Introduction

Within-Person Changes and the Motivational Theory of Lifespan Development (MTD)

MTD theory also addresses the role of within-person changes in more transient aspects of goal disengagement that relate to specific tasks and objectives within different life domains (Heckhausen et al., 2010, 2019). We focused on individual differences in goal disengagement because trait-like differences are more likely to be implicated in long-term developmental outcomes that unfold over extended time periods, such as change in cognitive functioning (cf., Pressman & Cohen, 2005; Pressman et al., 2019). Under these circumstances, individual differences may better capture disengagement from a wide array of challenging but mentally stimulating tasks that could preserve cognitive functioning in retirement (e.g., playing word or card games, reading literature, attending lectures, engaging in physical activity, financial planning). Nevertheless, an examination of within-person changes in goal disengagement from specific mentally stimulating tasks may be an interesting avenue for future research.

The Retirement Transition and Cognitive Decline

Increasing evidence shows that retirement is associated with increased risk of cognitive declines. For example, Wickrama et al. (2013) examined whether retiring was associated with changes in immediate memory for older Americans in the Health and Retirement Study (HRS). Results from their autoregressive models that controlled for baseline memory showed that retiring (vs. remaining employed) predicted subsequent declines in immediate memory. Another study based on the HRS examined changes over time in episodic memory and mental status for middle-aged and older retirees. A consistent pattern of results was observed, such that negative changes in mental status occurred post-retirement (Fisher et al., 2014). Also using the HRS, Clouston & Diener (2017) found cognitive differences in baseline levels and rates of decline in cognitive processes. Similar findings have emerged in other national studies that include the Swedish National Study on Aging and Care (Rennemark & Berglund, 2014), the English Longitudinal Study on Ageing (Rohwedder & Willis, 2010), and the Survey on Health, Ageing and Retirement in Europe (Mazzonna & Peracchi, 2012).

Method

Comparability of Retirees and Employees

Several precautions were taken to ensure our samples of middle-aged and older adults who retired versus remained employed were directly comparable. This was accomplished by (a) selecting individuals who were working at baseline and who either retired or remained employed nine years later and (b) using propensity score matching to equate participants on central demographic and health variables linked to cognitive functioning: age, gender, education, income, occupation, and health status (Hughes et al., 2018; Lachman et al., 2014; Tun & Lachman, 2008). We adopted propensity score matching over alternative procedures because this approach has been shown to improve balance on influential covariates and thereby reduce bias in parameter estimates of sample differences (Austin, 2011; West et al., 2014). Propensity score matching thus provided a common ground that made it possible to examine moderated changes in cognitive functioning between matched samples of retirees and employees who had similar distributions on potential confounding variables (Lee & Little, 2017; Thoemmes & Kim, 2011).

Rationale for Age Criterion

The decision to include participants who were 50+ years of age at MIDUS 2 (baseline) was based on conceptual, empirical, and statistical considerations. Conceptually, we were interested in differences in normative cognitive declines occurring in midlife and old age. Empirically, past studies have shown that episodic memory and executive functioning typically begin to decline more rapidly in midlife after age 50 (Hughes et al., 2018; Lachman et al., 2014). Statistically, very few participants who met our other inclusion criteria ($n = 12$) retired before age 50. There was thus a large imbalance of participants under 50 years old who were working at MIDUS 2 and 3 ($n = 541$) relative to their peers who were working at MIDUS 2 and retired at MIDUS 3 ($n = 12$). This imbalance meant there was insufficient coverage on one of our central matching variables (age) to include participants who were under 50 years old.

Differences Between the Analyzed Sample, All MIDUS Participants, and the US Population

Participants in the analyzed sample were slightly older ($M_{\text{Diff}} = 2.34$, $t(7047) = 4.61$, $p < .001$), had higher household incomes ($M_{\text{Diff}} = 23745$, $t(6108) = 9.81$, $p < .001$), were more likely to have some college education ($M_{\text{Diff}} = 0.15$, $\chi^2(1) = 64.78$, $p < .001$), and were more likely to be white ($M_{\text{Diff}} = 0.04$, $\chi^2(1) = 11.85$, $p = .001$) than those in the larger MIDUS sample. Participants in analyzed sample did not differ on gender from those in the larger MIDUS sample ($M_{\text{Diff}} = 0.02$, $\chi^2(1) = 0.65$, $p = .420$). These differences were mirrored when comparing the analyzed sample to the broader US population (U.S. Census Bureau, 2018).

