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PRIMARY AND SECONDARY CONTROL STRATEGIES: IMPLICATIONS FOR HEALTH AND WELL-BEING AMONG OLDER ADULTS

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As people move into advanced old age, they face increasing levels of age-related activity restriction. It becomes important that older adults adjust their goal-striving to age-related control restrictions in order to optimize physical and psychological well-being in this advanced and final stage of life. Older adults may use a variety of different control strategies to adjust to age-related activity restriction, initially in attempts to accomplish tasks, and then to ameliorate the negative psychological consequences of being unable to do so. In this study, cluster analysis revealed four unique patterns of primary and secondary control strategy use among 190 very old (79–98 years) community-dwelling adults. The majority of individuals were classified in a *Primary Control Group* (42.1%) characterized by continued task persistence. Second, a *Multi-Strategy Group* (16.3%) endorsed a combination of modified primary control strategies and compensatory secondary strategies. Third, a *Relinquished Control Group* (22.1%) was characterized by the abandonment of primary strategies and only modest use of supplemental compensatory secondary strategies. Finally, a *Failure to Compensate Group* (19.5%)

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endorsed modified primary control strategies (i.e., task modification), but showed a marked de-emphasis of compensatory secondary strategies. We assessed each group's self-report control opportunities, as well as their physical and psychological well-being. Individuals in the Primary Control and Multi-Strategy groups reported better physical and psychological well-being relative to the Relinquished Control and Failure to Compensate groups, presumably because they achieved a better match between control strategies and objective control opportunities.

As individuals age, their capacity to directly control the environment can begin to slowly diminish. Age-related physical declines place constraints on abilities to complete routine daily tasks such as changing a light bulb or getting the mail. Responses to these ongoing age-related task difficulties require shifts in typical approaches to the challenge. For example, arthritis-related difficulty in opening a jar or turning on a tap likely results in initial use of effortful approaches involving task persistence. As these tasks become increasingly difficult for an arthritic individual, it is likely that he/she will begin to disengage from the goal and adopt compensatory approaches to cope with the unattainable goal. This would reflect a progression from what has been classified as primary control strategies to secondary control strategies (Rothbaum, Weisz, & Snyder, 1982; Heckhausen & Schulz, 1995).

The Life-Span Theory of Control (Heckhausen & Schulz, 1995) posits that individuals are motivated to actively influence their environment throughout the lifespan (primacy of primary control). However, changes in primary control potential as a result of maturation and aging necessitate adjustment of primary control goals (i.e., expanding goals with growing control potential, and restricting goals with declining control potential). Thus, a developmental progression is proposed in which primary control strategies are optimal when a goal or task can still be accomplished, and secondary control strategies become necessary to help the individual disengage when a goal is no longer attainable. With age-related losses in primary control potential, goal adjustment can occur in a variety of ways involving several qualitatively different strategies such as modifying the task, seeking help to complete the task, or physically and/or cognitively disengaging from the task. As individuals attempt to shift from goal engagement to disengagement, it is possible that multiple strategies are used in combination, with some

strategies being emphasized and others being de-emphasized. How are such control-strategies combined or used in isolation? And what combination is most beneficial for dealing with the stresses of age-related task restrictions?

The present study was designed to examine whether and how individuals combine qualitatively different primary and secondary control strategies to deal with ongoing age-related loss of control potential. The Life-Span Theory of Control proposes combinations of strategies that are most functional in situations with high vs. low control potential. Indeed, opportunity-congruent goal engagement (i.e., matching control strategies to one's objective control opportunities) has been shown to lead to positive outcomes (e.g., Heckhausen, Wrosch, & Fleeson, 2001; Wrosch & Heckhausen, 1999). However, individuals differ in the extent to which they adhere to such opportunity-congruent control behavior. The present study also examines the adaptivity of the emergent patterns of control strategy use in terms of the extent to which each pattern achieves a "match" with actual opportunities for control, and will consider the association between control strategy use and both physical and psychological well-being.

TRANSITIONS IN THE USE OF CONTROL STRATEGIES

The Life-Span Theory of Control (Heckhausen & Schulz, 1995, 1998) focuses on the utility of primary and secondary control strategies to facilitate goal striving. The theory suggests that, because human behavior is so variable and flexible, two requirements must be fulfilled in order to maximize goal striving. First, investment of behavioral resources must be selective because only a small number of goals can be successfully pursued at any given time. Second, in the event of unsuccessful goal striving, compensation for failure is necessary to reserve motivation for future goal striving (Heckhausen & Schulz, 1995, 1998). Both primary and secondary control processes are used to accomplish goal selectivity and failure compensation. Thus, crossing primary/secondary control with selectivity/compensation results in four categories of developmental regulation: selective primary, compensatory primary, selective secondary, and compensatory secondary.

Disengagement from a restricted activity goal occurs in stages that involve a sequential retreat from selective primary control strategies to compensatory secondary control strategies (Heckhausen, 2003). Goal engagement is sustained until it is no longer feasible, at which point the individual must begin an organized retreat behind the subsequent line of defense. Heckhausen (2003) suggests that the most adaptive pattern of retreat from a restricted activity goal involves five lines of defense. At Level 1, when behavior-event contingencies are possible, individuals attempt to completely overcome task restriction through *selective primary control* strategies that involve goal-directed investments of time, effort, and skills. However, as task failure begins to occur, individuals will begin a retreat to Level 2 that involves attempts to maintain self-reliance at the task. Empirical evidence suggests that individuals will attempt to modify constraints by changing their approach to a task (Chipperfied & Perry, 2006; Chipperfield, Perry, Bailis, Ruthig, & Chuchmach, 2007; Manini, Cook, VanArnam, Marko, & Ploutz, 2006). Although not explicitly specified by the theory, these "task modification" strategies may represent a specialized form of selective primary control because these strategies continue to involve proactive, goal-related investments of time, effort, and skill, albeit in a modified form (e.g., doing only the parts of the task that are possible, or doing the task less frequently or more slowly). In addition to these modified selective primary control strategies, Level 2 may also involve the incorporation of *selective secondary control* strategies in order to enhance the value of the chosen goal and safeguard motivational commitment to the goal.

When *selective* primary and secondary control strategies no longer lead to successful goal attainment, individuals will begin a transition to Level 3, using *compensatory* primary control strategies to maintain activities with the help of others and/or the assistance of a technical aid. As opportunities continue to decline and the task can no longer be accomplished with help, individuals will benefit from a retreat to Level 4 by abandoning the goal to focus on minimizing discomfort (both physical and psychological). This involves the adoption of *compensatory* secondary control strategies to offset the negative psychological effects of task failure (see Heckhausen, 1997; Heckhausen & Schulz, 1998; Peng, 1993; Wahl, Schilling, & Becker, 2007; Wrosch & Heckhausen, 1999). Finally, when the individual is severely restricted, and nothing more can be done, transition to

Level 5 occurs wherein control attempts are best re-directed at remaining as healthy as possible (i.e., delaying death).

