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Engagement With Six Major Life Domains During the Transition to Retirement: Stability and Change for Better or Worse

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Abstract

Active engagement with multiple life domains (cross-domain engagement) is associated with adaptation throughout the adult life span. However, less is known about the role of cross-domain engagement during significant life course transitions that can challenge motivational resources, such as the shift to retirement. Based on the motivational theory of life-span development (Heckhausen et al., 2010, 2019), the present study used nine-year data from the national Midlife in the United States Study (MIDUS; n = 1,301, M age = 57, SD = 6.96, 56% female) to identify profiles of cross-domain engagement and to assess stability and change in these profiles during the transition to retirement. We also examined whether stability and change in the engagement profiles had implications for psychological adjustment. Results of latent profile analyses showed that three profiles of cross-domain engagement emerged both before and after retirement (high engagement, low work engagement, moderate engagement). Latent transition analyses indicated that most participants remained in their pre-retirement profiles at post-retirement, with the majority classified in a profile defined by stable high engagement with multiple life domains. Results of ANCOVAs showed this stable high engagement profile was associated with the most adaptive nine-year changes in cross-domain perceived control, cross-domain situation quality, and cross-dimension eudaimonic well-being. Findings advance the literature by showing that cross-domain profiles of engagement can be identified and that stability and change in these profiles have consequences for longitudinal psychological adjustment in retirement.

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Keywords

cross-domain goal engagement; primary control; life course transitions; psychological adjustment and aging

Most people are motivated to actively shape their lives by engaging with central life domains. Consistent evidence shows that engagement (active goal pursuit) facilitates adaptation in multiple domains and throughout the adult life span (Chipperfield & Perry, 2006; Haase, Heckhausen, & Wrosch, 2013; Hall et al., 2010; Hamm et al., 2015; Shane & Heckhausen, 2016). For example, recent research found that older adults with high levels of health engagement were at reduced risk of all-cause mortality over a 10-year period (Hamm, Chipperfield, Perry, Parker, & Heckhausen, 2017). Emerging evidence suggests that sustained engagement may be particularly adaptive during difficult life course transitions that challenge motivational resources, such as when entering college, having a first child, or being diagnosed with a chronic disease (Hamm et al., 2013; Heckhausen, Wrosch, & Fleeson, 2001; Schilling et al., 2016). However, research has yet to examine engagement during the ubiquitous transition to retirement which involves significant changes in income, daily routines, and social contacts (Kim & Moen, 2001; Kubicek et al., 2011). Little is known about how middle-aged and older adults' engagement with multiple life domains (e.g., health, work, relationships) changes during this juncture and the implications of these changes for psychological adjustment.[1]

The present study used nine-year data from the national Midlife in the United States Study to identify profiles of cross-domain engagement and to assess stability and change in these profiles during the transition to retirement. Profiles were based on engagement with multiple life domains pertinent for individuals in midlife and old age, including health, work, finances, others' welfare, and relationships with children and romantic partners (Lachman & Weaver, 1998). We also examined whether stability and change in the engagement profiles had consequences for central measures of psychological adjustment assessed post-retirement: cross-domain perceived control, cross-domain situation quality, and cross-dimension eudaimonic well-being.

The Motivational Theory of Life-Span Development (MTD)

The motivational theory of life-span development (MTD; Heckhausen et al., 1995, 2010, 2019) provided a theoretical basis for our examination of the role of engagement during the transition to retirement. Briefly, MTD theory addresses motivational processes that shape adaptive development within the context of changing opportunities and constraints encountered at different stages of the life course. The theory focuses on motivational processes involved in goal engagement and disengagement which are fundamental to the pursuit and relinquishment of valued goals across multiple life domains. MTD theory posits that goal engagement and disengagement involve the use of active control strategies. Goal

[1]Goal engagement can be domain-general (i.e., global) or domain-specific (e.g., health, work). Our study focused on domain-specific engagement in multiple domains because people often simultaneously pursue (engage with) goals in different life contexts, such as health, work, finances, and relationships (Heckhausen et al., 1997, 2010).

engagement strategies typically include investing thought and effort to pursue important goals (selective primary control). Goal engagement may also involve supporting strategies such as motivational self-regulation to enhance commitment to chosen goals (selective secondary control) and seeking help from others to overcome personal limitations (compensatory primary control). Goal disengagement strategies commonly involve reducing effort, devaluing the importance of goals that have become unattainable, and self-protective processes that buffer against the negative effects of loss and failure experiences (compensatory secondary control).[2]

According to MTD theory, adaptive development depends on maximizing personal influence (goal engagement capacity) across multiple domains and throughout the life span (Heckhausen et al., 2010, 2019). Goal engagement is theorized to be adaptive to the extent it meets three optimization criteria that concern whether chosen goals are realistic and can be achieved without compromising long-term engagement capacity in other life domains. First, there must be compatibility between the opportunity and the goal, such that the goal can be realistically attained (goal-opportunity congruence criterion). Second, pursuing a goal in a given domain should have positive implications for important goals in other life domains, or should at least not undermine such goals (interdomain consequences criterion). Third, a minimum diversity of goals must be maintained across life domains (goal diversity criterion).

Taken together, these criteria suggest that development may be optimized by active engagement with central life domains during the transition to retirement given the unique opportunities afforded at this life stage. Concerning goal-opportunity congruence, ending one's career provides increased time and autonomy to engage with goals in multiple domains (Lachman, 1986; Kim & Moen, 2002). For example, an individual who retires from a full-time career is released from a substantial time commitment which should increase opportunities to invest in personal relationships, health, or even new work-related pursuits. Concerning interdomain consequences, engaging with multiple domains at this life stage is likely to benefit development, or at least not harm pursuits in other domains given the reduced opportunity cost (Zhang et al., 2019). Concerning goal diversity, it should be adaptive to invest thought and effort into multiple life domains during the retirement transition to ensure one is not over-reliant on goals pursued in any one domain (Shane & Heckhausen, 2019). The present study thus focused on stability and change in cross-domain engagement during the transition to retirement.[3]

[2]Our study operationalized goal engagement as ratings of thought and effort that individuals reported investing into different life domains. This definition was based on MTD theory which contends that (a) thought and effort are core components of selective primary control and (b) selective primary control reflects the essence of goal engagement (Heckhausen et al., 2010, 2019). MTD theory posits that selective primary control strategies are the primary method of how people attempt to actively shape (influence) their lives and that maximizing long-term selective primary control capacity across domains represents the key criterion of adaptive development (Heckhausen et al., 1995, 2010). The other control strategies involved in goal engagement are used to support selective primary control striving (selective secondary control, compensatory primary control). Thus, our study focused on the investment of thought and effort as core engagement strategies based on MTD theory.

[3]Our emphasis was on goal engagement processes rather than goal disengagement processes because we were interested in how the thought and effort people invest into central life domains changes during the retirement transition, which provides more opportunities for engagement (greater time and autonomy). Although the retirement transition involves disengaging from career pursuits, it is important to note our research questions were not focused on the domain of career or work (where disengagement processes may be most relevant). Our research questions instead focused on how motivation to engage with a broader spectrum of life domains changes during this major transition, as well as the implications of such shifts for adjustment. Nevertheless, focusing on engagement processes

Stability and Change in Cross-Domain Engagement Throughout Adulthood

Although research is lacking on engagement during the transition to retirement, past studies suggest middle-aged and older adults (of retirement age) typically remain engaged with central life domains (e.g., Shane & Heckhausen, 2012, 2016; Watt, Konnert, & Speirs, 2017). For example, a recent study by Shane and Heckhausen (2016) found that individuals at this stage of the life course reported relatively high levels of engagement (7+ on a 10-point scale) with work, health, children, and romantic partners. They also explored how middle-aged and older adults managed engagement across domains by assessing pairwise combinations of engagement. Results showed that positive pairings of engagement (e.g., high health engagement-high partner engagement) were associated with the highest perceived control and perceived situation quality.

