

UCLA

UCLA Previously Published Works

Title

Control Strategies and Adulthood Depression: The Moderating Role of Age

Permalink

<https://escholarship.org/uc/item/1n9123v1>

Journal

Undergraduate Research Journal of Psychology, 10(1)

Author

Mesa-Buitrago, Daniel

Publication Date

2023-07-01

Peer reviewed

Control Strategies and Adulthood Depression: The Moderating Role of Age

Daniel Mesa-Buitrago

Clark University

Research illustrates how the way people seek to control personal goal attainment via different control strategies (e.g., primary and secondary) can influence the onset of adulthood depression. Research exploring these relationships is extensive but limited in exploring how they may differ across stages of adult development and has not considered certain subtypes of control strategies. Using a nationally representative sample from the Midlife in the United States study, we explored how different control strategies relate to depression across adulthood and examined whether age moderated this relationship. The results revealed that specific control strategies, such as compensatory primary control, acted as protective factors against depression, while others, like compensatory secondary control (goal adjustment), were found to be associated with increased depressive symptomology. Further, the moderation analysis demonstrated that the ability to maintain a motivational commitment to a goal was predictive of lower depression in young and middle adulthood, whereas a higher ability to disengage from unattainable goals was predictive of higher depression in young adulthood. We discuss the implications that these findings have in furthering our understanding of control strategies and depression, and how they may be used in applied settings such as in psychotherapy.

Keywords: Control strategies, depression, predictive ability, moderation, age

The adaptive management and attainment of personal goals across the adult lifespan is a critical component for healthy development. Failure to obtain these personal goals can lead to the onset of negative mental health outcomes such as depression, in which case the individual must be able to successfully disengage and focus their mental resources elsewhere in order to preserve their psychological well-being. In this paper, we explore the relationship between lifespan developmental control strategies and depressive symptomology among an age varied adult sample.

Control Strategies and Successful Lifespan Development

The motivational theory of life-span development (MTLD) is a theoretical model which details a framework for exploring individual agency throughout development (Heckhausen et al., 2010). Consistent with other action-oriented developmental approaches, this model views the individual as having an active role in shaping their own development (Brandtstadter, 1998; Freund & Baltes, 2002; J. Heckhausen, 1999; Lerner & Busch-Rossnagel, 1981). Specifically, the underlying idea of the MTLD is that throughout life, individuals seek to control their own development through action cycles involving either engaging or disengaging from developmental goals. This

process of engaging or disengaging from a chosen goal, then activates a set of appropriate control strategies (J. Heckhausen, 1999; Wrosch & Heckhausen, 1999).

These control strategies consist of two distinct subtypes: primary and secondary control. Primary control refers to processes directed at changing and controlling the external environment to be in line with oneself or one's wishes. In contrast, secondary control refers to processes that aim to conform oneself with the external environment and circumstances (Rothbaum et al., 1982). Primary and secondary control strategies both involve cognition and action, however primary control is mainly conceptualized as tangible action, whereas secondary control is typically seen as an internal cognition. The main purpose of both primary and secondary control is to facilitate the attainment of goals and the disengagement of goals that are no longer realistic, or unattainable, respectively. (Heckhausen, 1999).

Whether a goal is deemed attainable or not is dependent on a myriad of factors which include time and resources. Ultimately, life is short, and resources are scarce, so individuals must assess whether the investment of their time and resources to a particular goal is worth sustaining. There may be constraints related to why a goal becomes unattainable, such as loss of bodily function, or new familial responsibilities, or

perhaps, constraint is related to the contextual environment that the individual finds themselves in (Baltes & Baltes, 1990).

Of the control strategies, there are three that serve to directly facilitate goal attainment. First, selective primary control involves the investment of internal resources such as time and effort to achieve a goal (e.g., training daily to run a marathon, attending class and taking notes). Next, compensatory primary control refers to the use of external resources such as recruiting others or using technical aids to achieve a goal (e.g., lip reading to compensate for a hearing disability). Lastly, selective secondary control involves internal cognitive strategies aimed at increasing one's motivational commitment to a chosen goal by enhancing its value, while devaluing possible alternative goals (e.g., valuing alternative goals as less important than the primary goal) (Wrosch, 2002).

Goal disengagement strategies, namely compensatory secondary control (CSC), differ in that they facilitate goal attainment indirectly. This is accomplished through the process of disengaging from an unattainable goal to then reinvesting resources into a new, more obtainable goal to protect oneself from possible failure. CSC involves distinct protective mental strategies that are employed in the face of failure. These protective strategies fall into three distinct groups. One, CSC - disengagement is the strategy of disengaging from a now unattainable goal. Two, CSC - self protection involves mental strategies used to protect against feelings of failure in obtaining a goal such as avoiding self blame and focusing on potential success in other domains. Three, CSC - goal adjustment involves adjusting one's goals to an attainable alternative when the original is deemed unattainable.

An important consideration with the MTLT is the proposed hypothetical life-span trajectories for both primary and secondary control potential. According to this model primary control striving, or our desire to control the external environment, acts as the dominant motivator of behavior across the lifespan. Our potential to exert this control, or our primary control potential increases up until midlife (35-60 years of age) where adults have the greatest ability to exert control (Lachman et al., 2015; Heckhausen, 1999). During this stage, the ability to enact primary control plateaus, and as the individual continues to age from midlife to old age, their ability to exert primary control decreases over time into old age despite primary control striving staying constant (Heckhausen, 1999). This decrease in primary control potential in old age stems from the general nature of aging. Older age is often related to an increase in developmental constraints and irreversible age-related losses and health issues which would limit the individual's ability to exert primary control (Baltes, 1987; Heckhausen et al., 2010). As the discrepancy between primary control potential and primary control striving widens in older age the individual must recruit secondary control strategies to maintain a motivational commitment to their selected goals and thus maintain their primary control striving. Moreover, as certain goals become unattainable due to age-related limitations, the individual must disengage from them in favor of pursuing

more age-adapted goals. In this process individuals resort to secondary control strategies of adjusting expectations and values or simply disengaging (Heckhausen et al., 2010).