Within the broad categories of selective and compensatory primary and secondary control exist a range of qualitatively different control strategies that can be used to negotiate these shifts in lines of defense. For instance, selective primary control could be accomplished via task persistence or task modification, while compensatory primary control could involve getting help from others, or using a technical aid such as a cane. In terms of selective secondary control, individuals may choose to enhance the target goal's value, or instead devalue other goals, while compensatory secondary control could involve a diverse range of strategies such as disengaging from the task, or finding benefit in one's situation. Thus it is possible that several different control strategy combinations exist as defined by differential emphasis and de-emphasis of a given set of strategies. Further, the extent to which any pattern of control strategy use matches existing objective control opportunities may have implications for adaptivity in terms of both health and well-being. That is, control strategy patterns that are opportunity congruent should be most adaptive (Heckhausen et al., 2001).

CONTROL STRATEGY COMBINATIONS, HEALTH, AND WELL-BEING

Several empirical studies suggest a connection between control strategy use, health, and well-being. For example, research by Wrosch, Schulz, and Heckhausen (2002) examined control strategy combinations among older individuals with high vs. low levels of acute health problems (see also Heckhausen et al., 2001; Wrosch & Heckhausen, 1999). Wrosch et al. (2002) assessed control strategies with the health engagement control scale (HECS), which is a composite measure of several qualitatively different health-related control strategies including selective primary, compensatory primary, and selective secondary. Findings suggested that use of HECS was beneficial for older adults with high levels of acute (i.e., controllable) health problems. The use of the HECS composite provides insight into an adaptive strategy combination for individuals with less severe and more reversible health-related constraints. However, because the HECS measure does not include compensatory second-

ary control strategies, use of this approach cannot address strategy combinations that would be best suited to individuals with more severe and irreversible constraints.

Chipperfield, Perry, and Menec (1999) also assessed control strategy combinations, comparing younger (i.e., less restricted) and older (i.e., more restricted) groups of elderly individuals. Chipperfield et al. (1999) created three mutually exclusive control-strategy groups by categorizing participants who used: (1) predominantly primary control (i.e., effort and task modification), (2) predominantly secondary control (i.e., goal disengagement through lowered expectations and acceptance), and (3) a combination of both primary and secondary control. Findings suggested that younger individuals (<80) who used primary control strategies reported better health than those who used secondary control strategies. The reverse was true for older, more restricted elderly individuals (>80): Those who used secondary control reported better health than those who used primary control. While Chipperfield et al.'s (1999) study demonstrates the adaptivity of a specific combination of strategies for individuals who face decreasing opportunities for control, the procedure for creating control strategy groups relied on a limited range of possible primary and secondary strategies, mutually exclusive groups, and a predefined way of combining the strategies.

As demonstrated by both Wrosch et al. (2002) and Chipperfield et al. (1999), it is evident that control strategies (and combinations thereof) are maximally beneficial to the extent that they are congruent with one's objective control opportunities. Specifically, it is most beneficial to use selective primary control strategies when opportunities for goal attainment are favorable (i.e., lines of defense Levels 1 and 2), and to retreat to compensatory primary and secondary control strategies as goal attainment opportunities decline substantially and irreversibly (i.e., lines of defense Levels 3-5). Several other empirical studies demonstrate the importance of opportunity congruent control strategies for subsequent health and well-being. For example, Bailis, Chipperfield, and Perry (2005) showed that compensatory secondary control was associated with reduced odds of mortality among older individuals with low opportunities for control, suggesting that the benefits of secondary control are maximized under circumstances of reduced opportunities for control. In another study, Chipperfield and Perry (2006) investigated the moderating effects of gender on the relationship between control strat-

egies and health outcomes. Consistent with the notion that older women tend to be more restricted than older men, compensatory secondary control strategies were associated with fewer numbers of hospitalizations and shorter length of hospital stays among women, while primary control strategies were an important buffer for men (Chipperfield & Perry, 2006).

THE CURRENT STUDY: THE USE OF TASK-SPECIFIC CONTROL STRATEGIES

The current study examined whether and how individuals combine multiple strategies to transition from goal engagement to goal disengagement as they deal with age-related task restriction. Thus, our first objective was to produce a descriptive portrayal of the extent to which older individuals use several distinct task-specific control strategies in isolation or combination. In contrast to past methods that have either combined multiple control strategies into a composite measure (e.g., Wrosch et al., 2002) or created mutually exclusive groups using pre-selected strategy combinations (e.g., Chipperfield et al., 1999), the current study made use of cluster analysis to identify naturally occurring groups of individuals based on their emphasis and de-emphasis of the following eight distinct task-specific control strategies: *task persistence*, *task modification, help-seeking*, *positive reappraisal*, *optimistic social comparisons*, *downgrading task importance, downgrading personal expectations,* and *re-engagement with a new task.*

Based on the Life-Span Theory of Control (Heckhausen, 2003), we expected to observe groups of older individuals at varying stages of retreat from their restricted goal. First, we anticipated the emergence of a group of individuals who remained largely focused on selective primary control in terms of attempts to overcome the task restriction (i.e., Level 1) and/or maintaining self-reliance at the task (i.e., Level 2). Next, we expected a group of individuals who had retreated further from the goal as evidenced by use of compensatory primary control strategies (i.e., Level 3) and/or compensatory secondary control strategies (i.e., Level 4).

Additionally, we anticipated that less-adaptive patterns of control strategy use might emerge. In particular, the Life-Span Theory of Control would suggest two patterns of inappropriate strategy use

among older adults facing task restrictions: First, a pattern of over selection (i.e., over-use) of primary control strategies may manifest among some older individuals who dread giving up independence and cling to primary control even as tasks become extremely difficult. Such over-selection of primary control strategies (i.e., failure to give up the goal) could be maladaptive in light of declining control opportunities and eventual task failure. The second potentially maladaptive pattern involves under-compensation in terms of a lack of compensatory secondary control strategies. That is, a pattern may emerge whereby some older individuals abandon all control striving in response to age-related task difficulty, and are characterized by extremely low use of both primary- and secondary-control strategies.

Upon identifying the naturally occurring control-strategy groups, the second objective of this study was to assess the relative adaptiveness of each pattern of control strategies. As outlined earlier, the adaptivity of any control strategy (or combination of strategies) depends upon the extent to which the control strategies are congruent with objective control opportunities. Using this as a reference point, we then examined differences in physical and psychological well-being among the control strategy groups. It was expected that control strategy groups with more favorable opportunities for control (i.e., lower levels of restriction) would have better physical health, and that control strategy groups who most effectively adhered to opportunity-congruent control strategies would have the greatest levels of psychological well-being.