These findings provide some preliminary insight into the nature of cross-domain engagement in midlife and old age. However, little is known about the complex motivational dynamics that operate for middle-aged and older adults who vary in the thought and effort they invest in multiple life domains (Heckhausen, 1997). In particular, previous research has relied on variable-centered approaches that assess relationships between individual engagement domains (interactions between pairs of domains) in contrast to person-centered approaches that asses multifaceted profiles of engagement (common patterns across multiple domains). Research is needed on cross-domain engagement utilizing a person-centered approach, such as latent profile analysis. Such an approach would enable the identification of distinct subgroups of individuals who exhibit similar profiles of cross-domain engagement (Nylund, Asparouhov, & Muthén, 2007; Oberski, 2016). This would contribute to a more nuanced understanding of common patterns of concurrent engagement with multiple life domains in midlife and old age.

Research has also yet to examine stability and change in cross-domain profiles of engagement during the transition to retirement. However, past studies have examined whether domain-specific engagement changes over time in middle-aged and older adults (Heckhausen, 1997; Schilling et al., 2013; Shane & Heckhausen, 2016; Wahl et al., 2007; Wrosch et al., 2000). Findings suggest that although engagement in some domains changes as people age (e.g., increased health engagement, reduced work engagement), such changes are typically minor and engagement remains relatively stable in midlife and early old age. Nevertheless, it remains an open question whether patterns of engagement with multiple life domains exhibit stability or change for individuals experiencing major life course transitions, such as the shift to retirement.

There is great significance in examining how engagement with multiple life domains changes during the retirement transition and its implications for pertinent outcomes given recent economic trends, amendments to retirement and health policies, as well as the number of individuals in the Baby Boomer generation who are retiring (Helman, Greenwald,

permitted an indirect examination of disengagement processes to the extent that the two are inversely related (cf. Brandtstädter, 2009). This logic is consistent with the action-phase model within MTD theory which proposes that phases of goal engagement and disengagement are distinct and not blended (Heckhausen et al., 2010, 2019). In other words, one cannot effectively be engaged and disengaged with a given goal or domain simultaneously.

VanDerhei, & Copeland, 2007; Szinovacz, Martin, & Davey, 2013). The transition to retirement is not a process that is straightforward or even necessarily discrete because it involves a complex interplay of considerations across health, financial, and family domains. The typical retirement age is early to mid-sixties and there is likely an anticipation period during the time leading up to retirement in which individuals are planning their labor force withdrawal (Wang & Shi, 2014). Retirement timing is a complex process in which individuals are balancing when to retire and whether to completely or partially retire (Beehr, 1986). The shift to retirement thus provides a natural setting for examining stability and change in cross-domain engagement due to the motivational complexities of shaping adaptive development during this major life transition.

Although some continuity in day-to-day activities is common during the retirement transition (Kim & Feldman, 2000; Scherger et al., 2011), the substantial changes and challenges that occur at this juncture (e.g., career disengagement; altered daily routines, social contacts) may have important implications for engagement with different life domains. For example, retirement could lead some individuals to withdraw from work and to reinvest their time and energy into other life domains (e.g., family, health; cf. Barnes-Farrell, 2003; Shane & Heckhausen, 2019). However, for other individuals who are motivated to stay active in multiple domains, retirement may lead to few changes in their cross-domain engagement. Such individuals may continue to invest thought and effort into the same domains they did prior to retirement. This may include continued engagement with work given that individuals vary in the degree to which they withdraw from work after retirement, although work engagement at this life stage may take different forms (e.g., volunteering, part-time work; Beehr & Bennett, 2015; Wang & Shi, 2014). Research is thus needed to identify common patterns of engagement with multiple life domains and to assess stability and change in these patterns during the shift to retirement.

Engagement and Psychological Adjustment in Middle-Aged and Older Adults

Little is known about how engagement relates to psychological adjustment for middle-aged and older adults who transition to retirement. Indirect evidence on the role of engagement at this juncture comes from past studies that show engagement with multiple life domains has salutary effects on well-being for middle-aged and older adults (Chipperfield et al., 1999; Haase et al., 2013; Shane & Heckhausen, 2012, 2016). Most relevant to the present study is research on how engagement relates to central indicators of psychological adjustment that include perceived control, perceived situation quality, and eudaimonic well-being. Findings suggests that engagement is positively associated with each of these indicators in midlife and old age (Haase et al., 2013; Grümer et al., 2013; Shane & Heckhausen, 2016).

Perceived control can be domain-general (global) or domain-specific (e.g., health, work) and refers to beliefs people hold about their capacity to influence important events in their lives (Chipperfield, Hamm, Perry, Ruthig, 2017; Lachman, 2006; Lachman, Rosnick, & Röcke, 2009; Perry, 2003). The present study conceptualized perceived control as an outcome given our focus on the implications of stability and change in cross-domain engagement for several

key measures of psychological adjustment during the retirement transition (one of which was perceived control). This conceptualization enabled us to test whether sustained engagement helped to protect perceived control (and other core psychological resources) during a major life course transition that has the capacity to undermine control perceptions (cf., Hamm et al., 2016).

Research suggests engagement is related to higher levels of perceived control among middle-aged and older adults. For example, studies by Shane and Heckhausen (2012, 2016) showed that domain-specific engagement with health, work, and relationships with children and partners predicted corresponding increases in domain-specific perceived control over a nine-year period. Consistent results emerged in research that examined domain-specific engagement in relation to domain-general perceived control, such that higher engagement with work and family was associated with higher (global) perceived control (Grümer et al., 2013).

Perceived situation quality can also be domain-general (global) or domain-specific (e.g., health, work) and refers to appraisals of how satisfied one is with his or her circumstances (Diener, Emmons, Larsen, & Griffin, 1985; Diener, Suh, Lucas, & Smith, 1999; Staudinger, Bluck, & Herzberg, 2003). Past research has shown domain-specific engagement with health, work, and relationships with children and partners predicted corresponding increases in middle-aged and older adults' domain-specific situation quality (Shane & Heckhausen, 2016). Other studies have shown that domain-general engagement and situation quality are positively related in midlife and old age (Grümer et al., 2013; Helzer & Jayawickreme, 2015; Watt et al., 2017).

Ryff et al. (1989, 2013) defines eudaimonic well-being as the realization of personal growth and fulfillment, involving six key components: autonomy, environmental mastery, personal growth, positive relationships with others, purpose in life, and self-acceptance. We focused on eudaimonic well-being due to its emphasis on (motivation-relevant) growth and human fulfillment, which may be challenged during major life course transitions (Ryff & Singer, 2013). Several studies have examined linkages between engagement and eudaimonic well-being (Bryden, Field, & Francis, 2015; Haase, Heckhausen, & Silbereisen, 2012; Haase, Heckhausen, & Wrosch, 2013). For example, using a life-span sample, Haase and colleagues (2013) found domain-general engagement was a positive predictor of autonomy, environmental mastery, positive relationships, and purpose in life. Bryden et al. (2015) reported similar results wherein domain-specific engagement predicted higher eudaimonic well-being on all six dimensions.

These findings imply engagement may facilitate psychological adjustment for middle-aged and older adults negotiating the transition to retirement, which involves unique changes and challenges (Kim & Moen, 2001; Kubicek et al., 2011). Such challenges include disengaging from one's career, as well as adapting to substantial changes in income, daily routines and activities, and social contacts. Despite these challenges, there is mixed evidence on whether retirement poses a threat to psychological adjustment. Some studies found that retirement was associated with declines, as evidenced by lower levels of perceived control, situation quality, and eudaimonic well-being (e.g., Atchley & Robinson, 1982; Fasbender et al., 2014;

Richardson & Kilty, 1991; Ross & Drentea, 1998). Other studies found retirement was associated with stability or even improvements in psychological adjustment (e.g., Ekerdt et al., 1983; Midanik et al., 1995; Wang, 2007). Taken together, past research suggests that significant variability exists in post-retirement adjustment. This variability may be partially explained by individual differences in central motivation factors, such as cross-domain engagement, that remain largely unexamined.