Control Strategies and Depression Across Adulthood

Depression is defined as a mood disorder that is characterized by suppressed mood, reduced ability to experience pleasure (i.e., anhedonia), decreased energy, and feelings of guilt or low self-worth. The World Health Organization identifies depression as the leading cause for disability in the world, with over 322,000,000 people suffering from the disorder globally (World Health Organization, 2008; Geneva: World Health Organization; 2017). The National Health Interview Survey found that when excluding those in emerging adulthood, the ratio of adults who experienced either mild, moderate, or severe symptoms of depression in the past two weeks was highest among those aged 45–64 at 18.4%, followed by those 65 and over also at 18.4%, and lastly, by those aged 30–44 at 16.8% (Villaruel MA, Terlizzi EP, 2020). With depression being prevalent across the entirety of adulthood, researchers have aimed to explore how factors like control strategies and age relate to depression. Existing research has been able to detail how certain control strategies relate to depression as well as the role that age has in these associations.

The successful attainment of important life goals (e.g., working towards upward growth in the job environment, starting a family) is of critical importance for successful development among adults across the lifespan. To achieve one's goals, selective and compensatory primary control strategies must be employed. However, if one's perceived ability to assert primary control strategies over their environment is threatened or reduced due to new physical or cognitive resource constraints, then the individual now faces an increased risk of failure to obtain their goals. Given that depressive symptomology may emerge in the wake of failing to obtain a goal, selective and compensatory primary control strategies are then negatively associated with depression. Research has supported this notion by establishing that both selective and compensatory primary control improve health and functional capacity by virtue of reducing depressive symptomology (e.g., Pakenham, 1999; Wrosch et al., 2002; Wrosch, Miller et al., 2007). Similarly, Gitlin, Hauck, Dennis, and Schulz (2007) found that within a sample of African Americans, primary control striving for maintaining day-to-day activities was protective against the development of depression for those who struggle with functional disabilities. Since selective secondary control facilitates goal attainment similarly to selective and compensatory primary control, it functions in the same way when regarding depression by reducing the risk of depression for individuals with high levels of selective secondary control (Wrosch et al., 2002). Thus, all three goal engagement strategies (eg., selective primary control, compensatory primary control, and selective secondary control) are protective against depressive symptomology.

When individuals face loss of control or a chosen goal now becomes unattainable (eg., decreased fertility at midlife, college major being too difficult), they can maintain their subjective well-being and combat depressive symptomology by disengaging from the goals that have been rendered unattainable and then re-investing those mental resources back into other goals (Brandtstadter & Rothermund, 1994; Carver, La Voie, Kuhl, & Ganellen, 1988; de Rijk, Le Blance, Schaufeli, & de Jonge, 1998; J. Heckhausen et al., 2001; Thompson et al., 2006; Wallace & Bergeman, 1997; Wrosch et al., 2005; Wrosch & Heckhausen, 1999; De de Pontet, 2007; Wrosch, Scheier, Miller et al., 2003; Wrosch & Miller, 2009). This process allows for the maintenance of primary control potential because, although attainment of a goal was failed, reinvestment of resources, and engagement into a new goal provides further opportunity to enact primary control and achieve this newly selected goal. Although the relationship between CSC - goal disengagement and depression is clear, research has not explored the relationship between the other specific CSC types (e.g., self protection and goal adjustment). However, using conceptually parallel research we can make assumptions about how these CSC types may relate to depression. For example, self blame in the context of a traumatic experience such as sexual abuse, has been linked to increased depression (Alix, et al., 2019). Aspects of Cognitive Behavioral Therapy (CBT) focus on thought challenging by reminding the individual of their strengths and talents. Thus, since CSC - self protection involves strategies, such as blame avoidance, and focusing on successes in other domains, we can infer that there is a negative association between CSC - self protection and depression. Similarly, although the process of goal adjustment is relatively unexplored, research has identified how re-engaging into attainable goals after disengaging from an unattainable goal is protective against depression.

Although the current literature demonstrates that both primary and secondary control strategies are adaptive behaviors that may combat depression by maintaining levels of primary control striving, less is known about how age may impact the relationship between control strategies and depression. Consistent with the developmental trajectory of both primary and secondary control, it is known that the adaptive value of each control strategy may differ with age (Heckhausen et al., 2010). When primary control potential decreases with age after midlife, secondary control becomes increasingly important to goal attainment in older age by maintaining existing primary control (Heckhausen et al., 1999). Additionally, as goals become increasingly unattainable in older age, secondary control also gains importance by enabling the individual to disengage from unattainable goals and reinvest their cognitive resources into more pursuable endeavors. Therefore, age may impact the relationship between control strategies and depression such that certain control strategies may predict lower depression only in certain age groups. For example, higher primary control may be more protective against depression in younger aged adults compared to older aged

adults because of the available resources which facilitate primary control such as time, energy, and physical/cognitive capabilities. In contrast, higher capacity for secondary control strategies may be more protective against depression in older age due to the increased need for both positive appraisals in the face of failure, and the ability to disengage from unattainable goals as they become more present.

The Present Study

Although existing research has established a relationship between control strategies and depression, it has its limitations. First, research has not explored how all primary and secondary control strategies relate to depression in one cohesive study. Secondly, the three distinct subtypes of compensatory secondary control (e.g., disengagement, self protection, goal adjustment) have been overlooked in existing literature regarding depression. Finally, research regarding control strategies and depression overlooks the role that age may have in moderating the existing relationship, and whether it is consistent with the developmental trajectories of primary and secondary control strategies.

