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Research Article

Longitudinal Associations Between Perceived Control and Health for American and Japanese Aging Adults

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Abstract

Background and Objectives: Research suggests longitudinal and reciprocal relationships between perceived control over life circumstances and health for Western populations; yet, such associations have not been fully understood for non-Western populations. The present study addresses cultural differences in these associations for American and Japanese aging adults.
Research Design and Methods: For respondents aged 40 and older at 2 waves (Time 1 [T1] and Time 2 [T2]) of Midlife in the United States (N = 4,455) and Midlife in Japan (N = 827), cross-lagged path models were analyzed for T1 perceived control predicting change in each health measure (i.e., self-rated health, number of chronic health conditions, and functional limitations) from T1 to T2; and the matched T1 health measure predicting change in perceived control from T1 and T2. In these analyses, the effects of T1 age, T1 perceived control, and each T1 health measure were compared cross-nationally.
Results: A cross-national difference emerged in that T1 perceived control predicted change in chronic health conditions only for Americans. Similar tendencies were found between the 2 nationalities for T1 perceived control predicting changes in self-rated health and functional limitations. Reciprocal relationships between perceived control and health measures were found for Americans, but neither age nor any of the T1 health measures predicted change in perceived control for the Japanese respondents.
Discussion and Implications: The findings suggest cultural differences and similarities between the 2 nationalities, which have implications for potential health benefits of enhancing perceived control among American and Japanese aging adults. Building on these findings, the present study also indicates future directions of research.

Keywords: Autonomy, Cross-cultural research, Independence

Perceived control, or sense of control over life circumstances (Lachman et al., 2011), has been found to be associated with better health through late adulthood among Western populations (Gerstorf et al., 2011; Infurna et al., 2018; Kempen et al., 2005). However, such associations have been understudied for non-Western populations. The present study specifically addresses cultural differences in the association between perceived control and health for American and Japanese aging adults. While this study does not intend to generalize its findings for other nationalities, a cultural comparison of these two nationalities, who have had distinct philosophical traditions, beliefs, and values (Cheng et al., 2013; Kitayama et al., 2010), adds a cross-cultural dimension that the perceived control literature currently lacks.

The present study also focuses on middle and late adulthood, periods when individuals tend to start experiencing changes that could affect health trajectories. Perceived control can be considered a resilience factor that may help aging adults including those with hardships (e.g., low

income) maintain their health and well-being, at least for Western populations (Lachman et al., 2011; Mallers et al., 2014; Ryff, Miyamoto et al., 2015). Yet, more thorough cross-cultural research is warranted to improve the knowledge of whether such positive implications of perceived control are universal.

Theoretical Framework

Life-span developmental theory (Baltes et al., 1980; Baltes & Smith, 2004) serves as a theoretical framework that guides the present study. Although life-span theory was developed by Western researchers, it comprehensively addresses human development throughout life, taking into consideration not only the potential impacts of the aging process but also contextual or cultural influences on development; thus, it has relevance cross-culturally.

While children are greatly influenced by normative age-related experiences, like attending primary school, Baltes et al. (1980) suggested that age-related influences might exhibit another peak in old age. While many early normative influences are related to gains such as acquiring knowledge or abilities, after young adulthood individuals are likely to start experiencing fewer gains and more losses with age (Ebner et al., 2006). As the transition from middle adulthood to late adulthood can involve declining physical abilities and reduced autonomy (Baltes, 1995), it may become more important for middle-aged and older adults to set goals to counteract their losses and maintain their well-being (Ebner et al., 2006). Moreover, in addition to individual differences and life experiences, contextual factors also influence adult development; in particular, culture plays an important role in influencing age-related experiences (Baltes & Smith, 2004).

Guided by life-span theory, the present study specifically addresses areas of research in which more cross-cultural investigations are particularly needed: age differences in perceived control and reciprocal relationships between perceived control and health.