The Present Study: Cross-Domain Engagement and Psychological Adjustment During the Transition to Retirement

We used nine-year data from the national Midlife in the United States (MIDUS) Study to address our research objectives. The first objective was to identify cross-domain profiles of engagement during a ubiquitous life course transition experienced by middle aged and older adults, the shift to retirement. To do so, we adopted a person-centered analytic approach that enabled the identification of *common patterns* (profiles) of concurrent engagement with multiple life domains. This nuanced approach may better reflect the ecological realities of human engagement since people often simultaneously pursue multiple goals in different domains, such as health, work, finances, other's well-being, and relationships with children and romantic partners (Heckhausen et al., 1997; Lachman & Weaver, 1998). Given inter-individual variability in engagement within these domains (Shane & Heckhausen, 2016), we expected several distinct cross-domain profiles to emerge. We did not make predictions concerning the number of profiles since this is the first study to examine engagement profiles during the retirement transition.

The second objective was to assess stability and change in engagement profile membership during the transition to retirement (from pre-to-post retirement). The motivational theory of life-span development (Heckhausen et al., 1995, 2010) posits that maintaining engagement capacity is a key criterion for adaptive development and that engagement is relatively constant across the adult life span. Empirical evidence supports this proposition, showing engagement is comparatively stable among middle-aged and older adults (Heckhausen, 1997; Schilling et al., 2013; Wahl et al., 2007; Wrosch et al., 2000). We thus expected profile membership to remain largely consistent during the retirement transition. However, some changes in profile membership (e.g., increases in profiles with low work engagement) were expected given the significant changes in daily routines and activities that occur at this life stage.

The third objective was to examine whether stability and change in engagement profile membership had implications for central indicators of post-retirement psychological adjustment: cross-domain perceived control, cross-domain situation quality, and cross-dimension eudaimonic well-being. Heckhausen et al. (2010, 2019) propose that successful development is achieved by strong engagement with central life domains during periods of increasing opportunities, such as during the retirement transition (e.g., increased time and autonomy). Research has consistently shown that engagement is associated with improved psychological adjustment in middle-aged and older adults (Haase et al., 2013; Shane & Heckhausen, 2016; Watt et al., 2017). We therefore expected that profiles characterized by

high cross-domain engagement would experience higher post-retirement perceived control, situation quality, and eudaimonic well-being. Supplemental analyses also considered whether profile differences in adjustment were moderated by age since high cross-domain engagement may be more beneficial for younger retirees who are likely to face fewer age-related constraints in their goal pursuits (Lachman & Firth, 2004).

Method

Participants and Procedures

We examined our research questions using data from the Midlife in the United States National Longitudinal Study of Health and Well-being (MIDUS). A detailed summary of MIDUS can be found elsewhere (see Brim, Ryff, & Kessler, 2004; Ryff et al., 2017). Briefly, MIDUS is an ongoing national study of American adults who were 25–75 years old at baseline assessment (1995–2013; n = 7,108). Baseline data were assessed in 1995 (MIDUS I; n = 7,108), and all willing participants were reassessed in 2004 (MIDUS II; n = 4,963) and 2013 (MIDUS III; n = 3,294). Participants were asked about their employment status at each wave (1 = *working now*, 2 = *self-employed*, 3 = *looking for work*, 4 = *temporarily laid off*, 5 = *retired*, 6 = *homemaker*, 7 = *full-time student*, 8 = *part-time student*, 9 = *other*). Inclusion criteria for the present study were that participants (a) reported they were not retired at MIDUS I, (b) indicated they were retired at either MIDUS II or III, and (c) provided at least one rating of domain-specific engagement. Participants who reported they were retired at MIDUS I were excluded because no pre-retirement data were available for these individuals. These criteria allowed us to examine pre-to-post retirement changes in domain-specific engagement.

Prior to analysis, data for the retained sample (n = 1,301) were equalized based on wave of first retirement using the following protocol that enabled us to utilize all three waves of data while maintaining a sufficient sample size. For participants who first retired by MIDUS II, pre-retirement data were obtained from MIDUS I (1995) and post-retirement data from MIDUS II (2004). For participants who first retired by MIDUS III, pre-retirement data were obtained from MIDUS II (2004) and post-retirement data from MIDUS III (2013). Participants could contribute a maximum of two observations to the analyses (T1 = *pre-retirement*, T2 = *post-retirement*). At pre-retirement (T1), the retained sample had a mean age of 57 years (range = 31–82), was 56% female and 94% White, had an average household income of $79,683, and 63% reported some postsecondary education.

Some MIDUS participants reported being in multiple work categories. In our retained sample (n = 1,301), a large majority of participants reported they were exclusively retired (80%, n = 1045), a minority of participants reported they were also working or self-employed (12%, n = 160), few participants reported they were also homemakers (5%, n = 65), and very few participants reported they were also unemployed or in another work category that was not listed in the survey (3%, n = 32). MIDUS data collection was reviewed and approved by the Education and Social/Behavioral Sciences and the Health Sciences Institutional Review Boards at the University of Wisconsin-Madison.

Study Measures

Domain-specific engagement.—Engagement was assessed in six life domains (work, child relationships, spouse or partner relationship, health, financial, others' welfare). Consistent with previous research (Shane & Heckhausen 2012, 2016; Staudinger, Fleeson, & Baltes, 1999), engagement in each domain was measured using the following single-item: "How much thought and effort do you put into [relevant domain] these days?" Participants rated their engagement on an 11-point scale (0 = *no thought or effort*, 10 = *very much thought and effort*). Engagement in each domain was assessed pre- and post-retirement. See Table 1 for a summary of descriptive statistics and interitem correlations for domain-specific engagement.

Two considerations should be noted with respect to the work engagement item. First, all MIDUS participants were asked to respond to the work engagement item, regardless of their employment status. Second, the work engagement item was intentionally broad in its wording, such that it asked how much thought and effort individuals invested into their work these days. This definition lent itself to a very broad interpretation of work engagement that encompasses more than simply career pursuits, which permitted MIDUS participants to report that they invested thought and effort into their work situation (broadly construed) after retirement.

Cross-domain perceived control.—Perceived control was assessed in the same six life domains (work, child relationships, spouse or partner relationship, health, financial, others' welfare). In line with previous research (Lachman & Weaver, 1998; Lachman et al., 2009; Shane & Heckhausen 2012, 2016), perceived control in each domain was measured using the following single-item: "How would you rate the amount of control you have over [relevant domain] these days?" Participants rated their perceived control on an 11-point scale (0 = *no control at all*, 10 = *very much control*). A cross-domain measure of perceived control was derived using the mean score across domains at pre-retirement ($M = 7.36$, $SD = 1.43$, range = 0.75–10.00, $\alpha = .59$) and at post-retirement ($M = 7.49$, $SD = 1.53$, range = 0.00–10.00, $\alpha = .62$, test-retest $r = .51$).

Cross-domain situation quality.—Situation quality was assessed in the same six life domains (work, child relationships, spouse or partner relationship, health, financial, others' welfare). Consistent with past studies (Shane & Heckhausen 2012, 2016; Staudinger et al., 2003), situation quality in each domain was measured using the following single-item based on Cantril's (1965) self-anchoring scale: "How would you rate your [domain-specific situation] these days?" Participants rated their situation quality on an 11-point scale (0 = *the worst possible [domain-specific situation]*, 10 = *the best possible [domain-specific situation]*). A cross-domain measure of situation quality was derived using the mean score across domains at pre-retirement ($M = 7.49$, $SD = 1.22$, range = 1.00–10.00, $\alpha = .62$) and at post-retirement ($M = 7.57$, $SD = 1.20$, range = 1.00–10.00, $\alpha = .57$, test-retest $r = .53$).

Cross-dimension eudaimonic well-being.—Eudaimonic well-being was assessed on six dimensions using Ryff's short-form scales (Ryff, 1989; Ryff & Keyes, 1995). Dimensions included autonomy, environmental mastery, personal growth, positive

relationships, purpose in life, and self-acceptance. For each dimension, participants reported their agreement with three items on a seven-point scale (1 = *strongly agree*, 7 = *strongly disagree*). Subscales were created by summing relevant item sets for each of the six dimensions after reverse scoring positively worded items. Higher scores reflect higher levels of well-being. Confirmatory factor analyses conducted by Ryff and Keyes (1995) and replicated by Lindfors, Berntsson, and Lundberg (2006) indicate the items of each short-form measure produce satisfactory psychometric scales that conform to their theoretical underpinnings. A cross-dimension measure of eudaimonic well-being was derived using the mean score across dimensions at pre-retirement (M = 16.81, SD = 2.38, range = 8.17–21.00, α = .78) and at post-retirement (M = 16.92, SD = 2.34, range = 7.67–21.00, α = .80, test-retest r = .66).