Thus, the present study aims to build upon the existing body of work by exploring relationships between all control strategies and depression among an age varied adult sample. We hypothesized (a) an inverse relationship between goal engagement strategies and depression such that higher levels of goal engagement would predict lower depression scores. Similarly based on the adjacent literature we hypothesized that (b) compensatory secondary control and its sub-types would also predict lower depression. Both hypotheses are based upon the premise that the use of both primary and secondary control strategies at appropriate moments or action phases of goal attainment and disengagement are critical adaptive behaviors that may protect against depression by facilitating the pursuit of personal goals and maintaining levels of primary control striving. In considering the developmental trajectories of both primary and secondary control strategies we also hypothesized that (c) age would moderate the relationship between secondary control strategies and depression such that a higher capacity for secondary control strategies would be more protective against depression in older adults versus younger adults since the adaptiveness of secondary control strategies varies/increases with age. In contrast, we did not expect age to moderate the relationship between primary control strategies and depression since primary control striving stays constant throughout the lifespan meaning that primary control strategies would always be adaptive regardless of age.

Method

Participants and Data

This study utilized nationally representative data from the

Table 1

Mean, Standard Deviation, and Ranges of the Relevant Variables

Construct	<i>M</i>	<i>SD</i>	Minimum	Maximum
SPC	3.18	0.56	1.00	4.00
CPC	2.35	0.57	1.00	4.00
SSC	2.79	0.61	1.00	4.00
CSC Disengagement	2.45	0.50	1.00	4.00
CSC Self Protection	2.95	0.56	1.00	4.00
CSC Goal Adjustment	2.17	0.66	1.00	4.00
Age	50.5	14.4	23.00	76.00
Depression	0.79	1.94	0.00	7.00

Note: SPC = Selective Primary Control, CPC = Compensatory Primary Control, SSC = Selective Secondary Control, CSC = Compensatory Secondary Control.

National Survey of Midlife Development in the United States (MIDUS) public dataset (Brim et al., 1996). Originally established from 1994-1995, the MIDUS study was conducted as a national longitudinal study regarding the health and well-being of midlife Americans. Initial MIDUS participants were selected through random-digit-dialing and included noninstitutionalized, English-speaking adults living in the contiguous 48 states. Data was collected from a sample of 4242 adults, aged 25 to 74, via an initial telephone interview and a follow-up mail questionnaire. The second wave of data collection included a total of 1255 participants and recruited them from 2004-2005. Then, in 2011, the MIDUS refresher recruited 3,577 participants, and was meant to serve as a replacement for the original MIDUS 1 baseline cohort.

The analysis sample for the present study consisted of data from the MIDUS refresher and included 3,577 participants (53.3% female, mean age = 50.5 years, *SD* = 14.4). The sample was roughly 95% White. Educational attainment across the sample was varied. 5.2% of participants had not graduated high school, 18% had obtained a GED or high school diploma, 18.3% had some college education, 12% graduated from a 2-year college or vocational school, 23.2% had graduated from a 4 or 5 year college program or bachelor's program, and lastly, 17.8% had graduate level education.

Measures

To administer a survey with such a wide scope, MIDUS researchers conducted a series of 6 pilot studies to create and test abbreviated measures of key psychological and social constructs. Given the extensive testing of the measures, there is high confidence in the validity and reliability of all the

measures and variables used for analysis. In the present study primary and secondary control strategies, depression, and age were used as the primary variables. The measures included in this study are presented below, and Table 1 displays the relevant descriptive statistics.

Selective Primary Control [C1SSPCTR]: This 5-item scale captures one's perceived ability to exert selective primary control or invest internal cognitive resources in pursuit of a goal. Participants were asked to rate how well the given statements describe them. Scores were measured on a 1-4 likert scale where 1 = "A lot" and 4 = "Not at all". Sample items include the statement "Even when I feel I have too much to do, I find a way to get it all done" (Cronbach's α = .784, *N* = 2703) (Heckhausen et al., 1998).

Compensatory Primary Control [C1SCPCTR]: This 5-item scale captures one's perceived ability to exert compensatory primary control or recruit others and technical aids in pursuit of a goal. Participants were asked to rate how well the given statements describe them. Scores were measured on a 1-4 likert scale where 1 = "A lot" and 4 = "Not at all". Sample items include the statement "Asking for help comes naturally to me". Scales were constructed by calculating the mean of the values of the items in each scale. All items except ones marked with (R) were reverse-coded so that high scores reflect higher standing in each dimension. (Cronbach's α = .749, *N* = 2700) (Heckhausen et al., 1998).

Selective Secondary Control [C1SSSCTR]: This 3-item scale captures one's perceived ability to maintain selective secondary control or motivational commitment to a chosen goal. Participants were asked to rate how well the given statements describe them. Scores were measured on a 1-4 likert scale where 1 = "A lot" and 4 = "Not at all". Sample items include the

statement "When I have decided on a goal, I always keep in mind its beliefs". Scales were constructed by calculating the mean of the values of the items in each scale. All items except ones marked with (R) were reverse-coded so that high scores reflect higher standing in each dimension (Cronbach's $\alpha = .598$, $N = 2696$) (Heckhausen et al., 1998).

Compensatory Secondary Control – Disengagement [C1SCSCDE]: This 6-item scale reflects one's perceived ability to disengage from unattainable goals. Participants were asked to rate how well the given statements describe them. Scores were measured on a 1-4 likert scale where 1 = "A lot" and 4 = "Not at all". Sample items include the statement "I stop thinking about a goal that has become unattainable and let it go". All items except ones marked with (R) were reverse-coded so that high scores reflect higher standing in each dimension (Cronbach's $\alpha = .606$, $N = 2701$) (Heckhausen et al., 1998).