Age Differences in Perceived Control

With age, individuals may experience a decline in perceived control, as they tend to face more losses, as suggested by life-span theory, or uncontrollable events (Lachman et al., 2011). Indeed, cross-sectional (Slagsvold & Sørensen, 2008) and longitudinal (Lachman et al., 2009) research shows the tendency of older adults to report lower perceived control than middle-aged adults and experience declines in perceived control over time. However, these findings focus on Western populations and it is not well known whether there are such age differences in perceived control for non-Western populations such as Japanese aging adults. While people in any country may be likely to experience increased losses with age, the extent to which aging experiences affect perceived control over time may differ between American and Japanese adults. Compared to Americans, Japanese people as well as those in less individualistic countries tend to put less emphasis on values such as independence, autonomy, and agency that encourage them to control their environments to obtain desired outcomes (Cheng et al., 2013; Kitayama et al., 2010). Although increased difficulties and losses with age may prevent them from achieving their desired outcomes, they may be more open to accepting those experiences without attempting to control them (Cheng et al., 2013). Thus, the impact of aging experiences may be less pronounced for Japanese adults, but such speculations need to be empirically tested.

Reciprocal Relationships Between Perceived Control and Health

Given the multidirectionality of human development (Baltes et al., 1980), associations between perceived control and health are likely to be reciprocal. Lachman's conceptual model (Lachman, 2006; Lachman et al., 2011) shows such reciprocal relationships of perceived control and aging-related outcomes (e.g., health) affecting each other. Previous research, particularly for Western populations, has suggested both directions of such associations as discussed next.

Perceived Control Predicting Health

For Western adults, perceived control predicts multiple aspects of health, including subjective health, physical health, and functional health (Infurna et al., 2011; Kempen et al., 2005; Poortinga et al., 2008). The association of perceived control and health may involve mediators such as health-promoting behaviors (e.g., exercising), coping strategies, and social support, which are all associated with health (Lachman et al., 2011; Sargent-Cox et al., 2015). Perceived control also possibly involves psychological factors, such as optimism, self-efficacy, and self-perception of aging, which are associated with subjective health and functional abilities (Allen, 2016; Klein & Helweg-Larsen, 2002; Levy, 2009; McAuley et al., 2011; Mosing et al., 2009; Webber et al., 2010). In addition, the associations of perceived control with health may vary for those of different ages. Previous research suggests that lower perceived control predicts more increased chronic health conditions over time for older adults, but not for those aged 25–64 (Infurna et al., 2011), and a greater increase in functional disability for those aged 65 or older, but less strongly for younger individuals (Kempen et al., 2005). While older adults tend to experience decreased autonomy and physical abilities (Baltes, 1995), it appears important to maintain perceived control, which may help motivate older adults to take actions (e.g., exercise and healthy eating) to improve their life circumstances. Thus, the influential role of perceived control for health may increase with age.

Although the literature on perceived control for non-Western populations is more limited, there has been some research addressing the associations of perceived control with health or related outcomes in comparison to Western populations. A meta-analysis of Cheng et al. (2013) indicated that the association of external locus of control or lower perceived control with greater anxiety was stronger for adults in individualistic countries than those in collectivistic or less individualistic countries. The authors related this difference to the varying approaches to external environments, suggesting that lower perceived control might not necessarily be detrimental for mental health among less individualistic populations who emphasized the value of accepting environmental influences. Some cross-national studies specifically compared American and Japanese adults. For instance, Kitayama et al. (2010) found a marginally stronger association between sense of personal control and physical health for Americans, who value independence more, when compared with Japanese adults, who put more emphasis on interdependence. Levine et al. (2016) addressed culture and healthy eating and found that the self-construal (i.e., how people see themselves) of independence predicted healthy eating only for Americans, not for Japanese adults, and this association was mediated by autonomy. The authors noted that they found equivalent results when adopting perceived control instead of autonomy as a mediator, which is aligned with the findings of Kitayama et al. (2010) which suggested positive implications of independence and perceived control for health outcomes or behaviors among American adults but not necessarily for Japanese adults. In contrast, Kan et al. (2014) did not find differences between American and Japanese adults in whether perceived control mediated the associations of education and subjective social status with self-rated health and found that perceived control was significantly associated with self-rated health for both nationalities. However, because these studies were cross-sectional, longitudinal cross-national research is needed to make more conclusive directional inferences about perceived control predicting change in health over time. In addition, while research with Western populations has examined various health outcomes, the limited research with non-Western populations has addressed fewer health outcomes. Thus, there is a need to expand the cross-cultural research to address different aspects of health relating to perceived control for Japanese aging adults in contrast to Americans.