Work items for preliminary analyses.—MIDUS included several work-related measures that were relevant to post-retirement work engagement (see Preliminary Analyses section below). These included whether participants were currently doing any paid work (1 = *yes*, 2 = *no*); how many hours per month they volunteered at hospitals, nursing homes, schools, political organizations, or other organizations; whether they did more or less chores than their spouse or partner (1 = *you do a lot more*, 7 = *spouse does a lot more*); how many hours per week they did household chores; how often they attended educational lectures or courses (1 = *daily*, 6 = *never*); and how often they wrote letters, stories, or journal entries (1 = *daily*, 6 = *never*). Participants were also asked whether they described themselves as hardworking and whether they liked hard work (1 = *true of you*, 4 = *false*). The items assessing paid work, doing more chores than one's spouse, liking hard work, and perceiving oneself as hard working were reverse coded so that increasing scores corresponded to higher levels of each construct. The items assessing hours per month spent volunteering (0 = *did not volunteer*, 1 = *volunteered*), how often individuals attended educational lectures (0 = *did not attend*, 1 = *attended*), and how often they wrote letters, stories, and journal entries (0 = *did not write*, 1 = *wrote*) were dichotomized because responses were heavily skewed, as most individuals reported they never engaged in these activities.

Results

Preliminary Analyses: Correlates of Post-Retirement Work Engagement

Although paired-sample t-tests showed work engagement significantly declined from pre-to-post retirement (Mdiff = −1.30, t(956) = 12.30, p < .001), the majority of participants continued to report moderate levels of work engagement after they retired (M = 6.89). We thus conducted a series of exploratory correlational analyses to examine the nature of post-retirement work engagement. Results indicated that post-retirement work engagement was positively associated with (all ps < .01): doing any work for pay (r = .11); volunteering (r = .09); doing more housework than one's partner (r = .14); spending more hours per week on housework (r = .17); attending educational lectures or courses (r = .10); and spending time writing letters, stories, or journal entries (r = .10). Post-retirement work engagement was also positively correlated with describing oneself as hard working (r = .21) and reporting that one liked hard work (r = .21).

Rationale for the Main Analyses

Analyses were conducted in stepwise fashion consistent with Nylund (2007) and Beal, Crockett, and Peugh (2016). Step 1 involved separate latent profile analyses (LPA) at pre-retirement and at post-retirement to identify subgroups of individuals who were highly similar to each other in cross-domain engagement. Step 2 involved latent transition analyses (LTA) to assess stability and change in subgroup membership from pre-to-post retirement (i.e., engagement trajectories). Step 3 involved analyses of variance (ANOVA) procedures to examine trajectory differences in post-retirement psychological adjustment (perceived control, situation quality, well-being). Further details on each data analytic procedure is provided below.

Step 1: Latent Profile Analyses (LPA) of Pre-Retirement and Post-Retirement Engagement

Separate latent profile analyses (LPA) assessed pre-retirement and post-retirement engagement. LPA is a form of mixture modelling that identifies latent (unobserved) subgroups of individuals who are highly similar to each other, but different from those in other subgroups (Muthén & Muthén, 1998–2015; Nylund, Asparouhov, & Muthén, 2007). LPA is a person-centered approach that classifies individuals into subgroups based on responses to multiple (continuous) indicators (Oberski, 2016). LPA analyses enabled us to estimate the optimal number of profile subgroups at pre-retirement and at post-retirement. This approach allowed for an examination of whether the same engagement profiles emerged at both time points.

LPA analyses were assessed with Mplus 7 using maximum likelihood robust estimation (Muthén & Muthén, 1998–2015). As recommended by Marsh, Lüdtke, Trautwein, and Morin (2009), we estimated LPA models with varying numbers of profiles, ranging from two through six profiles. All models were conducted with 500 random starts and 50 optimizations to avoid the problem of local maxima (i.e., chance selection of suboptimal solution; Kam et al., 2016).

Model selection was guided by theory, interpretability, fit statistics, classification quality, and profile size (Infurna & Grimm, 2017; Marsh et al., 2009; Orpinas et al., 2014; Pastor & Gagné, 2013). Several recommended fit indices were used (Nylund et al., 2007), including the Aikake information criterion (AIC), the Bayesian information criterion (BIC), the sample-size adjusted BIC (SABIC), the bootstrapped likelihood ratio test (BLRT), and the Lo-Mendell-Rubin (LMR) adjusted likelihood ratio test. Lower values of AIC, BIC, and SABIC and significant BLRT and LMR tests indicate better fitting models. Entropy values provided a measure of classification quality and can range from 0 to 1, where higher values indicate a clearer separation of participants into profiles (values ≥ .80 recommended; Infurna & Grimm, 2017; Jung & Wickrama, 2008; Nylund-Gibson et al., 2014). Optimal model solutions contain few profiles with less than 5% of the total sample and are parsimonious in adequately accounting for the complexity of the data with the fewest latent profiles (DiStefano & Kamphaus, 2006; Infurna & Grimm, 2017; Jung & Wickrama, 2008; Samuelsen & Raczynski, 2013).

Pre-retirement (T1).—Results for the LPA models are shown in Table 2 (upper portion). AIC, BIC, and SABIC values declined as number of profiles (model complexity) increased, and BLRT and LMR tests were all statistically significant until the 6-profile model. This was expected because our sample size was reasonably large and the present fit statistics are sample size dependent (see Marsh et al., 2009). Elbow plots were therefore generated to provide a graphical summary of the information criterion indices and assist in model selection (Petras & Masyn, 2010; Morin et al., 2011). These plots show the marginal gain in fit associated with increases in the number of profiles (increased model complexity). Results suggested the 3-profile model produced the largest marginal gain in fit (see Figure S1a in the supplemental materials). Entropy values indicated that classification quality was best in the 4-profile model, but similar values were obtained for the models with 3, 5 and 6 profiles. Only the 2-profile and 3-profile models contained no profiles with < 5% of the total sample. Balancing the findings, the 3-profile model was selected because it had: the largest marginal gain in fit across the AIC, BIC, and SABIC indices; significant BLRT and LMR test statistics; high entropy (.84); no profiles with < 5% of the sample; and clear interpretability.

The latent profiles that emerged in the 3-profile model are depicted in Figure 1a and were labelled *high engagement* (n = 925; 76%), *low work engagement* (n = 101; 9%), and *moderate engagement* (n = 185; 15%). High engagement was defined by the highest levels of pre-retirement engagement across the six domains (work, child, spouse, health, financial, others). The high engagement profile was the largest group and accounted for 76% of the total sample. Low work engagement was defined by relatively high levels of engagement across most of the six domains, with the notable exception of work. Individuals in this profile reported very low levels of work engagement in comparison to their peers in the other two profiles. Moderate engagement was defined by moderate engagement across four of the six domains (spouse, health, financial, others). However, those in the moderate engagement profile reported relatively high levels of work engagement and relatively low levels of child engagement.

Post-retirement (T2).—Results for the LPA models are shown in Table 2 (lower portion). AIC, BIC, and SABIC values declined as the number of profiles increased. BLRT tests were all statistically significant until the 6-profile model, whereas the LMR test was significant for only the 3-profile model. Elbow plots were again generated to provide a graphical summary of the information criterion indices and assist in model selection (Petras & Masyn, 2010; Morin et al., 2011). Results indicated the 3-profile model produced the largest marginal gain in fit (see Figure S1b). Entropy values showed that classification quality was best in the 2-profile and 3-profile models. Models with 2, 3, and 4 profiles contained no profiles with < 5% of the total sample. Balancing the findings, the 3-profile model was selected because it had: the largest marginal gain in fit across the AIC, BIC, and SABIC indices; significant BLRT and LMR test statistics; high entropy (.83); no profiles with < 5% of the sample; and clear interpretability.