Compensatory Secondary Control - Self Protection [C1SCSCSP]: This 5-item scale reflects one's perceived ability to create mental self protective strategies in the face of failure to obtain a goal. Participants were asked to rate how well the given statements describe them. Scores were measured on a 1-4 likert scale where 1 = "A lot" and 4 = "Not at all". Sample items include the statement "I can find something positive, even in the worst situations". All items except ones marked with (R) were reverse-coded so that high scores reflect higher standing in each dimension (Cronbach's $\alpha = .714$, $N = 2703$) (Heckhausen et al., 1998).

Compensatory Secondary Control - Adjustment of Goals [C1SCSCAG]: This 3 item scale measures one's perceived ability to adjust their goals to a more obtainable alternative. Participants were asked to rate how well the given statements describe them. Scores were measured on a 1-4 likert scale where 1 = "A lot" and 4 = "Not at all". Sample items include the statement "To avoid disappointments, I don't set my goals too high".

All items except ones marked with (R) were reverse-coded so that high scores reflect higher standing in each dimension (Cronbach's $\alpha = .570$, $N = 2702$) (Heckhausen et al., 1998).

Depression: This depression scale consisted of two 7 item subscales for depressed affect ([C1PDEPAF]) and anhedonia ([C1PANHED]) that were administered via telephone interview. For the depressed affect items, participants were primed with the stem statement "During two weeks in the past 12 months, when you felt sad, blue, or depressed, did you..." and were then asked to give yes or no responses to the provided statements. Sample depressed affect items include "have more trouble falling asleep than usual?". For the anhedonia items, participants were primed with the stem statement "During two weeks in the past 12 months, when you lost interest in most things, did you..." and were then asked to give yes or no responses to the provided statements. Sample anhedonia items include "feel down on yourself, no good, or worthless?". Scores from each subscale were totaled from 0-7 and then averaged to create a composite depression score ([C1PDEPRE]) between 0-7 (WHO 1990).

Statistical Analyses

First, to obtain associations between all variables we ran a Pearson's correlation analysis.

Second, to test the hypothesis of both primary and secondary control strategies being predictive of lower depression, we regressed our depression variable on each of the individual primary and secondary control strategies using a linear regression model.

Third, to examine whether age moderated the relationships between control strategies and depression, we used a simple moderation analysis to look at the interactions between each individual control strategy and age in relation to

Table 2

Correlations Between All Control Strategies, Depression, and Age

Construct	1	2	3	4	5	6	7	8
1. SPC	-							
2. CPC	.13**	-						
3. SSC	.54**	.20**	-					
4. CSC Disengagement	.10**	.18**	.21**	-				
5. CSC Self Protection	.57**	.25**	.47**	.34**	-			
6. CSC Goal Adjustment	-.17**	-.02	-.09**	.36**	-.06**	-		
7. Depression	-.09**	-.10**	-.05**	.01	-.11**	.12**	-	
8. Age	.03	.04*	-.01	.16**	.4*	.02	-.11**	-

Note: SPC = Selective Primary Control, CPC = Compensatory Primary Control, SSC = Selective Secondary Control, CSC = Compensatory Secondary Control.

* $p < .05$. ** $p < .01$.

Table 3

Predictive Validity: Standardized Regression Coefficients

Criterion	Predictor Variable						
	SPC	CPC	SSC	CSC - Disengagemen t	CSC - Self Protection	CSC -Goal Adjustment	Adj.R ^l
Depression	-.02	-.07**	.02	.01	-.09**	.11**	.02

Note: SPC = Selective Primary Control, CPC = Compensatory Primary Control, SSC = Selective Secondary Control, CSC = Compensatory Secondary Control.

* $p < .05$. ** $p < .01$.

depression. Furthermore, we used a simple slopes graph to further visualize the significant interactions. For the purposes of this analysis, the age variable was divided into three groups. The minimum age group was 24 years of age, the median age group was 51 years of age, and the maximum age group was 76 years of age. The two primary reasons for setting these age groups parameters were because of theoretical justifications, and because of our anticipated effect sizes for our analysis. Theoretically, the selected age groupings effectively reflect ages within distinct developmental stages, young adulthood, midlife, and late adulthood. Regarding the anticipated effect sizes, given previous literature we expected to find small effects. Utilizing the upper and lower extremes of age allowed us to better detect our effects by utilizing data points that deviated further from the mean. Doing so remains theoretically sound as age is not a static variable and is constantly changing. Thus, while our age groupings reflect the upper and lower bounds of the sample, in the population people may be older than 76 or younger than 24. This fact allows for the findings from our analyses to be applied to a more general sense within the population, as the upper and lower bounds are not the "extremes" within the population.

Measures

Correlations. Results from the Pearson's correlation analysis indicated that there were several correlated variables (see Table 2). Notably, both primary control strategies, selective secondary control, CSC – disengagement, and CSC – self protection were all positively correlated with each other at varying magnitudes. Interestingly, CSC – goal adjustment was negatively associated with all other control strategies except for CSC – disengagement, which it was positively correlated with. Looking at depression, there were negative correlations with selective primary control, compensatory primary control, selective secondary control, and CSC – self protection. It was unrelated to CSC – disengagement, and positively related to CSC – goal adjustment. Finally, depression was also negatively associated with age, indicating that within our sample, younger participants reported greater depression scores.