Definition and Operationalization of Retirement

It is important to note that there are multiple definitions of retirement in the literature (e.g., Denton & Spencer, 2009; Ekerdt, 2010; Wang & Shi, 2014) and that the transition to retirement does not always reflect a discrete process. The present study defines retirement using a simple but common approach based on participant perceptions of whether they were retired (i.e., whether participants self-reported that they were retired) (see, for example, Clouston & Denier, 2017; Bonsang et al., 2012; Fisher et al., 2014; Wickrama et al., 2013).

Supporting this operationalization, 98% of participants in our sample who were classified as having retired at MIDUS 3 reported being exclusively retired (i.e., not being in any other work category). Specifically, nearly all retirees in our sample reported being exclusively retired (98%, $n = 308$). Few retirees reported being in multiple work categories (2%). Those who did reported being retired and at home (1%, $n = 3$), and only two reported being retired and in another work category not listed in the survey (1%, $n = 2$). There were no retirees who reported they were also employed or self-employed. In addition, we found that only a small minority of retirees reported they did any work for pay (13%, $n = 39$).

Goal Disengagement Scale Items, Reliability, and Validity

MIDUS contains preexisting three-item and five-item scales that measure different aspects of goal disengagement. We used the three-item scale because it better reflected the goal disengagement construct of interest in the present study. Specifically, the five-item scale was from MIDUS 1 (1996) and contained two items that pertain to reframing and self-protection (cf. Wrosch et al., 2000). The three-item scale was from MIDUS 2 (2003) and developed based on the seminal measures of goal disengagement from the perspective of MTD theory (Optimization in Primary and Secondary Control Scales; Heckhausen et al., 1998). The three-item scale excluded the two items relevant to reframing and self-protection and thus reflected a more focused measure that assessed two central components of goal disengagement, lowering aspirations and withdrawing commitment (Heckhausen et al., 2010, 2019; Wrosch et al., 2003).

Exploratory (EFA) and confirmatory factor analyses (CFA) assessed the factor structure and item loadings for the goal disengagement measure. Results of a one-factor EFA model yielded an eigenvalue of 1.54 with all factor loadings significant at $p < .05$ and ranging from modest to large in magnitude (standardized factor loading range = .31-.65; Tabachnick & Fidell, 2013). Results of a one-factor CFA model replicated these results (standardized factor loading range = .31-.65, all ps < .05). However, model fit could not be evaluated because this model was just-identified (i.e., had zero degrees of freedom). We thus constrained the variances of the first two items to equality in a second CFA in order to test model fit. Results of the second CFA model were consistent with the first (standardized factor loading range = .31-.68, all *p*s < .05) and yielded adequate fit: $\chi^2(1) = 0.14$, $p = .707$, CFI = 1.00, RMSEA = .000.

Reliability analyses indicated the goal disengagement measure had modest internal consistency (alpha = .51) and relatively strong test-retest reliability over an extended (9-year) time interval ($r = .53$). Validity of the goal disengagement measure was supported by an expected pattern of correlations with relevant motivation constructs. Goal disengagement was *positively* associated with perceived constraints ($r = .36$), pessimism ($r = .25$), and negative affect ($r = .23$); whereas it was *negatively* associated with perceived mastery ($r = -.22$), optimism ($r = -.25$), positive affect ($r = -.17$), goal commitment ($r = -.14$), and behavioral goal engagement ($r = -.19$) (all *p*s < .001).

MIDUS Cognitive Battery (BTACT)

BTACT scales. The Brief Test of Adult Cognition by Telephone (BTACT) battery includes two cognitive tests to assess episodic memory and five tests to assess executive functioning (see Lachman et al., 2014 and Tun & Lachman, 2008 for a detailed overview). Episodic memory was assessed using immediate and delayed recall tasks. Participants were instructed to (a) carefully listen to a list of 15 words that were read aloud at a rate of one word per second and (b) recall as many words as possible within one minute. Scores for both immediate and delayed recall reflect the number of correct responses provided.