The latent profiles that emerged in the 3-profile model are depicted in Figure 1b. Profiles from the post-retirement model were consistent with the pre-retirement model and were thus labelled *high engagement* (n = 839; 72%), *low work engagement* (n = 221; 19%), and *moderate engagement* (n = 104; 9%). High engagement was defined by the highest levels of

post-retirement engagement across all domains and remained the largest group, accounting for 72% of the total sample. Low work engagement was defined by relatively high levels of engagement across most of the six domains, except for work engagement which was very low. Moderate engagement was defined by moderate engagement across five of the six domains (work, spouse, health, financial, others). Those in the moderate engagement profile reported relatively low levels of child engagement.

Step 2: Latent Transition Analysis (LTA) of Pre-to-Post Retirement Engagement

Latent transition analyses (LTA) assessed stability and change in latent profiles of engagement from pre-to-post retirement. LTA is a form of mixture modeling that reflects a longitudinal extension of LPA (Muthén & Muthén, 1998–2015; Nylund-Gibson et al., 2014). LTA simultaneously estimates latent profiles at multiple time points, as well as changes in profile membership over time. LTA analyses were assessed with Mplus 7 using maximum likelihood robust estimation (Muthén & Muthén, 1998–2015). Consistent with the LPAs, we estimated LTA models with two to six profiles.

All models were conducted with 500 random starts and 50 optimizations to avoid the problem of local maxima (i.e., chance selection of a suboptimal solution; Kam et al., 2016). Because LPA analyses yielded consistent engagement profiles at pre- and post-retirement, means of the latent profile indicators were constrained to be equal for a given profile over time in line with previous research (i.e., time invariance was assumed; Finlay, Flanagan, & Wray-Lake, 2011; Knoll, Wiedemann, Schultze, Schrader, & Heckhausen, 2014; Seaton, Yip, Morgan-Lopez, & Sellers, 2012). LTA model selection was guided by theory, interpretability, fit statistics, classification quality, and trajectory size (Infurna & Grimm, 2017; Marsh et al., 2009; Tofighi & Enders, 2008).

Results for the LTA models are shown in Table 3. AIC, BIC, and SABIC values declined as the number of profiles (model complexity) increased. As with the LPA analyses, we generated elbow plots to provide a graphical summary of the information criterion indices and assist in model selection (Petras & Masyn, 2010; Morin et al., 2011). The 3-profile model produced the largest marginal gain in fit (see Figure S2). Entropy values indicated that classification quality was best in the 6-profile model, but models with 3, 4 and 5 profiles yielded similar values. All models contained at least one trajectory with < 5% of the total sample, but the 2-profile and 3-profile models contained the fewest. Balancing the findings, the 3-profile model was selected because it had: the largest marginal gain in fit across the AIC, BIC, and SABIC indices; high entropy (.80); few trajectories with < 5% of the sample; and clear interpretability.

The three profiles that emerged at pre- and post-retirement (high engagement, low work engagement, moderate engagement) were consistent with those observed in the LPA analyses. Three profiles at each time point (3 × 3) produced nine trajectories. Most individuals remained in their pre-retirement profiles at post-retirement (see Table 4 for latent transition probabilities): 83% remained in the high engagement profile at post-retirement (*stable high engagement*), 37% remained in the low work engagement profile (*stable low work engagement*), and 60% remained in the moderate engagement profile (*stable moderate engagement*). This suggests stable trajectories were common in our sample. However, two

trajectories with reasonably large *n*-sizes emerged that involved pre-to-post retirement profile changes. The first reflected a transition from high engagement at pre-retirement to low work engagement at post-retirement (*high engagement-low work engagement*). The second reflected a transition from moderate engagement at pre-retirement to low work engagement at post-retirement (*moderate engagement-low work engagement*).

Noteworthy is that four trajectories were predominant and accounted for 93% of the sample (see Table 4). These trajectories included *stable high engagement* (*n* = 729, 58%), *stable moderate engagement* (*n* = 194, 15%), *high engagement-low work engagement* (*n* = 132, 10%), and *moderate engagement-low work engagement* (*n* = 116, 9%). Our focus in the following analyses was to examine differences in psychological adjustment for these predominant trajectories. We do not test for differences in the remaining trajectories due to small *n*-sizes (all *n*s < 25) and because each reflects < 2% of the sample.

Step 3: Engagement Trajectory Differences in Post-Retirement Adjustment

Main analyses.—Separate analyses of covariance (ANCOVAs) tested whether engagement trajectories differed in cross-domain perceived control, cross-domain situation quality, and cross-dimension well-being at post-retirement. ANCOVAs controlled for age, sex, education, income, self-reported health status, and pre-retirement (baseline) levels of each outcome measure (i.e., autoregressive effects). Controlling autoregressive effects permitted an examination of trajectory differences in pre-to-post retirement changes in the adjustment outcome measures, such that variance due to baseline levels of the outcome measures was statistically partialed out (Cohen, Cohen, West, & Aiken, 2003; Maxwell & Delaney, 2004). In other words, rather than using raw change or gain scores which can produce misleading results, the outcomes in our ANCOVA models reflected regressed change (Cohen et al., 2003). Significant ANCOVA effects were probed with *t*-test pairwise comparisons that contrasted covariate-adjusted trajectory means for each outcome measure.

Separate ANCOVAs indicated there were engagement trajectory effects for perceived control, $F(3, 1020) = 25.04$, $p < .001$; situation quality, $F(3, 1020) = 18.56$, $p < .001$; and eudaimonic well-being, $F(3, 1015) = 3.93$, $p = .008$. A consistent pattern of results emerged in the *t*-test analyses that involved pairwise comparisons of covariate-adjusted trajectory means (see Table 5). Those in the stable high engagement trajectory reported the highest levels of perceived control, situation quality, and eudaimonic well-being (see Figure 2). Results were consistent in additional analyses that tested trajectory effects separately for each: perceived control domain, situation quality domain, and well-being dimension (see the Online Supplemental Materials).

Mean differences that favored the stable high engagement trajectory (vs. each of the other three trajectories) were all statistically significant, with one exception (see Table 5): The stable high engagement trajectory did not differ from the high engagement-low work engagement trajectory on eudaimonic well-being. Effect sizes are reported in Table 5 and showed that differences between those in stable high trajectory and their peers in other trajectories were: moderate in size for perceived control (*d* range = 0.50–0.61), small to moderate in size for situation quality (*d* range = 0.36–0.57), and small in size for eudaimonic well-being (*d* range = 0.16–0.23).

Demographic analyses.—ANOVAs tested whether engagement trajectories differed on pre-retirement demographic variables. Results showed the trajectories did not differ in age, race, income, education, marital status, occupational prestige, or partner retirement status (all *p*s > .05). Trajectory differences did emerge for pre-retirement sex ($F(3, 1195)$, $p < .001$), time-to-retirement ($F(3, 845)$, $p = .031$), and health status ($F(3, 1150)$, $p < .001$). Participants in the stable high engagement trajectory were more likely to be female and report better health status than their peers in other trajectories, whereas those in the high engagement-low work engagement trajectory were closer to retirement than their peers in other trajectories.

Supplemental ANCOVAs and pairwise *t*-tests assessed whether trajectory effects on the adjustment outcomes observed in the main analyses were consistent when several additional demographic variables were controlled: race, marital status, occupational prestige, partner retirement status, and time-to-retirement. These analyses also controlled for the main study covariates (age, sex, education, income, and self-reported health). Results of the supplemental analyses were consistent with those reported in the main analyses with few exceptions: The stable moderate engagement trajectory no longer differed from the moderate engagement-low work engagement trajectory on situation quality and the stable high engagement trajectory no longer differed from the stable moderate engagement trajectory on eudaimonic well-being (*p*s > .05). These supplemental tests were conservative given that sample size was reduced by 46% (loss of 478 participants) due to missing data on the supplemental covariates.

Supplemental OLS regression analyses assessed whether trajectory effects were moderated by age at pre-retirement. Age was treated as a continuous moderator variable. Analyses were conducted with dummy-coded trajectory variables that reflected stable moderate engagement, high engagement-low work engagement, and moderate engagement-low work engagement (reference group = stable high engagement). Results showed that age moderated trajectory effects on situation quality, but did not moderate trajectory effects on perceived control or well-being (see Table S2). Specifically, an Age x Moderate Engagement-Low Work Engagement interaction was observed ($B = .03$, $SE = .014$, $p = .015$) and indicated that differences between those in the stable high engagement trajectory and the moderate engagement-low work engagement trajectory were pronounced for *younger* retirees on situation quality domains (see Table S2).