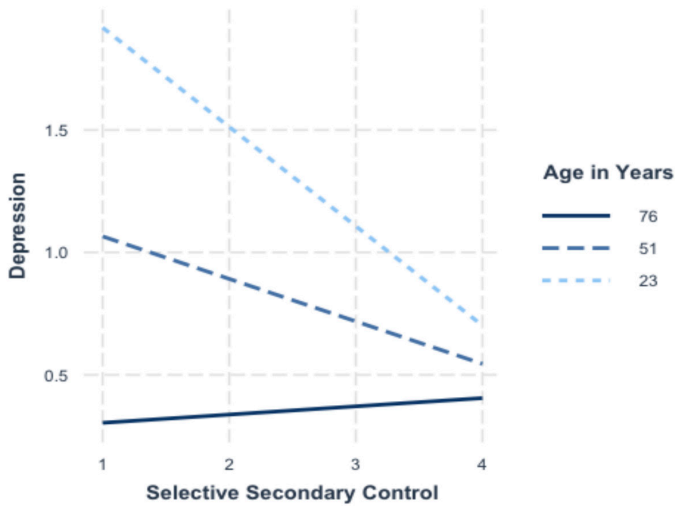
Predictive validity. Inconsistent with our hypothesis

regarding all goal engagement strategies being predictive of depression, the regression models revealed that only compensatory primary control strategies were predictive of depression ($\beta = -.07$, $SE = .07$, $p < .001$). Specifically, greater compensatory primary control strategies predicted lower depression scores. The analysis also showed that all but one of the compensatory secondary control strategies were significant predictors of depression. Consistent with our hypothesis, as the use of compensatory secondary control - self protection strategies increased, depression scores decreased ($\beta = -.09$, $SE = .08$, $p < .001$). In contrast, as compensatory secondary control - goal adjustment strategies increased, depression scores also increased ($\beta = .11$, $SE = .06$, $p < .001$) which was inconsistent with our prediction. See Table 3 for all of the coefficients.

Moderation Analysis. The moderation analysis revealed that only secondary control strategies were moderated by age. Firstly, there was a significant interaction between selective secondary control and age when predicting depression ($\beta = .00187$, $SE = 7.36e-4$, $p = .011$) such that higher levels of selective secondary control predicted lower levels of depression for participants in the minimum age group (23 years old) and the median age group (51 years old) but not for those in the maximum age group (76 years old) (see figure 1). Furthermore, results showed another significant interaction between compensatory secondary control - disengagement and age when predicting depression ($\beta = .00189$, $SE = 8.78e-4$, $p = .031$) such that higher levels of compensatory secondary control - disengagement were predictive of higher levels of depression only for participants in the minimum age group (23 years old) but not for those in the median or maximum group (51 and 76 years old, respectively) (see figure 2). Although secondary control strategies being moderated by age was in-line with our hypothesis, we did not predict selective secondary control to be more protective against depression in younger and middle age as opposed to older age, nor did we expect goal disengagement to act as a risk factor for depression in younger age.

Figure 1

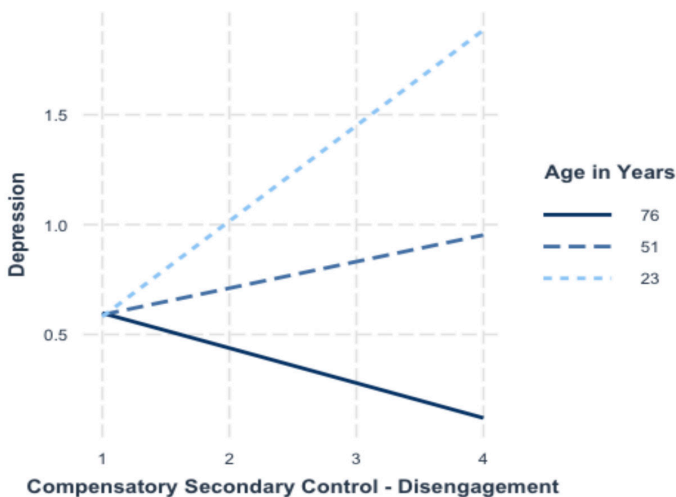
Interaction between selective secondary control and age when predicting depression.



Note: Values across the X and Y axes indicate score ranges for both variables.

Figure 2

Interaction between compensatory secondary control – disengagement and age when predicting depression.



Note: Values across the X and Y axes indicate score ranges for both variables.

Discussion

This study aimed to investigate the relationship between primary and secondary control strategies and depression, as well as to explore how age moderated such relationships. Findings revealed that certain primary and secondary control strategies were both predictive of depression, namely compensatory primary control, CSC – self protection, and CSC – goal adjustment. Furthermore, partially confirming our hypothesis,

we found that only the relationship between secondary control strategies and depression were significantly moderated by age, namely selective secondary control, and CSC – disengagement.

Control Strategies as Predictors of Depression

Results from the regression analysis were inconsistent with our original hypothesis surrounding goal engagement strategies. We believed that based on the literature, all goal engagement strategies would predict lower depression scores. Of these goal engagement strategies, only compensatory primary control strategies were predictive of lower depression. This inconsistency with the literature is surprising since compensatory primary control serves as a supplementary function to selective primary control which was not found to be a significant predictor of depression. Furthermore, selective secondary control, which also serves as a goal engagement strategy, was not a significant predictor either. Overall, this suggests that one's ability to recruit help from others may be important in protecting oneself from depression. Numerous correlational and longitudinal studies have supported this notion and have found that social support across adulthood is critical in protecting against depression (Gariépy, et al., 2018; Holahan & Holahan, et al., 1987). Thus, we can infer that individuals who lack the ability to recruit the help of others or technical aids will have or develop a weaker social support system, which increases risk of depression. Conversely, those who have a strong ability to recruit external help from others, will likely have or develop a stronger social support system, which could reduce risk of depression.