Executive functioning was assessed using measures of inductive reasoning (completing patterns in number series), category verbal fluency (number of animal names produced in one minute), working memory span (backward digit span), processing speed (number of digits produced counting backwards from 100 in 30 seconds), and reaction time for attention switching and inhibitory control conditions (Stop-and-Go Switch Task; SGST).

Measures of episodic memory and executive functioning factors were calculated by averaging the standardized values of their respective subtests (Hughes et al., 2018). Episodic memory was thus comprised of the standardized average of the immediate and delayed recall tests. Executive functioning was comprised of the standardized average of the inductive reasoning, category verbal fluency, working memory span, processing speed, and attention switching and inhibitory control tests. For the executive functioning measure, we used two recommended filters that retained data for only participants with valid and accurate scores on the Stop and Go Switch Task using a standardized approach (SGST; Lachman et al., 2014; Ryff & Lachman, 2009; Tun & Lachman, 2008). Valid scores were those in which there were no technical malfunctions during the SGST trials and the participant carried out the task as instructed. Accurate scores were those in which participants achieved at least 75% accuracy in each SGST condition to ensure they were performing the task correctly (see Ryff & Lachman, 2009).

Factor structure of the BTACT. Previous MIDUS research using the BTACT has documented a two-factor structure (episodic memory, executive functioning) that exhibits metric invariance across measurement occasions (Hughes et al., 2018; Lachman et al., 2014; Robinson et al., 2018). Confirmatory factor analysis (CFA) were used to test whether results replicated in our analyzed sample. As recommended by Marsh et al. (2016) and Cole and Maxwell (2003), residual terms of observed variables were allowed to covary across measurement occasions consistent with previous research (Robinson et al., 2018).[1]

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[1]The residual covariance term for immediate recall was omitted because it approached zero and its inclusion resulted in a residual covariance matrix that was not positive definite.

Results were consistent with those of previous studies (Hughes et al., 2018; Lachman et al., 2014; Robinson et al., 2018) in documenting good fit for a two-factor model comprising episodic memory and executive functioning: $\chi^2(65) = 207.92$, $p < .001$, CFI = .963, RMSEA = .055. We subsequently tested for longitudinal measurement invariance. Results of nested model comparisons showed the fit of configural (M2 and M3 factor loadings unconstrained) and metric (M2 and M3 factor loadings constrained equal) did not differ ($p > .05$). Further model comparisons indicated that the fit of metric and scalar (M2 and M3 factor loadings and intercepts constrained equal) significantly differed ($p < .05$). These findings are consistent with previous research showing that two-factor model of cognitive functioning exhibits metric invariance over time (Hughes et al., 2018).

Results

Rationale for Propensity Score Matching Covariate Selection

Covariates were carefully chosen based on theoretical and empirical considerations stemming from the propensity score matching, retirement transition, and cognitive functioning literatures. As recommended by Lee and Little (2017; see also Ho et al., 2007 and Imbens, 2004), we selected covariates theorized to be related to both the predictor (retirement status) and the outcome (cognitive functioning): age, gender, education, income, occupation, and health status. Previous research has shown these covariates are reliably associated with cognitive functioning and retirement status (e.g., Fisher et al., 2014; Hughes et al., 2018; Kajitani et al., 2017; Kim & Moen, 2001; Robinson & Lachman, 2018; Wang & Shi, 2014).

Propensity score models were estimated using the MatchIt package for R (Ho et al., 2011). Our logistic regression matching algorithm employed 1:1 nearest neighbor matching with a caliper of ≤ .20 (maximum allowable distance between matched participants; Lee & Little, 2017). Suitable neighbors who remained employed were identified for 268 participants who retired. See Figure S1 for the distribution of propensity scores for matched and unmatched participants.

As noted in the manuscript, the matched samples did not differ on the study covariates or on baseline cognitive functioning. Additional analyses assessed whether our matching algorithm equated retirees and employees on other measures beyond the covariates and baseline cognition. Results showed that the matched samples did not differ (all *p*s $> .05$) on other demographic (race, marital status), psychosocial (perceived constraints, perceived mastery, goal commitment, behavioral goal engagement, goal disengagement, depressive symptoms, life satisfaction), or health variables at baseline (IADL, BADL, chronic conditions, BMI; see Figure S2).