METHOD

THE AIM AND SAS STUDIES

A sub-sample of individuals (N = 232) was selected from the 30-year longitudinal Aging in Manitoba (AIM) study. Because the detailed methodology of the AIM study is described elsewhere (Chipperfield, Havens, & Doig, 1997; Chipperfield, Campbell, & Perry, 2004), only a brief summary will be given here. The AIM project is one of the largest and longest continuing population-based studies of aging (Hall et al., 1997; Chipperfield et al., 1997). AIM participants

were initially selected through a stratified sampling technique, and were interviewed in 1971 with new cohorts added in 1976 and 1983 (resulting in nearly 9,000 participants). Follow-up interviews for the 1971 and 1976 cohorts were conducted in 1983, 1990, 1996, and 2001 and for the 1983 cohort in 1990, 1996, 2001, 2005, and 2006.

The data for the current study was obtained from a satellite study of the AIM known as the Successful Aging Study (SAS) that re-interviewed a subset of AIM participants in 2003 (N = 232). The criteria for inclusion in SAS included those who: (a) resided in or near one of the provinces' major cities, (b) lived in the community (vs. a personal care home), (c) had a satisfactory level of comprehension, and (d) responded to the AIM interview in English. All participants were first contacted by mail, and were then telephoned to set up a convenient interview time. All interviews were conducted in the participant's home. Further details of the SAS procedures and sample characteristics can be found elsewhere (Chipperfield et al., 2004; Chipperfield & Perry, 2006).

STUDY SAMPLE

Data for the current analyses is based on those participants from the 2003 SAS follow-up who (a) reported having difficulty with age-related restrictions and, (b) responded to subsequent questions about what control strategies they used when dealing with age-related restrictions. Participants were asked to indicate a specific activity or task that currently (or in the past) had become difficult to perform as a result of aging (e.g., gardening/yard work, vacuuming, getting in and out of the bathtub, etc.). Of the 232 SAS participants, 42 reported having no current or past difficulty with tasks, and therefore were not asked about their control strategies to deal with age-related task restriction. Thus, our analysis was restricted to the remaining 190 individuals who did report a current or past age-related task restriction. This final sample was comprised of 125 women and 65 men (66% vs 34%) whose ages ranged from 79-98 years (M = 85.12, SD = 4.43). Participants' marital status varied: 36% married, and the remaining 65% not married (54% widowed, 7% single, and 3% divorced/separated). Level of education ranged from 3 to 21 years, with an average of 10.35 years (corresponding to the completion of grade 10). After adjusting for extreme outliers, annual income

ranged from $4800 to $60,002 Canadian dollars (M = $21,035, SD = $10,782).1

VARIABLES

Task-Specific Control Strategies. The present study used a previously developed procedure to assess task-specific control strategies, expanding on the number of possible strategies (see Chipperfield & Perry, 2006; Chipperfield et al., 2007). In particular, participants were asked to identify an activity/task that was difficult to do because of aging, after which they were asked about the extent to which they used specific strategies when dealing with the task difficulty. A list of 12 primary control items and 22 secondary control items were prefaced with the question "When you have difficulty with (*insert reported difficult task*) how often do you . . . exert more effort; do the task less frequently; etc." (0 = *never*, 4 = *almost always*). Some strategy items were constructed specifically for our own purposes and some items were adapted from the OPS (Optimization in Primary and Secondary Control) scale and a short version of the OPS-scales adapted for the MIDUS (for original wordings see Heckhausen & Schulz, 1998; Peng & Lachman, 1994; Wrosch, Heckhausen, & Lachman, 2000). A factor analysis was used to describe the underlying structure of the primary and secondary control items (see Results section).

Prior Task Restriction. As an approximation of objective control opportunities, we examined participants' prior level of task restriction.

1. As would be expected, several differences emerged between the participants who reported task restriction (n = 190) and those excluded participants who did not report restriction (n = 42). While the mean age of the two groups was equivalent (M's = 85.12 vs. 84.60, respectively, SD's = 4.43 vs. 3.69, ns.) the gender distribution was not (χ^2 = 3.67, $p < .05$). In particular, the group that reported restrictions (n = 190) consisted of a significantly elevated ratio of women to men (2:1) relative to the no-restriction group (1:1). In terms of the dependent variables of interest, the task-restricted group reported significantly poorer physical health in terms of both a severity of chronic conditions scale (M's = -56.87 vs. -45.11, respectively, SD's = 27.94 vs. 26.04, $p < .05$) as well as a recent health symptoms scale (M's = 3.42 vs. 4.25, respectively, SD's = 1.05 vs. 0.88, $p < .05$). Further, task-restricted participants reported more stress (M's = 1.38 vs. 0.89, respectively, SD's = 0.55 vs. 0.57, $p < .05$), however, no differences emerged for positive emotion (M's = 22.29 vs. 22.73, respectively, SD's = 5.37 vs. 5.92, *ns*.).

This was accomplished by accessing data from a previous AIM interview that was conducted in 2001, roughly a year and a half before the beginning of the SAS 2003 interviews (that contained all other study measures). We chose to use this 2001 assessment of restriction as the closest approximation of participants' *prior* level of task restriction (i.e., prior to control strategy use). Participants indicated (yes/no) whether or not they were able to perform six instrumental activities of daily living including: heavy housework, making tea/coffee, shovelling/yard work, shopping, doing laundry, and household repairs. These six items were adapted from Lawton and Brody's (1969) Instrumental Activities of Daily Living (IADL) scale, a 31-item inventory that was designed to evaluate the functional capacity of older adults to perform several daily tasks relevant for independent living and general self-maintenance. Responses for each of the six activities were converted to dichotomous variables (0 = *able to perform the activity*; 1 = *unable to perform the activity*). A summed score was created for each participant with higher scores reflecting greater levels of prior task restriction (*Range* = 0 - 6, *M* = 2.61, *SD* = 1.37).

Physical Health. Two indicators of physical health were assessed: First, participants were given a list of 22 chronic health conditions (e.g., arthritis, hearing loss, cancer, etc.) and asked to indicate whether (yes/no) they had each condition. Based on the Seriousness of Illness Rating Scale - Revised (Wyler, Masuda, & Holmes, 1968; Rosenberg, Hayes, & Peterson, 1987), a severity score was assigned for each of the 22 health conditions with the least serious condition (missing teeth) given a rank of 1, and the most serious condition (cancer) given a rank of 22. An additive *severity of chronic conditions* score was created for each participant by summing over the ranks associated with each of his/her reported conditions (see Chipperfield et al., 2007 for an extensive description of the severity of chronic conditions measure). These scores ranged from 1 – 136, with higher scores indicating more severe chronic conditions and thus *poorer* health. Reverse coding was applied to this range by simply assigning a negative sign to all scores such that higher scores (i.e., smaller negative values) indicated better health (*range* = -136 to -1, *M* = -56.87; *SD* = 27.94; *Mdn* = -54.00). This reverse coding procedure was used to ease the interpretation of subsequent results with the severity of chronic conditions measure.[2]

The second measure of physical health assessed participants' *recent health symptoms* with three items: "During the past month, I have often: . . . felt physically unwell; . . . had some physical symptoms like stomach upset, headaches, or dizziness; . . . wished I had felt physically better" (see Ruthig, Chipperfield, Newall, Perry, & Hall, 2007). Responses for each item ranged from 1 (*almost never true*) to 5 (*almost always true*) and were reverse coded and summed so that higher scores indicated better health (α = .78, M = 3.41, SD = 1.05).