The findings from the regression analysis were also inconsistent with our hypothesis regarding compensatory secondary control strategies predicting lower depression. Firstly, CSC – disengagement alone was not a significant predictor of depression. Secondly, findings show that the hypothesized negative association between secondary control strategies and depression only held true for CSC – self protection. Thus, a higher perceived ability to create adaptive mental strategies such as avoiding self-blame and focusing on success in other domains when faced with failure in obtaining a goal predicted lower depression. This mirrors adjacent literature that establishes the same predictive relationship between blame avoidance in the context of traumatic experiences (E.g., sexual abuse), and depression (Alix, et al., 2019). In contrast, CSC – goal adjustment was positively associated with depression, meaning that a higher perceived ability for adjusting one's goals to a more obtainable alternative was predictive of higher depression. This finding is interesting as it suggests that there may be a fundamental difference between adjusting one's goals versus the act of disengaging and then re-engaging into a distinctly separate yet more attainable goal. CSC – goal adjustment, as measured by the scale used in the MIDUS study, reflects an almost negative outlook on adjusting one's goals to something easier to obtain. The measure items are framed in a way that make goal adjustment seem like an outcome stemming from

one's own inability to succeed in a particular domain (E.g., "When my expectations are not being met, I lower my expectations."; "To avoid disappointments, I don't set my goals too high."). This view of goal adjustment being a result of one's own inability or failure, is different to how goal re-engagement is conceptualized. Where goal adjustment may be seen as "I have to adjust my goals because I failed," goal re-engagement can be seen as a coping strategy for when an individual fails to obtain their original goal. Specifically, since failure to obtain one's goals can lead to feelings of distress and depression, an individual can cope by re-engaging into something more obtainable, thus negating feelings of failure by now accomplishing their new goal (Strauman, 2002). For example, someone who has a now unattainable goal of running 10 miles and adjusts their goal to only 5 miles, may feel as if the need to adjust their goals or lower their expectations serves as a reminder of their own failure/limitations, thus, causing them distress. Comparatively, the same person could instead choose to first disengage completely from their goal of 10 miles and re-engage into a separate more obtainable goal like learning how to play a new instrument or reading a new novel. Engaging in a new goal could be protective against feelings of distress and depression as it provides a clean slate from the individual's past failure. These findings suggest that research moving forward should explore these two constructs as separate psychological mechanisms.

The Moderating Rules of Age

Consistent with our final hypothesis, the findings from the moderation analysis showed that only secondary control strategies had a significant interaction with age when predicting depression. The first interaction was between selective secondary control and age such that a higher perceived ability for enacting selective secondary control strategies or maintaining a motivational commitment to chosen goals predicted lower depression in young adults (23 years old), and in middle aged adults (51 years old). Although this confirms our hypothesis, it challenges our original explanation. Since secondary control strategies become more necessary in later adult development due to a natural decline in primary control, we believed that the secondary control strategies would be more predictive of lower depression in older age. However, the interaction between selective secondary control and age shows the inverse of this. One explanation for these findings could have to do with how goal selection changes at different stages of adulthood. Typically, people in young adulthood have a more varied goal selection that encompasses multiple domains. These goals tend to be more long term and gain oriented in general (i.e., career goals or owning a home) (Peningroth & Scott, 2012). Having several longer-term goals requires a greater sustained motivational commitment to successfully attain them and reap the psychological benefits of doing so (e.g., greater perceived self-efficacy, positive emotional response). A lack of motivation could lead to a premature

disengagement from these long-term goals which could lead to feelings of failure and possibly depression. So, since these long-term goals require a sustained motivational commitment, selective secondary control then becomes critical in achieving these goals and maintaining emotional/psychological well-being. While research exploring changes in motivational domains have varied findings, studies have consistently found that younger aged adults tend to have greater motivations related to growth and advancement (Cornwell et al., 2022). Maintaining these motivations through selective secondary control then becomes essential for the successful attainment of these growth-oriented goals. In contrast, older adults have a narrower goal selection which include shorter term goals that are focused primarily on maintenance/loss prevention (e.g., continued participation in their church group) (Peningroth & Scott, 2012). Perhaps, these shorter-term goals require less of a motivational commitment to successfully be attained thus, selective secondary control becomes less critical as a protective factor against depression via the process of goal attainment. Further research on this front is required.

Although the initial regression revealed no main effect between goal disengagement and depression, the moderation analysis revealed that there was a significant interaction between CSC - disengagement and age when predicting depression. The analysis showed that a higher perceived ability to disengage from unattainable goals was predictive of higher depression in young adults (23 years old) but not for middle aged and older (51 and 76, respectively). We had predicted that secondary control strategies would be predictive of lower depression in older age, however these findings demonstrate the opposite in that CSC - disengagement predicted higher depression in younger age. This relationship could be explained by how perceptions of goal attainment expectations can change across the lifespan. Younger individuals are often taught to pursue longer term, more ambitious goals since they generally have more cognitive (e.g., long term and short term memory) and physical resources (E.g., physical health, and being able bodied) available to them (Peningroth & Scott, 2012; Murman, 2015). Thus, younger people may expect to be relatively successful in obtaining their chosen goals. So, when they perceive a goal to now be unattainable, they will be met with feelings of failure, and may disengage from their goals. Although disengagement is generally seen as a coping strategy, the very act of having to disengage from a goal that was perceived as readily obtainable may be a trigger for continued feelings of failure and subsequent depression. As shown by the previous moderation analysis, the ability to maintain a motivational commitment to and stick with your original goal is more adaptive when compared to disengaging in young adulthood. In contrast, an individual in older age may face a decline in both cognitive and physical resources that are essential in successful goal pursuit (Murman, 2015; Heckhausen, 1999). This lack of resources could lead to the presence of unattainable goals becoming more frequent. Thus, being able to successfully disengage from these more

frequent and expected unattainable goals and then reinvesting those limited resources elsewhere would in theory become more adaptive and beneficial in older age – or so we thought. As mentioned prior, the moderation analysis revealed that disengagement was not a significant predictor for depression at all in both middle and older age.