Supplemental Analyses

Range of significance. Supplemental analyses probed the Retirement Status x Goal Disengagement x Gender interaction using a Johnson-Neyman approach to determine the range of significance for simple retirement effects. Johnson-Neyman intervals showed that the simple effect of retirement for women was significant at $p < .05$ when goal disengagement was outside the following ranges: 1.00 to 2.18 for episodic memory and 1.00 to 2.64 for executive functioning. This means that retiring (vs. remaining employed) was associated with greater declines in (a) episodic memory for women who had goal disengagement scores above 2.18 and (b) executive functioning for women who had had goal disengagement scores above 2.64.

These findings suggest that retiring may increase risk of episodic memory declines for women with even moderate goal disengagement considering that a score of 2.18 is only slightly higher than the mean (2.12). Results also suggest that retiring may only increase risk of executive functioning declines for women with relatively high goal disengagement (who score nearly 1 SD above the mean). Johnson-Neyman intervals were not observed for men on either episodic memory or executive functioning (simple retirement effects were not significant at any values of goal disengagement).

Baseline interaction models. Supplemental analyses assessed whether results were consistent when incorporating Baseline x Goal Disengagement and Baseline x Retirement Status interactions. Results showed the baseline interactions were not significant for either episodic memory or executive functioning (*p*s > .05) and the main findings remained unchanged: The three-way Retirement Status x Goal Disengagement x Gender interaction remained significant for episodic memory (*b* = -.48, *SE* = .229, *p* = .036) and not significant for executive functioning (*b* = -.19, *SE* = .119, *p* = .118). Simple slope analyses were also consistent in showing that retiring (vs. remaining employed) predicted steeper declines in episodic memory (*b* = -.39, *SE* = .129, *p* = .003) and executive functioning (*b* = -.13, *SE* = .066, *p* = .047) for only females high in goal disengagement.

Doubly-robust models. Supplemental analyses examined whether results from our main analyses were consistent in “doubly-robust” analyses that controlled for the matching variables (age, gender, education, income, occupation, and self-reported health). The three-way Retirement Status x Goal Disengagement x Gender interaction remained significant for episodic memory (*b* = -.46, *SE* = .224, *p* = .040). Simple slope analyses that probed the interaction were also consistent in showing that retiring (vs. remaining employed) predicted steeper declines in episodic memory (*b* = -.31, *SE* = .127, *p* = .014) for only females high in goal disengagement. Although the substantive pattern remained the same, neither the three-way interaction (*b* = -.18, *SE* = .116, *p* = .126) nor the simple slope for females high in goal disengagement (*b* = -.10, *SE* = .066, *p* = .142) were significant for executive functioning in the doubly-robust analyses.

Separate BTACT test models. Supplemental analyses assessed Retirement Status x Goal Disengagement x Gender models for each of the seven separate tests of cognitive functioning: immediate recall, delayed recall, inductive reasoning, category verbal fluency, working memory span, processing speed, and attention switching and inhibitory control. Results yielded three-way interactions for immediate recall (b = -1.47, SE = .576, p = .011) and processing speed (b = -3.25, SE = 1.61, p = .045). The interaction for delayed recall exhibited the same pattern but was not significant (b = -1.08, SE = .667, p = .106). Simple slope analyses showed that, for only women high in goal disengagement, retirement predicted significant declines in delayed recall (b = -1.41, SE = .369, p < .001) and marginal declines in immediate recall (b = -0.62, SE = .321, p = .055), and processing speed (b = -1.61, SE = .900, p = .074). Three-way interactions were not observed for working memory, verbal fluency, inductive reasoning, or attention switching and inhibitory control (*p*s > .05).

Latent variable models. Supplemental analyses were conducted to test whether our findings were consistent when episodic memory and executive functioning were treated as latent variables that accounted for measurement error. Results were consistent with the main analyses and yielded a significant Retirement Status x Goal Disengagement x Gender interaction for episodic memory (b = -.72, SE = .320, p = .025) but not for executive functioning (b = -.13, SE = .082, p = .110). Simple slope analyses indicated that retirement predicted significant declines in episodic memory (b = -.95, SE = .279, p = .001) and marginal declines in executive functioning (b = -.12, SE = .073, p = .094) for only those who were prone to goal disengagement and female.