A final set of supplemental analyses examined whether trajectory differences emerged for participation in post-retirement leisure activities that included reading books, magazines and newspapers and engaging in physical activity during leisure activities (e.g., playing sports, gardening, walking). Results of ANCOVAs showed that those in the stable high engagement trajectory reported reading more frequently ($F(1,1011) = 15.93$, $p < .001$) and had higher levels of leisure-related physical activity ($F(1,1011) = 5.21$, $p = .023$) relative to their peers in the moderate engagement-low work engagement trajectory.

Discussion

Using data from the national Midlife in the United States study, our study sought to shed light on the role of cross-domain engagement during a ubiquitous transition experienced by middle aged and older adults (i.e., the shift to retirement). Findings advance the literature by showing that cross-domain profiles of engagement can be identified and that stability and change in these profiles during the retirement transition are consistent with the motivational theory of life-span development (Heckhausen et al., 1995, 2010, 2019). Results also contribute to a better understanding of the consequences of cross-domain engagement for longitudinal psychological adjustment in midlife and old age.

Cross-Domain Engagement Profiles Before and After Retirement

Our study is among the first to use a person-centered approach (latent profile analysis) to identify meaningful profiles of cross-domain engagement. This approach may better reflect the ecological realities of human engagement given that people typically pursue (engage with) goals in multiple life domains simultaneously (e.g., work, health, social; Heckhausen, 1997; Shane & Heckhausen, 2016). Specifically, latent profile analyses conducted pre- and post-retirement identified three cross-domain engagement profiles that emerged at both time points: high engagement, low work engagement, and moderate engagement. These profiles were in line with theoretical considerations and previous empirical evidence.

For instance, Heckhausen et al. (2010, 2019) posit that many people are motivated to be active agents in shaping their lives by engaging with central life domains. Engagement profiles observed in our study were consistent with this proposition in that a majority of participants had profiles defined by high cross-domain engagement both before (76%) and after (72%) retirement. Individuals in this profile reported high levels of engagement with their work, children, spouses, health, finances, and others' welfare.

These results are in line with past research that found high levels of engagement were common in midlife and old age and that positive pairings of engagement had beneficial consequences for well-being (Shane & Heckhausen, 2016). Our findings also extend this research by pointing to the more complex motivational dynamics that operate for individuals who vary in their engagement with multiple life domains. In particular, the low work engagement and moderate engagement profiles that emerged highlight the variability that exists in middle-aged and older adults' cross-domain engagement.

Although not as pronounced as the high engagement profile, the low work engagement profile exhibited relatively high levels of engagement across most domains (especially with children and spouses). A significant difference between these profiles was that work engagement was very low in this profile (see Figure 1). The low work engagement profile was identified both before and after retirement, which suggests that some individuals had withdrawn from work pursuits even before they retired. In contrast, the moderate engagement profile exhibited average levels of engagement across most domains. Exceptions to this trend were that those in the moderate engagement profile reported relatively high levels of work engagement and relatively low levels of child engagement.

Results of the latent profile analyses also suggested that disengaging from one's career (retirement) does not necessitate disengaging from work altogether (Fasbender et al., 2014; Shulz & Wang, 2011). We found that work remained an important component of many peoples' lives even after retirement, as evidenced by high levels of post-retirement work engagement in the high engagement profile. Preliminary correlational analyses from our study suggest that the nature of post-retirement work engagement may shift from career pursuits to those that involve part-time work, volunteering, housework, educational pursuits, and time spent writing (e.g., journaling; cf. Beehr & Bennett, 2015; Wang & Shi, 2014). However, future research is needed to provide a more systematic analysis of how engagement with work changes during the transition to retirement.[4]

Stability and Change in Cross-Domain Engagement During the Retirement Transition

Stable engagement trajectories were prevalent in our sample of middle-aged and older adults transitioning to retirement. Results showed that a large majority (75%) of participants remained in their pre-retirement profiles at post-retirement. The stable high engagement trajectory was the largest and comprised 58% of the sample. These results are consistent with the motivational theory of life-span development, which suggests engagement with central life domains is fundamental to adaptive development and that engagement remains relatively constant throughout the life span (Heckhausen et al., 1995, 2010, 2019). Findings also support previous research that has shown engagement is comparatively stable among middle-aged and older adults (Heckhausen, 1997; Schilling et al., 2013; Wahl et al., 2007; Wrosch et al., 2000).

However, several trajectories provided evidence that changes in pre-to-post retirement engagement occurred for a substantial minority of the present sample (25%). Notable was that both predominant change trajectories involved a shift to low work engagement: high engagement-low work engagement and moderate engagement-low work engagement. Such shifts are logical given that some retirees are likely to redirect their (former) engagement with work towards other important life domains (Shane & Heckhausen, 2019).

To the extent that goal engagement and disengagement are inversely related, these findings provide indirect evidence for the role of work disengagement during the retirement transition. This logic is consistent with the motivational theory of life-span development (MTD) which proposes that individuals cannot effectively be engaged and disengaged with a given goal or domain simultaneously (Heckhausen et al., 2010, 2019). More specifically, the action-phase model within MTD proposes that phases of goal engagement and disengagement are distinct and not blended (Heckhausen et al., 2001).

Thus our finding that both change trajectories involved reduced work engagement points to the potential role of work disengagement in the context of shifting opportunities and constraints encountered during the retirement transition. Retirement reflects a unique developmental stage wherein opportunities for engagement may substantially increase on the whole (more time and autonomy), but at the same time some new constraints may also

[4]Note that 23% of participants in our sample reported they worked for pay after retirement and that 45% reported they volunteered after retirement. Post-retirement work engagement was positively associated with both outcomes (respective rs = .11, .09).

simultaneously emerge (reduced work opportunities; Kim & Feldman, 2000). This implies that while stable high engagement should generally be adaptive during the transition, there may also be benefits to reducing engagement with (disengaging from) work or career pursuits as long as high engagement is maintained in other life domains (Heckhausen et al., 2010).

The larger of the change trajectories (high engagement-low work engagement) was consistent with such a motivational pattern and involved a shift from high engagement before retirement to low work engagement after retirement. This pattern may reflect a form of adaptation to changing opportunities and constraints by (a) disengaging from work (or at least career) goals that have become more limited and (b) capitalizing on these freed up motivational resources by investing additional thought and effort in other central life domains. Accordingly, those in the high engagement-low work engagement trajectory substantially reduced their engagement with work but maintained high levels of engagement with children, spouses, health, finances, and others' welfare.

Consequences of Cross-Domain Engagement for Psychological Adjustment

The present findings also suggest that stability and change in cross-domain engagement trajectories have implications for central indicators of post-retirement psychological adjustment: cross-domain perceived control, cross-domain situation quality, and cross-dimension eudaimonic well-being. Results indicated that the sustained high engagement trajectory was consistently associated with the most adaptive outcomes. Individuals in this trajectory were advantaged on each of the three adjustment measures (see Table 5). Differences between the stable high engagement and moderate engagement-low work engagement trajectories were most pronounced, with the latter typically reporting the lowest levels of adjustment.

These results are in line with theory and previous research. The motivational theory of life-span development proposes that people are motivated to actively shape their lives, and that this engagement tendency is adaptive (Heckhausen et al., 1995, 2010, 2019). Past studies have supported this proposition by showing engagement in individual life domains was positively associated with psychological adjustment in middle-aged and older adults (e.g., Haase et al., 2013; Shane & Heckhausen, 2016; Watt et al., 2017). Our study extends this literature by demonstrating a trajectory defined by stable high engagement across multiple life domains had positive implications for central indicators of adjustment (perceived control, situation quality, eudaimonic well-being) during a major life course transition.

Findings point to the benefits of remaining highly engaged in multiple domains after retirement. Retirement can be viewed as involving significant losses (e.g., disengaging from a valued career), but it also reflects a period in the life course when there may be opportunity for significant gains (cf. Kim & Moen, 2002). For example, retiring enables individuals to invest more time and resources into other life domains, such as relationships with children and spouses (Wang, 2007). This line of reasoning is consistent with our finding that participants in the stable high engagement and high engagement-low work engagement trajectories (comprising 68% of the sample) rated engagement with children and spouses higher than all other domains.