Psychological Well-Being. Participants' psychological well-being was assessed with two indicators: *recent positive emotions* and *perceived stress*. In particular, *recent positive emotions* were assessed by asking participants to indicate during the past two days how often they felt grateful, happy, hopeful, love, proud, and contented (0 = *never*, 6 = *almost always*). Responses for the six positive emotions were summed for all participants (*range* = 3.00 - 36.00; M = 20.57; SD = 6.95; α = .74).

Participants' *perceived stress* was assessed with Cohen, Kamarck, & Mermelstein's (1983) Global Perceived Stress Scale. This 14-item scale is prefaced by the question "In the last month, how often have you . . . " e.g., "felt nervous and stressed." Participants were asked to rate each item on a 0 - 4 scale (0 = *never*, 4 = *very often*). Items were reversed where necessary, and a composite perceived stress score was calculated for each participant by summing over the 14 items and taking an average (*range* = .14 - 2.86, M = 1.39, SD = .55; α = .80).

2. The SIRS-R procedure (Chipperfield et al., 2007; Wyler et al., 1968) involved medical students assigning seriousness scores to 137 illnesses. Our measure of 22 chronic conditions included nine conditions that had an exact match to one of the SIRS-R 137 illnesses. We assigned these nine chronic conditions the corresponding SIRS-R rank. Ten of our remaining chronic conditions did not have an exact-match to any of the 137 SIRS-R illnesses, but had near-matches to multiple SIRS-R illnesses. For these 10 chronic conditions, we computed an average rank of the multiple corresponding SIRS-R illnesses. The remaining three of our 22 chronic conditions had neither an exact-match or near-match to any of the 137 SIRS-R illnesses. We asked two medical residents to review our entire list of 22 chronic conditions and provide their estimate of the seriousness of the three unranked conditions (relative to the 19 previously ranked conditions).

RESULTS

CONTROL STRATEGY SCALES

In order to identify the underlying structure of the 12 primary control items and 22 secondary control items, separate principle components exploratory factor analyses with varimax rotation were conducted. We used Kaiser's (1960) widely accepted method of determining the number of factors to retain, thereby selecting only those factors with eigenvalues greater than 1.00. A critical value of |.50| was chosen as a minimum item-to-factor loading as it represents 25% overlap in variance between item and factor (see Stevens, 2002). Any item that did not meet this critical value of |.50| was not considered for inclusion in the interpretation of that factor. These criteria resulted in the retention of three primary control factors and five secondary control factors (see Tables 1 and 2 for exact item wordings, factor eigenvalues, and percent variance values).3

As can be seen in Table 1, primary control Factor 1 consisted of three items that reflected *help-seeking* (e.g., find someone else to help with the task), Factor 2 was comprised of three *persistence* items (e.g., continue doing the task just as always), and Factor 3 consisted of three items that assessed *task- modification* (e.g., do only the parts of the task that are possible). Table 2 demonstrates that secondary control Factor 1 consisted of four *social comparison* items (e.g., tell yourself that despite this problem, you are better off than many others), and Factor 2 was represented by three *positive reappraisal* items (e.g., look for the positive side of the struggle). Secondary control Factor 3 was comprised of four items that were characterized by *re-engagement* (e.g., focus your thoughts on other aspects of your life), and Factor 4 constituted three items that assessed *downgrading expectations* (e.g., expect less of yourself). A final secondary control

3. The initial item pool contained 12 primary control items and 22 secondary control items: a greater number of secondary control items was included in order to capture as much variation as possible in this less well-documented construct. Two primary control items and four secondary control items were removed prior to the exploratory factor analysis due to empirical and conceptual ambiguity (i.e., low inter-item correlations). Additionally, one primary control item, as well as three selective secondary control items failed to load above the .50 cutoff on any factor, and were subsequently removed from consideration. These exclusions resulted in a reduced pool of 9 primary control items and 15 secondary control items.

TABLE 1. Primary Control Three-Factor Structure, Scale Reliabilities, Ranges, Means, and Standard Deviations

	Primary Control		
	Factor 1 Help-Seeking	**Factor 2 Persistence**	**Factor 3 Task-Mod.**
Find someone else to help with the task	0.93	—	—
Find someone else to do the task	0.93	—	—
Rely on others to help you with the task	0.93	—	—
Continue doing the task just as always	—	0.80	—
Exert more effort	—	0.77	—
Do whatever is necessary to continue with the task	—	0.87	—
Take more time to do the task[a]	—	0.68	0.51
Do only the parts of the task that are possible	—	—	0.77
Do the task less frequently	—	—	0.88
Eigenvalue	3.35	2.92	1.14
% Variance	33.59	29.26	11.39
Cronbach's α	0.95	0.79	0.70
Range	0-4	0-4	0-4
Mean	1.64	1.98	2.15
Standard Deviation	1.41	1.10	1.01

[a]The decision to include the cross-loading item on factor 3 was based on the overlap between item content and factor content.

Factor 5 was comprised of two *downgrading importance items* (e.g., tell yourself the task is not necessary).

Based on these analyses, three primary control scales (i.e., *help-seeking*, *persistence*, and *task modification*) and five secondary control scales (i.e., *social comparisons*, *positive re-appraisal*, *re-engagement*, *downgrading expectations*, and *downgrading task importance*) were created, for a total of eight control strategy scales. Composite scores on each of the eight scales were created for all participants by summing over relevant items and taking an average (see Tables 1 and 2 for scale reliabilities, ranges, sample means, and standard deviations). All eight control strategies were used in the subsequent cluster analysis to identify naturally occurring control-strategy groups.