We also tested whether findings were consistent when both goal disengagement and the cognitive functioning variables were treated as latent. Results were in line with the main analyses and yielded a marginal Retirement Status x Goal Disengagement x Gender interaction for episodic memory (*b* = -1.53, *SE* = .899, *p* = .089) and executive functioning (*b* = -0.42, *SE* = .205, *p* = .041). Simple slope analyses indicated that retirement predicted declines in episodic memory (*b* = -1.20, *SE* = .383, *p* = .002) and executive functioning (*b* = -0.20, *SE* = .090, *p* = .024) for only those who were prone to goal disengagement and female.

Occupation models. Supplemental analyses tested whether retirement status effects differed based on the (former) occupation of retirees and employees. Analyses were conducted with dummy-coded retirement status variables that reflected retiring from a professional job (R-P), remaining employed in a professional job (E-P), or remaining employed in a non-professional job (E-NP). The reference group for the dummy-coded analyses was retired non-professionals.

A consistent pattern of results emerged for both outcome measures. Specifically, E-P x Goal Disengagement x Gender interactions were significant for episodic memory (*b* = .87, *SE* = .336, *p* = .010) and executive functioning (*b* = .42, *SE* = .167, *p* = .013). Simple slope analyses showed that retiring from non-professional jobs (vs. remaining employed in professional jobs) was associated with steeper declines in episodic memory (*b* = .55, *SE* = .201, *p* = .006) and executive functioning (*b* = .22, *SE* = .101, *p* = .034) for only those who were prone to goal disengagement and female. In other words, women high in goal disengagement who retired from non-professional jobs experienced greater cognitive declines than those who remained employed in professional jobs that typically involve higher levels of mental stimulation.

R-P x Goal Disengagement x Gender and E-NP x Goal Disengagement x Gender interactions were not observed for episodic memory or executive functioning (*p*s > .05). This suggests that female retirees high in goal disengagement who retired from non-professional jobs were not more prone to cognitive decline than their peers who retired from professional jobs or who remained employed in non-professional jobs that typically involve lower levels of mental stimulation.

One caveat when interpreting the occupation model results is that certain non-professional jobs, such as an auto-mechanic, involve processing novel information and may involve comparable levels of cognitive stimulation to professional jobs (Oltmanns et al., 2017). Future research is needed to conduct a more systematic examination of whether retirement status effects differ based on both the type of occupation as well as the degree of novel information processed as a function of the occupation.

Discussion

Retirement and Cognitive Decline

Our study is among the first to employ a propensity score matching approach to examine longitudinal differences in cognitive functioning between middle-aged and older adults who transition to retirement relative to their peers who remain employed. This approach may provide a better common ground to compare samples that may otherwise differ on a variety of influential demographic and health variables (Wang & Shi, 2014; West et al., 2014). In other words, propensity score matching facilitated a comparison of our matched samples by ensuring a region of common support that involved overlapping distributions on age, gender, education, income, occupation, and health status (Lee & Little, 2017).

Findings from our propensity score matched samples suggested that retiring does not necessarily increase risk of cognitive decline. We observed a small but non-significant difference in cognitive functioning between those who retired and their peers who remained employed. Our results differ somewhat from previous research that found significant differences between these groups in analyses that controlled for but did not match on many of the same variables (e.g., Fisher et al., 2014; Rennemark & Berglund, 2014; Wickrama et al., 2013). However, it is interesting to note our preliminary correlational analyses that were based on the pre-matched samples were consistent with this literature, in that retiring (vs. remaining employed) was associated with reduced cognitive functioning at the end of the nine-year follow-up period. Taken together, the present findings point to the value of matching samples of retirees and employees to ensure a region of common support on potential confounding variables and thereby improve comparability (Lee & Little, 2017). Results also point to the role of important factors that may moderate the relationship between retirement and cognitive decline.