Supplemental analyses point to the moderating role of age for trajectory differences in cross-domain situation quality. Results showed that differences in situation quality between those in the stable high engagement trajectory and the moderate engagement-low work engagement trajectory were pronounced for younger retirees. This suggests that simultaneously engaging with multiple life domains during the retirement transition may be most beneficial for retirees in midlife and early old age who may face fewer age-related constraints in their goal pursuits (Heckhausen, 1997; Lachman & Weaver, 1998). These findings are also in line with the congruence principle proposed in the motivational theory of life-span development that suggests engagement is most adaptive when goals match available opportunities (Heckhausen et al., 2010).

Strengths, Limitations, and Future Directions

Our study has several strengths. First, it was informed by the strong theoretical framework afforded by Heckhausen et al.'s (1995, 2001, 2010, 2019) motivational theory of life-span development. The fundamental principles of Heckhausen et al.'s theory are clear, specific, testable, and supported by over 20 years of empirical evidence. Second, our sample was drawn from the Midlife in the United States (MIDUS) study which contains longitudinal data from a national sample of middle-aged and older American adults, thus enhancing the generalizability of our findings. Third, using nine-year MIDUS data enabled us to examine pre-to-post retirement changes in engagement with multiple life domains, as well as the implications of these changes for longitudinal psychological adjustment.

Although using population-based MIDUS data is a strength of our study, it also represents a limitation to the extent that individuals who participated in this longitudinal study may have been more engaged with central life domains than their peers who did not. It is therefore unclear whether results would generalize to individuals with very low levels of cross-domain engagement. A second limitation of our study was that domain-specific measures of goal disengagement were not available in MIDUS. We were therefore unable to directly test whether disengagement with certain life domains (e.g., work or career) increases during the transition to retirement, although indirect evidence for this supposition was observed in our preliminary analyses that showed work engagement declined significantly from pre-to-post retirement in our sample. We were also unable to directly examine the role of domain-specific engagement with leisure activities since MIDUS did not include such a measure. However, our supplemental analyses provide indirect support for the view that high levels of engagement with other life domains may foster sustained engagement with leisure activities during the retirement transition. Domain-specific measures of other control strategies that support goal engagement were also unavailable in MIDUS (selective secondary control, compensatory primary control), and future research should examine how these supporting goal engagement strategies change as people shift to retirement.

Another limitation was our use of single-items to measure cross-domain engagement in six central life domains. However, the present findings and previous research provide some support for the reliability and validity of these single item measures (e.g., Shane & Heckhausen, 2012, 2016). For example, Shane and Heckhausen (2012) found that nine-year test-retest reliability was acceptable for domain-specific: work engagement ($r = .28$), work

perceived control (r = .31), and work situation quality (r = .28). Results presented in the Online Supplemental Materials offer some evidence for the validity of the present single-item measures in revealing an expected pattern of correlations between domain-specific assessments of engagement and related domain-specific measures (e.g., spousal engagement-spousal strain r = −.30; other engagement-volunteering r = .21). Although multi-item measures of each construct may have produced more robust effects, we are confident in the present results given the consistent pattern of findings observed across: (a) the LPA and LTA analyses that identified reliable cross-domain profiles of engagement and (b) the MANCOVA and ANCOVA analyses that showed profile stability and change was associated with reliable longitudinal differences in multiple indicators of psychological adjustment.

The present study points to several avenues for future research. Our preliminary analyses on post-retirement work engagement suggests that work remains an important aspect of life even after individuals retire (cf. Fasbender et al., 2014; Schulz & Wang, 2011). Future research would do well to conduct a systematic analysis of how the nature of work engagement changes during the shift to retirement (e.g., from paid work to volunteering, hobbies, etc.) and the implications of such shifts for psychological adjustment.

Research is also needed to examine the consequences of cross-domain engagement for cognitive functioning during the transition to retirement. Emerging evidence suggests that those who retire may be at increased risk of cognitive declines relative to those who remain employed in midlife and old age (e.g., Wickrama et al., 2013; Rennemark & Berglund, 2014). However, research has yet to examine the role of cross-domain engagement, which may moderate this process. For instance, it seems plausible that individuals who remain actively engaged in multiple life domains after retirement may be protected from such declines if environmental stimulation and cognitive engagement account for the observed differences between workers and retirees (cf. Fisher, Stachowski, Infurna, & Faul, 2014).

Another productive area for future research may be the development of motivation interventions to enhance cross-domain engagement during the retirement transition. Research shows that goal engagement interventions facilitate adaptive patterns of cognition, emotion, and behavior in multiple domains (education, health) and stages of the life span (early adulthood, old age; Hamm et al., 2016, in press; Gitlin et al., 2006). These findings point to the potential benefits of interventions to increase cross-domain engagement for middle aged and older adults navigating the work-to-retirement transition.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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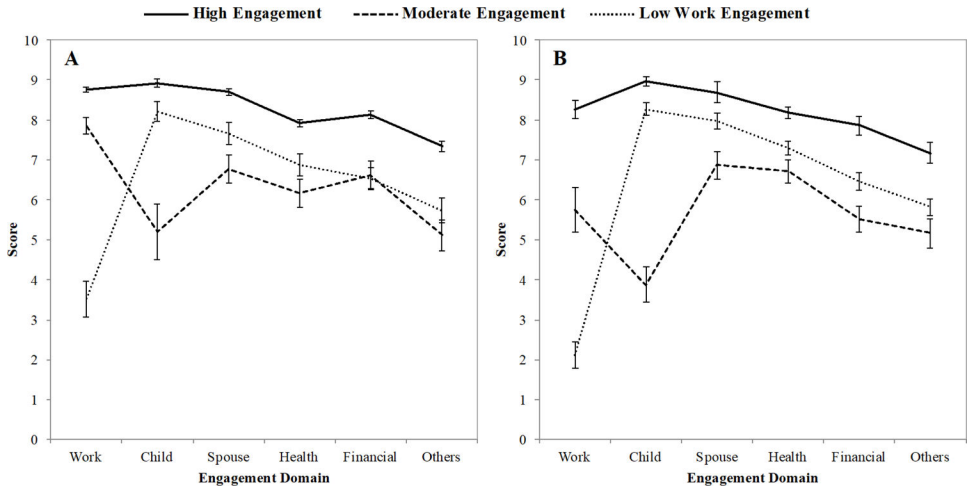

Figure 1.

Results from the $k = 3$ profile latent profile analyses of engagement at pre-retirement (Panel A) and post-retirement (Panel B).

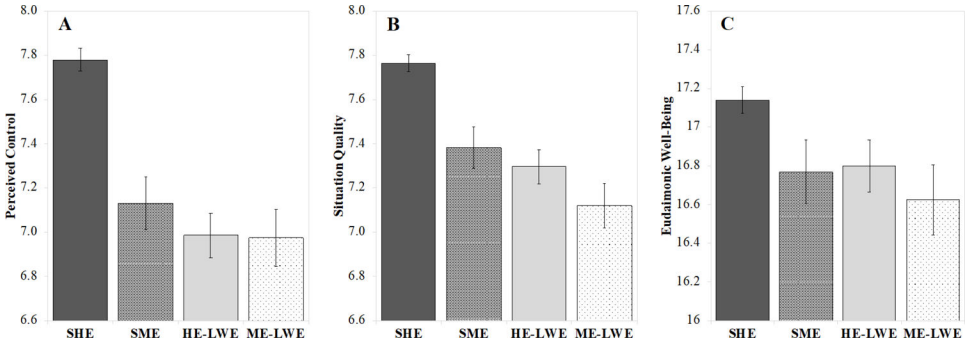

Figure 2.

SHE = stable high engagement. SME = stable moderate engagement. HE-LWE = high engagement-low work engagement. ME-LWE = moderate engagement-low work engagement. Differences in cross-domain perceived control (Panel A), cross-domain situation quality (Panel B), and cross-dimension eudaimonic well-being (Panel C) by latent profile engagement trajectories. Engagement trajectories are based on the $k = 3$ profile latent transition analysis. Analyses controlled for pre-retirement (T1) age, gender, education, income, health status, and autoregressive effects.