TABLE 2. Secondary Control Five—Factor Structure, Scale Reliabilities, Ranges, Means, and Standard Deviations

	Secondary Control				
	Factor 1 Social Comparisons	**Factor 2 Positive Reappraisal**	**Factor 3 Re-engagement**	**Factor 4 Downgrading Expectations**	**Factor 5 Downgrading Importance**
Tell yourself that despite this problem, you are better off than many others	0.81	—	—	—	—
Tell yourself that you can do many other things that people your age can't do	0.83	—	—	—	—
Try to think of how many problems other people have, compared to you	0.78	—	—	—	—
Tell yourself that others have worse problems	0.86	—	—	—	—
Look for the positive side of the struggle	—	0.76	—	—	—
Tell yourself that good things often come from hard times	—	0.77	—	—	—
Look for what you can learn from the difficulty	—	0.82	—	—	—
Focus your thoughts on other aspects of your life	—	—	0.65	—	—
Think about how you can save your energy for other things	—	—	0.78	—	—
Tell yourself that there are more important things than being able to do this	—	—	0.65	—	—
Tell yourself that you mustn't set your goals too high	—	—	—	0.67	—
Tell yourself that it is unrealistic to continue trying as you have in the past	—	—	—	0.76	—
Expect less of yourself	—	—	—	0.73	—
Tell yourself the task is not necessary	—	—	—	—	0.88
See the task as being less important	—	—	—	—	0.87
Eigenvalue	4.29	2.82	1.34	1.17	1.02
% variance	28.59	18.81	8.97	7.78	6.82
Cronbach's α	0.85	0.78	0.64	0.79	0.68
Range	0-4	0-4	0-4	0-4	0-4
Mean	2.61	2.06	2.14	2.15	1.43
Standard Deviation	0.87	0.98	0.79	0.94	1.16

IDENTIFYING CONTROL-STRATEGY PROFILES: CLUSTER ANALYSIS

Rationale for Analysis. Cluster analysis was chosen because it effectively identifies groups of individuals who are very similar within-group and highly dissimilar between-group on a specific set of response variables (Huberty, Jordan, & Brandt, 2005). Cluster analysis has been used in several studies of older individuals to identify different types of social networks (Litwin, 2001; Fiori, Antonucci, & Cortina, 2006), to examine patterns of coping (O'Rourke & Cappeliez, 2002), and to distinguish between low and high levels of physical health and psychological functioning (Smith & Baltes, 1998; Ford & Taylor, 1983).

Prior to conducting the cluster analysis we ensured that all eight control strategy scales had relatively normal distributions and were free of significant outliers. Additionally, we standardized the control-strategy response variables, equating their relative contribution to the clustering procedure to facilitate interpretation of final clusters (see Huberty et al., 2005; Milligan & Cooper, 1987). Ward's (1963) cluster method was used to determine the number of naturally occurring clusters in the data (Step 1). However, because Ward's (1963) procedure is limited by the hierarchical nature in which it classifies individuals, we used a follow-up non-hierarchical procedure, the interactive partitioning of k-means method (Step 2), as recommended by Huberty et al. (2005) and Milligan and Cooper (1987). The final selection and interpretation of clusters was then guided by theory and past empirical work (i.e., much like a factor analysis).

Results from Ward's (1963) procedure (Step 1) suggested that there were between four to six clusters, thus, we used the k-means method to specify four-, five-, and six-cluster solutions separately (Step 2). The four-cluster solution was deemed the most theoretically meaningful, and resulted in the retention of reasonable sample sizes in each group (Table 3). Because the control-strategy scales were standardized, the individual control strategy loadings presented in Table 3 can be interpreted with reference to a mean equal to 0.00 and a standard deviation equal to 1.00. Since our objective was to classify individuals based on their patterns of accentuation (high use) and de-emphasis (low use) of each control strategy, we interpreted a loading greater than, or equal to +.50 (representing a

TABLE 3. Control-Strategy Groups Produced by Cluster Analysis

Label		Primary Control		Secondary Control					
	N	Persistence	Task Mod.	Help-Seeking	Downgrading Importance	Downgrading Expectations	Re-engagement	Social Comparisons	Positive Reappraisal
Primary Control	80	.61	—	-.69	—	.56	—	—	—
Multi-Strategy	31	—	.65	.57	.74	.63	1.15	.71	.88
Relinquished Control	42	1.16	1.10	—	—	—	—	—	—
Failure to Compensate	37	—	.64	—	—	—	.55	1.23	.82

Note. Positive values indicate above average use of the given control strategy, negative values indicate below average use of the control strategy, and absence of values indicates moderate or average use of the control strategy (i.e., values between -.50 and +.50).

half a standard deviation above the total sample mean) as *accentuation* of a strategy, and a loading of -.50 or lower (representing half a standard deviation below the total sample mean) as *de-emphasis* of a strategy (see Fiori et al., 2006 for a similar procedure). For simplicity of presentation, and to highlight the strategies that were accentuated or de-emphasized, Table 3 presents only those values that were below -.50 or above +.50. Thus, not shown in Table 3 are the exact values for any loading between -.50 and +.50 that signalled an *average* or *moderate* use of the control strategy in question.

Control Strategy Groups. An examination of the loadings for group 1, labelled the *Primary Control Group* (n = 80, 57.5% female, mean age = 83.41 years), reveal the accentuation of persistence as determined by the above average loading of .61 (see Table 3). The tendency for these individuals to persist in the face of difficult tasks is further suggested by the de-emphasis of compensatory primary control (i.e., help-seeking, -.69), and one of the five compensatory secondary control strategies (downgrading expectations, -.56). All remaining control strategies (i.e., task modification, downgrading importance, re-engagement, social comparisons, and positive reappraisal) loaded between +.50 and -.50, and thus were neither accentuated nor de-emphasized by individuals in the Primary Control Group (as noted above, the exact loading values of control strategies in the moderate range are omitted from Table 3 for ease of interpretation).

Group 2 was labelled the *Multi-Strategy Group* (n = 31, 87.1% female, mean age = 83.42 years) because individuals in this group reported above average use of all control strategies *except* persistence. When facing task restrictions, these individuals appear to have shifted their primary control orientation from simple persistence to task modification and help-seeking as evidenced by above average loadings (.65 and .57, respectively). Relative to the Primary Control Group, the Multi-Strategy Group's pattern of control strategy use could imply decreased control opportunities in terms of higher levels of task restriction. However, by simultaneously emphasizing a variety of compensatory primary and secondary control strategies including both goal disengagement and self-protection, these individuals appear to be exploring multiple avenues to modified goal attainment as well as failure compensation.

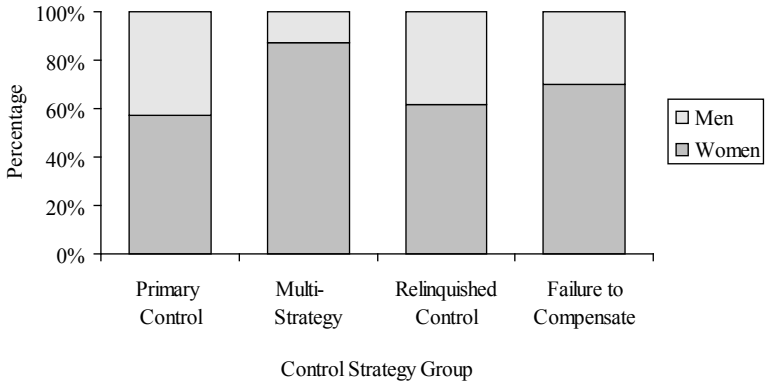

FIGURE 1. Gender composition of control-strategy groups.