Adaptive and Maladaptive Goal Disengagement

These findings are also consistent with previous research and theory that suggests goal disengagement plays a complex role in shaping adaptive development. Goal disengagement is theorized to be adaptive when opportunities to influence (engage with) the environment are limited and there is a need to relinquish unattainable goals (Barlow, Wrosch, & McGrather, in press; Wrosch et al., 2003). Conversely, goal disengagement is maladaptive when opportunities for engagement are plentiful, such as during retirement (Hamm et al., 2019; Wrosch et al., 2000). Ending one’s career provides increased time and autonomy to invest in new goal pursuits involving personal relationships, health, or hobbies that keep the individual cognitively engaged and challenged (Lachman, 1986; Kim & Moen, 2001). Failure to capitalize on such opportunities is detrimental and can undermine fundamental resources such as cognitive skills.

The Protective Role of Work for Women Prone to Goal Disengagement

It is important to note that women prone to goal disengagement who remained employed were protected against cognitive declines. In fact, these women maintained relatively high levels of cognitive functioning in comparison to their peers (see Figure 2). This suggests that structured tasks inherent in daily work life may serve as a protective resource for women with strong tendencies to disengage from challenging tasks and goals who may otherwise be at risk of accelerated cognitive declines.

Cognitive Functioning in Male Retirees High in Goal Disengagement

Our results indicate that male retirees high in goal disengagement were not at greater risk of cognitive declines than their employed peers, which is in contrast to the differences observed among women. These divergent results may be due to several sociodemographic and motivation factors that have the potential to protect disengaged male retirees from cognitive declines. For example, consistent with broader trends in the American population (Eichner & Robbins, 2015; U.S. Census Bureau, 2014), the socioeconomic status of men tended to be higher than that of women in our study. This was reflected by small but consistent gender associations that favored men in terms of education (r = -.11), income (r = -.16), and occupation (r = -.09). Men in our study also reported lower levels of trait-like goal disengagement than women (r = .17). This may have important implications when combined with men's greater tendency to adopt and actively pursue concrete post-retirement goals that may help to sustain cognitive functioning (Hershey et al., 2002; Wang & Shi, 2014; cf., Nicolaisen et al., 2014). Male retirees high in goal disengagement may thus be protected from cognitive decline in part as a function of (a) their higher SES, (b) their higher likelihood of engaging with concrete and stimulating new goals, and (c) a slightly greater tendency to persist with (not disengage from) these goals when they become challenging.

Associations Between Retirement, Episodic Memory, and Executive Functioning

Although the pattern of results was consistent for both indicators of cognitive functioning, some interesting differences emerged in terms of effect size and robustness. Effects were more pronounced and reliable for episodic memory than for executive functioning. Retirement (vs. remaining employed) was associated with a 0.41 *SD* decline in episodic memory and a 0.14 *SD* decline in executive functioning for women prone to goal disengagement. These differential effects may be a function of previously documented lifespan changes in episodic memory and executive functioning.

Research by Hughes et al. (2018) showed that episodic memory was relatively stable in early adulthood and early midlife. However, declines began to emerge around retirement age in late midlife (50s and 60s) and became more pronounced in old age. This suggests that late midlife (retirement age) may reflect a critical developmental window wherein episodic memory is vulnerable to decline in the absence of active cognitive engagement. Previous studies show that such losses can be mitigated by mentally stimulating work or leisure activities (Fisher et al., 2014; Lachman et al., 2010). Women prone to goal disengagement who may struggle to self-initiate or maintain leisure activities in retirement may have thus been protected from declines in episodic memory by remaining employed in late midlife (Wang & Shi, 2014).

Findings by Hughes et al. (2018) et al. showed that executive functioning exhibited a markedly different pattern of change across the life span. Declines for executive functioning began two decades earlier (30s and 40s) and continued at a faster rate than for episodic memory. This suggests that the developmental window wherein executive functioning appears vulnerable to initial decline occurs in early midlife, well before the typical retirement age (Wang & Shi, 2014). Stable trajectories of executive functioning decline that begin earlier in the adult life span may thus be less affected by changes in work status that occur in late midlife and early old age. Even so, it is interesting to note that although the effects were weaker, the observed pattern of results for executive functioning were consistent in suggesting that retiring was associated with steeper declines for women prone to goal disengagement.