Table 1

Descriptive Statistics and Interitem Correlations

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. T1 Age	–																
2. T1 Female	.11	–															
3. T1 Education	−.05	−.06	–														
4. T1 Income	−.18	−.19	.33	–													
5. T1 Health status	.06	−.01	.09	.12	–												
6. T1 Work engagement	.05	.10	.05	.04	.19	–											
7. T1 Child engagement	.02	.20	−.10	−.08	.06	.15	–										
8. T1 Spouse engagement	.03	.01	−.09	−.04	.16	.20	.32	–									
9. T1 Health engagement	.07	.14	.00	−.02	.23	.18	.26	.23	–								
10. T1 Financial engagement	−.02	.02	−.10	−.03	.09	.26	.19	.20	.25	–							
11. T1 Others engagement	.02	.15	.06	−.02	.16	.24	.28	.21	.24	.17	–						
12. T2 Work engagement	.08	.13	−.02	−.03	.14	.21	.15	.17	.18	.19	.16	–					
13. T2 Child engagement	.07	.14	−.09	−.02	.08	.21	.38	.25	.23	.18	.21	.26	–				
14. T2 Spouse engagement	.06	−.02	−.02	−.02	.13	.19	.22	.46	.28	.11	.14	.17	.27	–			
15. T2 Health engagement	.03	.08	.01	−.01	.18	.17	.23	.19	.44	.20	.17	.23	.24	.25	–		
16. T2 Financial engagement	.00	.03	−.06	−.02	.00	.18	.17	.16	.22	.39	.12	.28	.28	.20	.22	–	
17. T2 Others engagement	−.04	.19	.07	.04	.12	.17	.19	.17	.24	.13	.33	.24	.20	.17	.18	.24	–
M	57.19	56%	7.00	79683	7.48	8.19	8.31	8.34	7.57	7.77	6.87	6.89	8.42	8.41	7.88	7.39	6.74
SD	6.96	–	2.55	62548	1.59	1.96	1.99	1.70	1.89	1.95	2.39	3.03	1.92	1.80	1.74	2.32	2.50

Note. T1 = pre-retirement. T2 = post-retirement. All correlations above .10 are significant at $p \leq .01$ (two-tailed tests).

Table 2.

Model Fit for Latent Profile Analyses of Pre-Retirement and Post-Retirement Engagement (k = 2–6 Profile Solutions)

									Profile size	
No. of profiles	**LL**	**Free par.**	**AIC**	**BIC**	**SABIC**	**BLRT *p***	**LMR *p***	**Entropy**	**< 1%**	**< 5%**
						Pre-retirement				
2	−13997	19	28032	28129	28068	< .001	< .001	.72	0	0
3	**−13826**	**26**	**27703**	**27836**	**27753**	**< .001**	**.037**	**.84**	**0**	**0**
4	−13693	33	27452	27620	27516	< .001	.004	.87	0	1
5	−13598	40	27277	27481	27354	< .001	< .001	.86	0	2
6	−13539	47	27172	27412	27263	< .001 *	.188	.85	0	2
						Post-retirement				
2	−13592	19	27223	27319	27258	< .001	.391	.85	0	0
3	**−13432**	**26**	**26916**	**27048**	**26965**	**< .001**	**< .001**	**.83**	**0**	**0**
4	−13340	33	26745	26912	26807	< .001	.081	.80	0	0
5	−13259	40	26599	26800	26674	< .001	.154	.79	0	2
6	−13204	47	26501	26739	26590	< .001	.190	.80	0	2
Interpretation	*Lower* values better		*Lower* values better	*Lower* values better	*Lower* values better	*Significant* values support tested model over model with one less profile	*Significant* values support tested model over model with one less profile	*Higher* values better	*Fewer* profile sizes with < 1% and < 5% better	

Note. LL = loglikelihood. Free par. = number of free parameters. AIC = Aikake information criterion. BIC = Bayesian information criterion. SABIC = sample-size adjusted BIC. BLRT = bootstrapped likelihood ratio test. LMR = Lo-Mendell-Rubin adjusted likelihood ratio test. Profile size refers to number of latent profiles that contain < 1% or < 5% of the sample. Bold font indicates the best fitting model selected.

* *p*-value may not be trustworthy due to local maxima

Table 3.

Model Fit for Latent Transition Analyses of Pre-Retirement to Post-Retirement Engagement (k = 2–6 Profile Solutions)

							Trajectory size	
No. of profiles (trajectories)[a]	**LL**	**Free par.**	**AIC**	**BIC**	**SABIC**	**Entropy**	**< 1%**	**< 5%**
2 (4)	−27578	27	55210	55349	55263	.76	1	1
3 (9)	**−27230**	**38**	**54536**	**54731**	**54611**	**.80**	**3**	**2**
4 (16)	−27008	51	54118	54380	54218	.80	8	4
5 (25)[bc]	−26839	66	53811	54150	53940	.81	16	5
6 (36)[c]	−26713	83	53593	54019	53756	.82	25	8
Interpretation	*Lower* values better	*Lower* values better	*Lower* values better	*Lower* values better	*Lower* values better	*Higher* values better	*Fewer* trajectory sizes with < 1% and < 5% better	

Note. LL = loglikelihood. Free par. = number of free parameters. AIC = Aikake information criterion. BIC = Bayesian information criterion. SABIC = sample-size adjusted BIC. Trajectory size refers to number of pre-to-post retirement trajectories that contain < 1% or < 5% of the sample. Bold font indicates the best fitting model selected.

[a]Number of pre-to-post retirement trajectories for each *k* profile model are presented in parentheses.

[b]Model standard errors may not be trustworthy due to non-positive definite first-order derivative product matrix.

[c]Several logit parameters were fixed to avoid singularity of the information matrix.

Table 4.

Latent Transition Probabilities from Pre-Retirement to Post-Retirement

	Post-retirement profile		
Pre-retirement profile	**High engagement**	**Low work engagement**	**Moderate engagement**
High engagement			
Transition prob.	*0.83*	0.15	0.02
n	**729**	**132**	18
Low work engagement			
Transition prob.	0.34	*0.37*	0.29
n	19	21	16
Moderate engagement			
Transition prob.	0.04	0.36	*0.60*
n	15	**116**	**194**

Note. Results from the $k = 3$ profile latent transition analysis model. Italicized entries along the diagonal indicate membership in the same latent profile at pre- and post-retirement (i.e., stable latent profile trajectories). Bolded entries reflect pre-to-post retirement latent profile trajectories that comprise 93% of the sample.

Table 5

Pairwise Comparisons of Trajectory Means on Post-Retirement Perceived Control, Situation Quality, and Eudaimonic Well-Being

Outcome measure	Covariate-adjusted trajectory means				Pairwise trajectory comparisons	Cohen's *d*
	SHE (1)	SME (2)	HE-LWE (3)	ME-LWE (4)		
Perceived control	7.78	7.13	6.99	6.97	1 >2,3,4	1 vs. 2 = 0.50; 1 vs. 3 = 0.61; 1 vs. 4 = 0.59
Situation quality	7.76	7.38	7.30	7.12	1 >2,3,4;2>4	1 vs. 2 = 0.36; 1 vs. 3 = 0.43; 1 vs. 4 = 0.59; 2 vs. 4 = 0.21
Well-being	17.14	16.77	16.80	16.63	1 >2,4	1 vs. 2 = 0.16; 1 vs. 4 = 0.23

Note. Perceived control = cross-domain perceived control. Situation quality = cross-domain situation quality. Well-being = Cross-dimension eudaimonic well-being. SHE = stable high engagement. SME = stable moderate engagement. HE-LWE = high engagement-low work engagement. ME-LWE = moderate engagement-low work engagement. Pairwise comparisons involved *t*-tests that contrasted each pair of trajectory means for perceived control, situation quality, and well-being. Trajectory means and pairwise comparisons are adjusted for age, sex, education, income, self-reported health status, and pre-retirement levels of each outcome measure (i.e., autoregressive effects). Cohen's *d* is reported for only significant contrasts.

* $p \leq .05$.

** $p \leq .01$ (two-tailed tests).