The *Relinquished Control Group* (n = 42, 61.9% female, mean age = 82.24 years) consisted of individuals who de-emphasized selective primary control in terms of both *persistence* and *task modification* (-1.16 and -1.11, respectively), a pattern that may imply a relatively high level of task restriction. In circumstances where primary control is largely abandoned, the adoption of compensatory secondary control strategies becomes essential. Yet, as the label implies, individuals in this Relinquished Control Group did not emphasize any of the five compensatory secondary control strategies. As a result of this under-compensation, there may be insufficient use of compensatory secondary control strategies to effectively deal with task failure.

Finally, a *Failure to Compensate Group* (n = 37, 70.3% female, mean age = 83.68 years) was characterized by above average levels of modified primary control striving (*task modification*), combined with a de-emphasis of several compensatory secondary control strategies (*re-engagement, social comparisons,* and *positive re-appraisal*). The emphasis on task modification (i.e., vs. persistence) may suggest decreasing opportunities for control. This pattern may be particularly maladaptive to the extent that these individuals are over-selecting (i.e., over-emphasizing) primary control strategies, and under-compensating in terms of extreme low levels of secondary control.

CONTROL-STRATEGY GROUP DIFFERENCES

Covariates. Preliminary analyses were conducted to determine if the control strategy groups differed in terms of demographic composition. Analyses revealed an omnibus gender difference among the control strategy groups ($\chi^2 = 9.31$, $p < .05$) that was the result of an unbalanced ratio of women to men in the Multi-Strategy group (see Figure 1). The gender imbalance among the Multi-Strategy group (87.1% vs. 12.9%) exceeds the imbalances of the other three groups that more closely parallel the gender proportions of the overall sample (i.e., 66% women vs. 34% men). The finding that women demonstrate a greater likelihood than men to use a combination of primary and secondary strategies is consistent with past research (Chipperfield et al., 1999; Chipperfield et al., 2007). Analyses of the remaining demographic variables (marital status, age, years of education, and income) revealed no significant group differences. Therefore, gender was the only demographic variable included as a covariate in all subsequent analyses.

Prior Task Restriction. An ANCOVA (controlling for gender) revealed a significant difference among the four control strategy groups in their levels of prior task restriction as assessed a year and a half earlier, $F = 4.82$, $p < .05$, $\eta^2 = .07$ (see Figure 2). The group means and *t*-test comparisons (Table 4) show that prior task restriction was significantly lower for individuals in the Primary Control group ($M = 2.19$) as compared to each of the Multi-Strategy ($M = 2.71$) , Relinquished Control ($M = 2.87$), and Failure to Compensate ($M = 3.09$) groups. The relatively low level of restriction among the Primary Control group implies that these individuals had no need for goal retreat. Further, this group's use of selective primary control strategies (i.e., persistence) appears to be a good match between their opportunities for control and their subsequent use of control strategies.

The relatively higher levels of prior task restriction among the three remaining groups suggests the need to initiate an organized goal retreat in order to match control strategies to restricted opportunities for control. Among these three groups, however, only the Multi-Strategy group appears to match their control strategy use to the elevated level of task restriction by emphasizing secondary control. While the Relinquished Control group appears to acknowl-

TABLE 4. Control-Strategy Group Means/Centroids And Pairwise Comparisons

	Control-Strategy Profile Means/Centroids				Group Comparisons					
	1. Primary Control	2. Multi-Strategy	3. Relinquish Control	4. Failure to Compensate	1 vs. 2	1 vs. 3	1 vs. 4	2 vs. 3	2 vs. 4	3 vs. 4
Level of restriction	2.19	2.71	2.87	3.09	1.86+	2.68*	3.40*	0.47	1.14	0.73
Physical well-being	0.14	0.39	-0.34	-0.26	1.16	2.50*	2.00*	3.05**	2.64**	0.33
Psychological well-being	0.36	0.23	-0.32	-0.63	0.59	3.50**	4.84**	2.26*	3.41**	1.32

+$p = .06$; *$p < .05$; **$p < .001$.

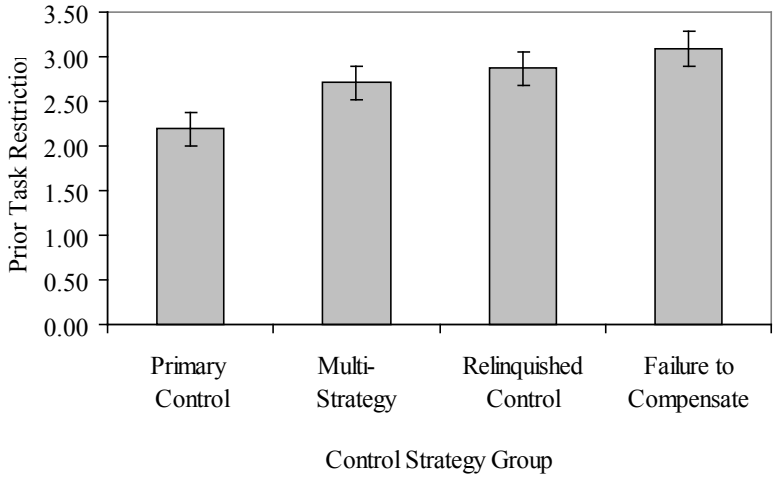

FIGURE 2. Prior level of task restriction of each control strategy group.

edge their relatively high level of prior task restriction by abandoning primary control, they fail to supplement their losses with increased secondary control. And despite having the highest level of restriction, the Failure to Compensate group appears to cling to primary control (task modification) and actually *de*-emphasizes several secondary control strategies. Thus, unlike the Primary Control and Multi-Strategy groups, it does not appear that the Relinquished Control or Failure to Compensate groups have effectively matched their control strategy use to their level of prior task restriction.

Physical Health and Psychological Well-Being. A two-step statistical approach was used to assess whether the four control-strategy groups differed in terms of physical and psychological well-being. First, two separate one-way multivariate analyses of covariance (MANCOVA) were conducted with control-strategy group as the independent variable (Primary Control, Multi-Strategy, Relinquished Control, Failure to Compensate), gender as the covariate, and physical well-being (severity of chronic conditions and recent physical health) and psychological well-being (recent positive emotions and perceived stress) as the dependent measures. Second, in cases where a significant MANCOVA main effect emerged, follow-

up *t*-tests were conducted to examine specific control-strategy group differences in physical health and psychological well-being.

In order to compute MANCOVA follow-up *t*-tests, it was necessary to conduct a discriminant function analysis to aggregate the multiple indicators of each dependent variable (physical health and psychological well-being). In particular, discriminant function analysis created two composite dependent variables (one for physical health and one for psychological well-being) by weighting the multiple indicators in a way that best maximizes the differences between the control-strategy groups (Tabachnick & Fidell, 2007; Stevens, 2002). In this way, discriminant analysis produced estimates of group *centroids* (i.e., the multivariate analog to univariate group means), thereby enabling us to conduct *t*-tests to statistically determine group differences in physical health and psychological well-being.