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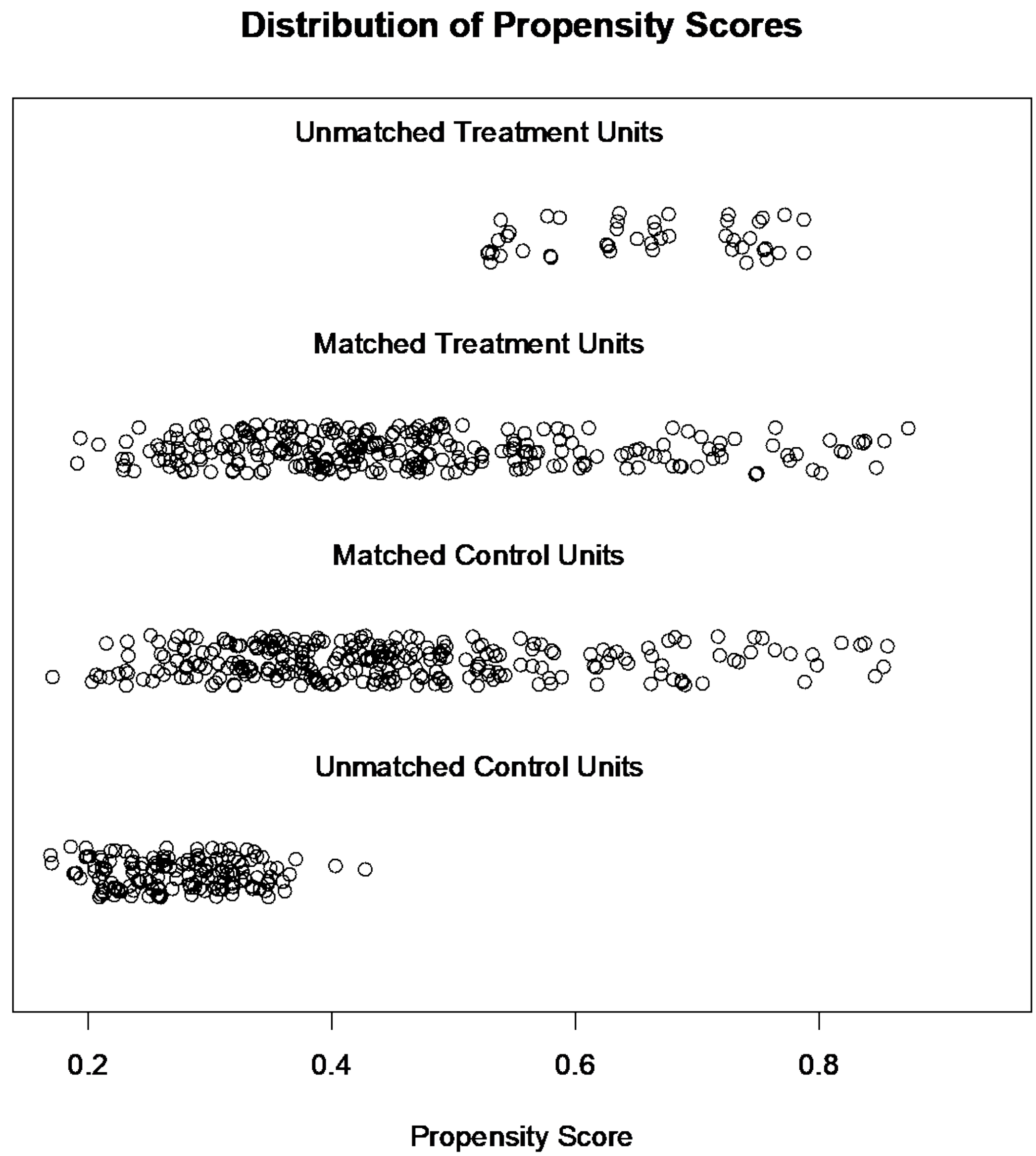

Figure S1. Distribution of propensity scores for matched and unmatched participants in the analyzed sample. Note that treatment units refer to participants who were employed and subsequently retired, and control units refer to participants who remained employed.