Limitations

There are several limitations within this study that should be addressed in future work. The first is with the selected sample. The MIDUS study and data is approximately 95% White with a mean household income of over \$80,000. While this pre-existing dataset offered a large and easily accessible sample, it is not representative of most adults within the United States.

Second, this research is non-experimental in design thus findings are only correlational. The nature of this correlational study means that it does not determine change over time between control strategies and depression, nor directionality of the relationship. Theoretically it would be important to pinpoint whether control strategies are driving the experiences in (or lack thereof) of depression, or if depression is driving the control strategy utilization.

Lastly, the data used for this study was from the MIDUS refresher which spanned from 2011-2014. As of 2023, this data set is nearly a decade old. Given the domestic and global changes seen within the last 10 years, findings may not be generalizable to a modern sample of participants.

Future Directions

Given the limitations, future research should aim to utilize a more representative sample regarding racial/ethnic make-up of the participants. It should also aim to recruit participants from a more diverse economic status to better reflect the financial standing of the average American. Finally, in terms of generalizability, a more recent sample is needed due to the sociocultural and political changes both domestic and globally over the last decade.

Future work should also aim to conduct longitudinal analysis using structural equation modeling to determine change over time between control strategies and depression, establish directionality, as well as to establish the causal factors that are driving changes in the relationships between control strategies and depression across the adult lifespan.

Future research should explore the differences between both constructs of goal adjustment and goal re-engagement to better understand how they function in regard to healthy and adaptive development. This study demonstrated that there may be a fundamental difference between compensatory secondary control - goal adjustment and the act of goal re-engagement. Although both serve the purpose of focusing one's cognitive resources on a more obtainable goal, the existing literature paired with our findings suggest that where

goal re-engagement is generally protective against feelings of failure and depression, goal adjustment may promote feelings of failure and depression since it is a direct result of one's own shortcomings. Similarly, research should continue to explore the compensatory secondary control subtypes to build a more general consensus on how they function in regard to goal attainment and adaptive development.

Lastly, future research should aim to implement our understanding of how control strategies relate to depression at different stages of adult development into the applied setting. Findings demonstrate how the relationship between control strategies and depression may differ depending on age, so a therapy that targets the development of different control strategies depending on the age of the individual may prove to be efficacious. For example, someone in early adulthood suffering from depression may benefit from a therapy that aims to enhance and maintain a motivational commitment to a chosen goal, or from a therapy that seeks to reduce goal disengagement. The use of a therapy model that targets control strategies, namely Primary and Secondary Control Enhancement Therapy (PASCET), has been used in the past, but has been targeted specifically at youth patients. PASCET methods aim to reduce mild-to-moderate child depression through an eight-session cognitive-behavioral intervention that aims to develop both primary and secondary control coping skills such as identifying and conscientiously engaging in activities that the child finds mood enhancing as well as identifying and modifying depressogenic thoughts (Weisz, et al., 1997). Guidelines and methods from PASCET could be adapted for use in adults suffering from depression, and certain primary and secondary control coping skills could be emphasized depending on the individual's age.

Conclusion

Building on previous research surrounding the motivational theory of life-span development, this present research expands our understanding of how primary and secondary control strategies relate to depression across the adult life span. This study sought to explore three primary hypothesis (a) goal engagement strategies (eg., selective and compensatory primary control, selective secondary control) and depression would exhibit a negative relationship (b) compensatory secondary control and its sub-types (eg., disengagement, self protection, goal adjustment) would also be negatively related to depression (c) age would moderate the relationship between secondary control strategies and depression but not the relationship between primary control strategies and depression. Our findings challenge the current literature by demonstrating how primary and secondary control strategies that are generally thought of as protective factors against depression, can be related to higher depression, as was the case with compensatory secondary control – goal adjustment and goal disengagement. We also found that the adaptiveness of secondary control strategies do not all follow the same

developmental trajectory outlined by the motivational theory of life-span development. Whereas the model outlines secondary control strategies to be more adaptive in older age, we found that selective secondary control was only a protective factor against depression in young and middle adulthood, and that goal disengagement was a risk factor for depression in young adulthood. Ultimately, our research underscores the importance of closely considering age as a factor when determining the adaptiveness of developmental control strategies across adulthood and emphasizes the need for further research to develop a generalizable consensus on the role of control strategies as protective/risk factors for depression.

Acknowledgements

This project would not have been possible without the overwhelming support from everyone who was involved in the development and editing of this research project. Specifically, big thanks to Dr. Catherine Good, my former undergraduate mentor for always supporting my research interests and long-term goals within psychology and academia. Thank you to Dr. Jacob Shane for providing me with his expertise in research surrounding adult lifespan development and for supervising the beginning stages of this project during my time as a Brooklyn College Research Experiences for Undergraduates mentee. Finally, thank you to my current advisor Dr. Amy Heberle for her continued support in this project and help with final edits and feedback.