A significant mutivariate main effect emerged for *physical health* (Wilkes $\Lambda = .93$, $p < .05$, $\eta^2 = .04$), indicating that the four control-strategy groups (Primary Control, Multi-Strategy, Relinquished Control, and Failure to Compensate) differed in terms of their self-reported physical health status. A single discriminant function emerged that accounted for 98% of the variance and was characterized by positive loadings on both indicators of physical health: severity of chronic conditions (*z* weight = .97, structure *r* = .99); and recent health symptoms (*z* weight = .07, structure *r* = .42). The composite variable resulting from the discriminant function analysis represented positive physical health, with higher scores indicating low severity of chronic conditions and relatively few recent health symptoms. The group centroid comparisons (controlling for gender) revealed that participants in the Primary Control and Multi-Strategy groups had similar levels of physical health, which was generally better than physical health among those in the Relinquished Control and Failure to Compensate groups (see Table 4 for group centroids and *t*-values).

Next, in order to assess omnibus group differences in *psychological well-being*, a MANCOVA was conducted controlling for gender and physical health. We included the composite physical health variable as a covariate because we were interested in the effect of control strategy group on psychological well-being above and beyond the impact of physical health status. A main effect emerged (Wilkes Λ=

.85, $p < .05$, $\eta 2 = .07$), suggesting group differences in psychological well-being. A discriminant function analysis yielded a single function that explained 98% of the variance and was characterized by a positive loading for recent positive emotion (*z* weight = .90, structure $r = .96$); and a negative loading for perceived stress (*z* weight = -.28, structure $r = -.47$). The composite variable reflects positive psychological well-being, with high scores indicating high levels of recent positive emotion and low levels of perceived stress. The *t-test* comparisons of the control strategy group centroids showed that individuals in the Primary Control and Multi-Strategy groups had greater psychological well-being than those in the Relinquished Control and Failure to Compensate groups (see Table 4 for group centroids and *t*-values).

In summary, as expected, individuals in the Primary Control group who had lower levels of restriction were more physically healthy than individuals with higher levels of restriction (i.e., those in the Relinquished Control and Failure to Compensate groups). Somewhat unexpectedly, however, individuals in the Multi-Strategy group (who faced equally high levels of restriction as those in the Relinquished Control and Failure to Compensate groups), had physical health scores that were comparable to those of the Primary Control group. Given their elevated level of task restriction, we would have anticipated that the Multi-Strategy group's physical health would have been more comparable to that of both the Relinquished Control and Failure to Compensate groups. In terms of psychological well-being, findings generally suggest that individuals who effectively matched their control strategies to their relative level of restriction (i.e., those in the Primary Control and Multi-Strategy groups) experienced greater psychological well-being than those who did not (i.e., Relinquished Control and Failure to Compensate groups).

DISCUSSION

This study, guided by the Life-Span Theory of Control, provides an account of naturally occurring patterns of primary and secondary control strategies among a representative sample of older adults facing age-related task restriction. Consistent with Heckhausen's (2003) lines of defense argument, four distinct control strategy

groups emerged that reflected older individuals at varying stages of retreat from a restricted activity goal. In particular, the four combinations of control strategies involved: (a) persistent striving for selective primary control (Primary Control Group), (b) combination of primary control striving with compensatory secondary control (Multi-Strategy Group), (c) disengagement from primary control without compensating the loss of control with secondary control strategies (Relinquished Control Group), and (d) continued primary control striving for unattainable goals without compensatory secondary strategies to protect against the negative consequences of failure (Failure to Compensate Group). The four control strategy groups differed in terms of objective control opportunities (i.e., level of restriction), and the extent to which they matched their control strategies to their objective control opportunities. These differences in adherence to opportunity-congruent control strategies had theory-consistent implications for both physical and psychological well-being.

VARIATION IN CONTROL STRATEGY APPROACHES

As outlined by Heckhausen (2003), disengagement from a restricted activity goal occurs in stages that involve a sequential retreat from selective primary control to compensatory primary and secondary control. At Level 1 of this sequence individuals are still able to overcome task restriction through use of selective primary control strategies such as persistence. In support of this proposition, a large percentage of participants in our study (i.e., 42.1%) were classified in a Primary Control group that used predominantly selective primary control strategies in response to task-restriction. Indeed, it appears that successful goal pursuit was still possible for individuals in the Primary Control group to the extent that they reported very favorable opportunities for control (i.e., low levels of task restriction). The relatively low level of restriction helps explain the Primary Control group's high level of physical health, and the group's adherence to opportunity-congruent control strategies translated into high levels of psychological well-being. This proactive approach to age-related difficulties approximates Heckhausen's (2003) Level 1 line of defense, and also more generally supports the Life-Span Theory of Control (Heckhausen & Schulz, 1999) in terms of the primacy of

primary control (i.e., continued motivation to create and maintain behavior-event contingencies throughout the lifespan).

Compared to the Primary Control group, the three remaining control strategy groups (Multi-Strategy, Relinquished Control, and Failure to Compensate) experienced significantly higher levels of task restriction. This higher level of task restriction suggests reduced opportunities for control, and signals the need for a retreat to subsequent lines of defense (Heckhausen, 2003). Despite the fact that these three groups reported equally high levels of task restriction, several differences were evident in their patterns of control strategy use, and in the overall adaptiveness of these patterns. Most striking was the differential use of compensatory secondary control strategies, which become particularly important in the retreat from a restricted activity goal.

The first of these groups, the Multi-Strategy group, used a wide range of both primary- and secondary-control strategies in their approach to task restriction. The use of modified primary control strategies such as task modification and help-seeking may have provided these individuals with opportunities for successful goal completion (i.e., lines of defense Levels 2 and 3). Meanwhile, their simultaneous use of a wide range of secondary control strategies may have helped them accept downgraded goal aspirations and allowed for compensatory self-protection if and when failure arose. This diversity in strategy use appears to be well-matched to the Multi-Strategy group's relatively high level of restriction, and may explain why these individuals were able to maintain a highly positive psychological profile. Indeed, this is consistent with research from the related coping literature that suggests the psychological benefits of using multiple (vs. single) strategies to cope with stressful situations (Lazarus, 1996; Carver, Scheier, & Weintraub, 1989; Cheng, Hui, & Lam, 1999). Additionally, to the extent that the Multi-Strategy group was comprised of 87.1% women, these findings support past research that suggests flexibility in control strategy use is more characteristic for older women than for older men (Chipperfield et al., 2007).

