping styles and three measures of cognitive functions. This study also has limitations. First, MIDUS has a disproportionate representation of white adults with higher levels of education, which may limit the generalizability of these findings. There was also substantial attrition across waves, which likely contributed to the study composition bias and may have also underestimated the associations. Future research should test the generalizability of the findings using other large datasets that are more diverse in terms of ethnicity, race, sex, social groups, and from different countries and cultural contexts. Second, we used the 3-item purpose in life scale instead of the 7-item measure because we prioritized prospective data over concurrent data (i.e., MIDUS I includes the 3-item but not the 7-item purpose measure). Prior research shows good construct validity between shorter and longer versions of the purpose scale (e.g., Ryff & Keyes, 1995; Zilioli et al., 2015), and even single-item measures of purpose have statistically equivalent associations with other aspects of cognitive function as longer scales (e.g., Sutin, Luchetti, Aschwanden et al., 2023). Furthermore, we conducted a sensitivity analysis to examine the validity of the 3-item purpose measure in comparison to the 7-item version of the scale and found that both purpose scales had comparable reliability (Supplement Table S1). Third, information on coping was not collected at MIDUS I. As such, we did not have the data needed for a comprehensive assessment of stability and change to better identify the temporal relations between purpose, coping, and cognition across time. Although a limitation, the results of the present research indicate meaningful prospective associations that support the underlying theoretical model. Indeed, reported findings for purpose and coping were consistent across waves and models, demonstrating the strength of these associations. The findings reported from this analysis will hopefully set a foundation to stimulate future research to better identify both bidirectional relations and greater temporal specificity of how purpose shapes coping strategies to ultimately support better cognitive function. One next step in this line of investigation is to shrink the timescale to better identify these processes and how they develop. Finally, the mediation effects reported were modest, and thus the overall explanatory power of the study variables could be considered low in predicting cognitive function. It should be noted, however, that numerous factors affect cognitive function, and any one individual factor would likely contribute only modest effects (Luchetti et al., 2022). Future research could examine the role of other psychological resources associated with stress appraisal strategies that may account for the relation between purpose and cognition, such as perceived control or mindfulness (Schnell & Krampe, 2020; Sesker et al., 2016).

Conclusions

Despite these limitations, this study suggests new evidence for pathways linking purpose and cognitive function. The ability to successfully cope with stress across the life course is a valuable resource for healthy aging. Persons with higher purpose have a strong sense of self-efficacy that may increase the likelihood of positively appraising stressors as challenges that can be managed and controlled. The present study provides evidence that more adaptive coping strategies mediate, in part, the association between purpose and cognitive functioning. Further, adaptive coping strategies may also help older adults better manage memory problems and restore a sense of self following a dementia diagnosis (Xanthopoulou & McCabe, 2019). Thus, this research provides a basis for further examination of the relationship between purpose, coping, and cognition.

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Author Contribution

AAM conceived the study, performed analyses, and interpreted data with assistance from ARS. AAM completed the initial manuscript with contributions from PSOS and ARS. PSOS, ML, AT, and ARS provided critical revisions. All authors approved the final version of this manuscript.

Declaration of Conflicting Interests

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Ethical Statement

Ethical Approval

This work is compliant with American Psychological Association ethical principles standards regarding the treatment of human subjects research.

Informed Consent

MIDUS has been approved by the University of Wisconsin-Madison IRB. All participants provided written informed consent prior to participation (IRB Protocol #2016–1051).

Data Transparency and Openness

Data exclusions (see *Participants and Procedure*) are reported according to standardized protocols (JARS; Kazak, 2018). MIDUS data are archived and freely available in the MIDUS portal (<https://midus.colectica.org>) and the University of Michigan Interuniversity Consortium of Political & Social Research (ICPSR; <https://www.icpsr.umich.edu/web/ICPSR/series/203>). Measures and statistical scripts for the analyses can be accessed on the Open Science Framework (OSF). Materials are at <https://osf.io/2em38/>. Hypotheses and analyses for this project are preregistered at <https://osf.io/k85wz>.

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Supplemental Material

Supplemental material for this article is available online.

Note

1. The MIDUS I race variable was a single forced-choice question asked in the Self-Administered Questionnaire (SAQ), resulting in missing baseline data for non-SAQ respondents. For MIDUS II, race questions were expanded and moved to the Computer-Assisted Telephone (CATI) and Personal Interview (CAPI) surveys, resulting in more accurate and complete data. For consistency, all covariates were sourced from MIDUS II.

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