References

- Alix, S., Cossette, L., Cyr, M., Frappier, J. Y., Caron, P. O., & Hébert, M. (2020). Self-Blame, Shame, Avoidance, and Suicidal Ideation in Sexually Abused Adolescent Girls: A Longitudinal Study. *Journal of child sexual abuse*, 29(4), 432–447. <https://doi.org/10.1080/10538712.2019.1678543>
- Baltes, P. B. (1987). Theoretical propositions of life-span developmental psychology: On the dynamics between growth and decline. *Developmental Psychology*, 23(5), 611–626. <https://doi.org/10.1037/0012-1649.23.5.611>
- Baltes, P. B., & Baltes, M. M. (1990). Psychological perspectives on successful aging: The model of selective optimization with compensation. In P. B. Baltes & M. M. Baltes (Eds.), *Successful aging: Perspectives from the behavioral sciences* (pp. 1–34). Cambridge University Press. <https://doi.org/10.1017/CBO9780511665684.003>
- Brandtstädter, J. (1998). Action perspectives on human development. In W. Damon & R. M. Lerner (Eds.), *Handbook of child psychology: Theoretical models of human development* (pp. 807–863). John Wiley & Sons Inc.
- Brim, Orville Gilbert, Baltes, Paul B., Bumpass, Larry L., Cleary, Paul D., Featherman, David L., Hazzard, William R., ... Shweder, Richard A. *Midlife in the United States (MIDUS 1)*, 1995- 1996. Inter-university Consortium for Political and Social Research [distributor], 2020-09-28. <https://doi.org/10.3886/ICPSR02760.v19>
- Dienberg Love, G., Seeman, T. E., Weinstein, M., & Ryff, C. D. (2010). Bioindicators in the MIDUS National Study: Protocol, measures, Sample, and comparative context. *Journal of Aging and Health*, 22(8), 1059–1080. <https://doi.org/10.1177/0898264310374355>
- Freund, A. M., & Baltes, P. B. (2002). Life-management strategies of selection, optimization and compensation: Measurement by self-report and construct validity. *Journal of Personality and Social Psychology*, 82(4), 642–662. <https://doi.org/10.1037/0022-3514.82.4.642>
- Gariépy, G., Honkaniemi, H., & Quesnel-Vallée, A. (2016). Social support and protection from depression: Systematic review of current findings in Western countries. *British Journal of Psychiatry*, 209(4), 284–293. doi:10.1192/bjp.bp.115.169094
- Gitlin, L. N., Hauck, W. W., Dennis, M. P., & Schulz, R. (2007). Depressive symptoms in older African-American and white adults with functional difficulties: the role of control strategies. *Journal of the American Geriatrics Society*, 55(7), 1023–1030. <https://doi.org/10.1111/j.1532-5415.2007.01224.x>
- Heckhausen, J. (1999). *Developmental regulation in adulthood: Age-normative and sociostructural constraints as adaptive challenges*. Cambridge University Press.
- Heckhausen, J., & Schulz, R. (1993). Optimization by selection and compensation: Balancing primary and secondary control in life-span development. *International Journal of Behavioral Development*, 16, 287–303.
- Heckhausen, J., & Schulz, R. (1995). A life-span theory of control. *Psychological Review*, 102, 284–304.
- Heckhausen, J., Schulz, R., & Wrosch, C. (1998). *Developmental regulation in adulthood: Optimization in primary and secondary control, a multiscale questionnaire*. Technical Report, Max Planck Institute for Human Development and Education, Berlin.
- Heckhausen, J., Wrosch, C., & Fleeson, W. (2001). Developmental regulation before and after a developmental deadline: The sample case of "biological clock" for childbearing. *Psychology and Aging*, 16(3), 400–413. <https://doi.org/10.1037/0882-7974.16.3.400>
- Heckhausen, J., Wrosch, C., & Schulz, R. (2010). A motivational theory of life-span development. *Psychological review*, 117(1), 32–60. <https://doi.org/10.1037/a0017668>
- Holahan, C. K., & Holahan, C. J. (1987). Self-efficacy, Social Support, and Depression in Aging: a Longitudinal Analysis. *Journal of Gerontology*, 42(1), 65–68. doi:10.1093/geronj/42.1.65
- James F. M. Cornwell, Emily Nakkawita, Becca Franks & E. Tory Higgins (2022) Motivation and well-being across the lifespan: A cross-sectional examination, *The Journal of Positive Psychology*, DOI: 10.1080/17439760.2022.2093787
- Kuwabara, S. A., Van Voorhees, B. W., Gollan, J. K., & Alexander, G. C. (2007). A qualitative exploration of depression in emerging adulthood: disorder, development, and social context. *General hospital psychiatry*, 29(4), 317–324 <https://doi.org/10.1016/j.genhosppsych.2007.05.003>

org/10.1016/j.genhosppsy.2007.04.001

- Lachman, M. E., Teshale, S., & Agrigoroaei, S. (2015). Midlife as a Pivotal Period in the Life Course: Balancing Growth and Decline at the Crossroads of Youth and Old Age. *International journal of behavioral development*, 39(1), 20–31. <https://doi.org/10.1177/0165025414533223>
- Lerner, R. M. (1981). *Individuals as producers of their development: A life-span perspective*. Acad. Pr.
- Murman D. L. (2015). The Impact of Age on Cognition. *Seminars in hearing*, 36(3), 111–121. <https://doi.org/10.1055/s-0035-1555115>
- Pakenham K. I. (1999). Adjustment to multiple sclerosis: application of a stress and coping model. *Health psychology : official journal of the Division of Health Psychology, American Psychological Association*, 18(4), 383–392. <https://doi.org/10.1037//0278-6133.18.4.38>
- Penningroth, S. L., & Scott, W. D. (2012). Age-Related Differences in Goals: Testing Predictions from Selection, Optimization, and Compensation Theory and Socioemotional Selectivity Theory. *The International Journal of Aging and Human Development*, 74(2), 87–111. <https://doi.org/10.2190/ag.74.2.a>
- Strauman TJ. Self-regulation and depression. *Self and Identity*. 2002;1(2):151–157.
- Weisz, J. R., Thurber, C. A., Sweeney, L., Proffitt, V. D., & LeGagnoux, G. L. (1997). Brief treatment of mild-to-moderate child depression using primary and secondary control enhancement training. *Journal of consulting and clinical psychology*, 65(4), 703.