Similar to those in the Multi-Strategy group, individuals in the Relinquished Control group appear to have begun a retreat from their activity goals as evident in their marked de-emphasis of selective primary control strategies. The Relinquished Control group, however, did not supplement this loss of control with re-directed em-

phasis on compensatory primary and secondary control strategies. While the discontinuation of selective primary control strategies such as persistence may serve a direct protective function among these relatively highly restricted individuals (e.g., by preventing exhaustion and physical injury), this type of goal relinquishment must be accompanied by compensatory secondary control strategies involving active goal disengagement and self-protection (Heckhausen et al., 2001). In this situation, individuals who under-compensate (i.e., fail to incorporate compensatory secondary control strategies) may face an increased risk of experiencing the negative psychological consequences associated with repeated task failure (Heckhausen & Schulz, 1998). Consistent with this interpretation was the finding that the Relinquished Control group had significantly lower levels of psychological well-being relative to both the Primary Control and Multi-Strategy groups (who had effectively matched their strategies to their level of restriction). Further, the Relinquished Control group's high level of task restriction also corresponded to an inferior physical health profile (as compared to those in the Primary Control and Multi-Strategy groups).

Finally, individuals in the Failure to Compensate group demonstrated a pattern of control strategy use that many control theorists would regard as problematic (see Rothbaum et al., 1982; Wrosch, Scheier, Carver, & Schulz, 2003). Specifically, despite having the highest level of task restriction (i.e., lowest opportunities for control), these individuals emphasized a modified form of primary control striving (i.e., task modification), in combination with a marked *de*-emphasis of several compensatory secondary control strategies. That is, these individuals not only over-selected primary control strategies, but also under-compensated by failing to supplement their primary control striving with compensatory secondary strategies (e.g., re-engagement, social comparison, and positive reappraisal). As would be expected, the Failure to Compensate group reported lower psychological well-being than individuals who adhered to opportunity-congruent control strategies (i.e., the Primary Control and Multi-Strategy groups). These findings are consistent with a body of research that repeatedly confirms the importance of secondary control for health and well-being among older adults (Heckhausen, 1997; Chipperfield & Perry, 2006; Chipperfield et al., 1999) and more generally for individuals struggling with control

loss regarding important life goals (e.g., child-bearing, Heckhausen et al., 2001; partnership, Wrosch & Heckhausen 1999).

Overall, the current study provides support for several propositions of the Life-Span Theory of Control. First, the primacy of primary control was supported to the extent that nearly half of the participants were classified in the Primary Control group that continued to persist in the maintenance of behavior-event contingencies through the use of selective primary control strategies. Second, the four distinct patterns of control strategies that emerged offer partial support for Heckhausen's (2003) lines of defense argument to the extent that the control strategy groups represented individuals at varying stages of goal retreat. In particular, the Primary Control group reflected participants at Level 1, while the Multi-Strategy group reflected participants at Levels 2-3. The other two groups (Relinquished Control group and Failure-to-Compensate group) reflected maladaptive goal retreat patterns at Levels 2-4. Finally, the findings provide support for the Life-Span theory of Control in terms of the importance of opportunity-congruent control strategy use for subsequent physical and psychological well-being. Two of the control strategy groups adhered to opportunity-congruent control strategies (i.e., Primary Control and Multi-Strategy groups), and had a positive pattern of physical and psychological well-being. In contrast, the remaining two groups (i.e., Relinquished Control and Failure to Compensate) were less able to effectively match their control strategies to their reduced opportunities for control and had a less positive pattern of physical health and psychological well-being.

LIMITATIONS

The results of this study should be interpreted with the following limitations in mind. The design of the study was cross-sectional, making our findings subject to the *reciprocal causality* limitation that characterizes many investigations of psychological variables. We cannot infer causality in the relationship between control-strategy group and physical/psychological well-being. It may be the case that certain control-strategy combinations result in good health, or, alternatively, good health may promote the use of certain control

strategies. However, to the extent that our measurement of control strategies captured past strategy use by asking people to recollect how they have dealt with task challenges, the control strategies can be regarded as having occurred prior to the assessment of well-being. Thus, while our approach does not enable us to infer causality, our findings show that physical and psychological well-being was compromised among individuals with control strategy patterns that could be considered deficient or maladaptive. Indeed, recent research offers support for this direction of causality demonstrating that control strategies predict longitudinal health outcomes (Chipperfield & Perry, 2006; Wrosch, Schulz, Miller, Lupien, & Dunne, 2007; Wrosch, Dunne, Scheier, & Schulz, 2006).

A second limitation of the study involves our operational definition of objective control opportunities. We assessed objective control opportunities with a self-report checklist concerning participants' prior task restrictions, making this measure subject to several self-report biases such as cognitive (recall) bias, social desirability, etc. Given this, future research may wish to assess participants' objective control opportunities with a more impartial method such as behavioral observation or expert ratings (e.g., by physicians, physical or occupational therapists, family members, etc.). A final concern involves the use of cluster analysis to identify the control strategy groupings. While cluster analysis is a particularly well-suited analytic approach for assessing how elderly individuals *naturally* combine control strategies, it is somewhat descriptive in nature. Therefore, future research may wish to compliment this procedure by combining it with a less descriptive approach.

IMPLICATIONS AND CONCLUSIONS

While the strategy combinations used by the Primary Control and Multi-Strategy Groups were relatively adaptive, a substantial proportion of older adults used less adaptive strategies. However, it seems reasonable to assume that a number of individuals characterized by maladaptive strategy use (i.e., Relinquished Control and/or Failure to Compensate groups) are in transition, not yet having developed or incorporated the strategies to compensate for failure. Identifying control-strategy profiles that may put individuals

at-risk is an important first step in developing interventions that would be designed to aid elderly people dealing with age-related task restrictions. Indeed, our findings suggest the utility of an intervention designed to enhance compensatory secondary control. Naturally, such interventions would need to be carefully matched to older adults' level of restriction such that only those individuals who are relatively highly restricted would be encouraged to adopt compensatory strategies in response to task restriction. It is possible that interventions designed to encourage diverse and flexible strategy use could expedite the transition from a maladaptive to an adaptive control-strategy profile.

The findings of this study offer a glimpse into the quality of life that is experienced by the average individual in each control-strategy group. We would not expect that adopting a different pattern of control-strategy use could erase the physical and psychological problems of an elderly individual. However, it would be reasonable to assume that changing one's strategy profile from Failure to Compensate to Multi-Strategy (by incorporating some secondary control strategies) may relieve some stress and increase positive emotions (psychological well-being). For the individuals in our sample these small psychological changes could have a substantial impact on well-being and general quality of life.

In summary, older adults with age-related task restrictions appear to combine control-strategies in multiple, discernable patterns. Some of these control-strategy patterns are well adapted to existing control opportunities and serve to promote well-being. Other patterns of control strategies are clearly maladaptive, and may not promote overall well-being. Our findings were largely supportive of conceptual propositions in terms of the primacy of primary control, and the inherent risks of certain control strategy combinations. The findings also highlight the need for further investigation of several unresolved issues, such as the longitudinal impact of these patterns of control strategy use on health and well-being, as well as the development of interventions aimed at encouraging adaptive patterns of control strategies among the elderly.

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