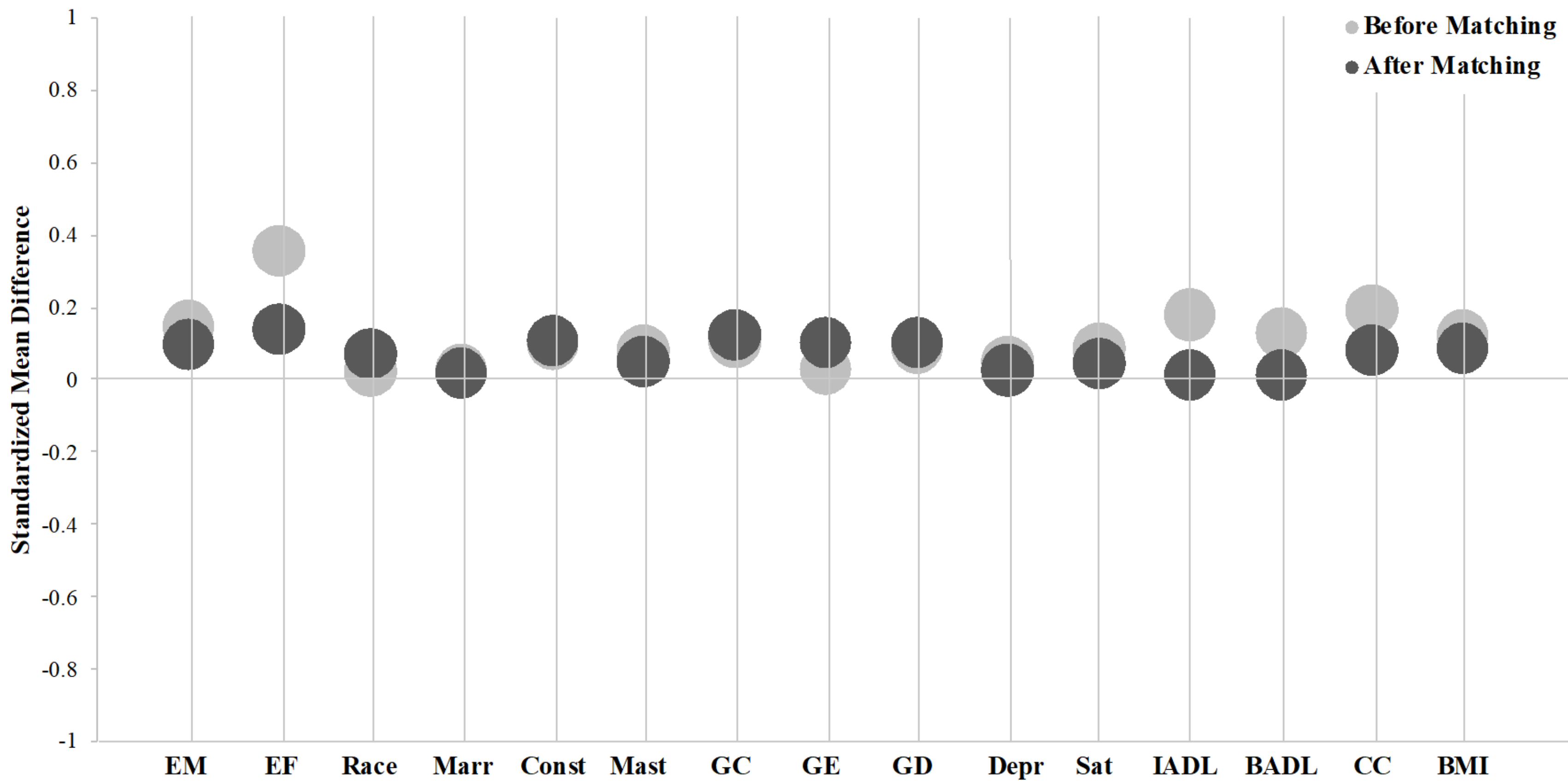

Figure S2. Standardized mean differences before and after matching. The matched samples did not differ on baseline: episodic memory (EM), executive functioning (EF), race, marriage (Marr), perceived constraints (Const), perceived mastery (Mast), goal commitment (GC), goal engagement (GE), depressive symptoms (Depr), life satisfaction (Sat), independent activities of daily living (IADL), basic activities of daily living (BADL), chronic conditions (CC), or body mass index (BMI) (all *p*s > .05).