Health Predicting Perceived Control

For Western aging adults, longitudinal research shows that having more health problems such as chronic health conditions, functional limitations, and low self-rated health predicts lower levels of perceived control or its decline over time (Drewelies et al., 2017; Gerstorf et al., 2011; Infurna et al., 2018; Infurna & Okun, 2015). Health problems are associated with more negative self-perceptions of aging (Wurm et al., 2019), which may be self-fulfilling (Levy, 2009) and result in an increased sense of helplessness, or lack of control, particularly for those who need caregiving (Coudin & Alexopoulos, 2010; Whitehall et al., 2020). With regard to age differences, Infurna and Okun (2015) indicated that the association of functional limitations with levels of perceived control was more pronounced for middle-aged adults than older adults. The authors suggested that middle-aged adults with functional limitations might perceive their experience of having functional problems as too early (i.e., not age-normative) and those problems could limit their family and work life, which might negatively affect their sense of control. In contrast, Drewelies et al. (2017) found that the negative association of functional limitations with levels of perceived control was stronger for older people than their younger counterparts. Although it may be speculated that functional problems may increase one's self-perception of being sick (Drewelies et al., 2017) or being old (Wurm et al., 2019), which could in turn lead to lowering perceived control, the inconsistency in the directions of age differences found in these previous studies warrants further research.

Research on health predicting perceived control is more limited for non-Western populations. Choi et al. (2020) examined associations among functional limitations, sense of personal control, and subjective and psychological well-being comparing Japanese and American adults. While their focus was on whether personal control mediated the associations between functional limitations and well-being, they found a cross-national difference such that functional limitations were associated with personal control for American adults but not for Japanese adults. This finding appears similar to the aforementioned findings (Kitayama et al., 2010; Levine et al., 2016) addressing the opposite direction of this perceived control–health association. These studies all seem to suggest that perceived control may not be relevant to well-being for Japanese adults, whose focus tends to be less on independence than Americans', which may explain the differing results between the two nationalities. However, although Choi et al. (2020) examined associations of the predictor and mediator with the well-being outcomes both cross-sectionally and longitudinally, the association between functional limitations and personal control was cross-sectional in their multiple analyses. Thus, more longitudinal research is needed to address how health may lead to change in perceived control over time for those in distinct cultures/countries.

Purpose of the Study

Given the limitations of the aforementioned cross-national and cross-sectional studies, the present study aimed to examine longitudinal associations between perceived control and health and their age differences for the Japanese and American aging adults. In addition, this study addressed

multiple aspects of health relating to perceived control as well as the potential impact of aging on perceived control as these had not been well understood for non-Western, specifically Japanese, adults. By filling in these gaps in the literature on aging, perceived control, and health, the present study aimed to make a unique contribution by improving the knowledge of these understudied areas of research.

Specifically, the present study examined how perceived control at baseline (Time 1 [T1]) predicted changes in different aspects of health including self-rated health, number of chronic health conditions, and functional limitations over years (up to Time 2 [T2]) and how these aspects of health at T1 predicted change in perceived control from T1 to T2 for American and Japanese aging adults. For these associations, we had multiple hypotheses of age and cross-national differences building on the aforementioned previous findings and implications. In terms of cultural differences, we hypothesized that the following associations would be stronger for Americans than Japanese aging adults: (a) the associations of T1 perceived control and changes in health from T1 to T2, and (b) those of T1 health and change in perceived control from T1 to T2. We generalized our hypotheses for different aspects of health while investigating these health outcomes/predictors in an exploratory manner and anticipating that we might obtain some different results depending on the specific aspect of health. As discussed earlier, we also speculated that unlike Americans, age might not be associated with change in perceived control for Japanese aging adults. For age differences in associations between perceived control and health, we made hypotheses only for American aging adults as we expected such associations would not be pronounced for Japanese individuals. We hypothesized that both associations of T1 perceived control with change in health from T1 to T2 and of T1 health with changes in perceived control from T1 to T2 would be stronger for older American adults than their younger counterparts.

Research Methods

Data

Data from Midlife in the United States (MIDUS) and Midlife in Japan (MIDJA) were used for the present study. MIDUS is a national longitudinal survey measuring psychosocial and behavioral factors, health, and well-being, and MIDJA adopted common measures to those of the MIDUS survey, which was conducted in the Tokyo metropolitan area (University of Wisconsin–Madison Institute on Aging, 2020). Three waves of the MIDUS study were conducted in 1995–1996 (N = 7,108; aged 20–75), in 2004–2006 (N = 4,963), and in 2013–2014 (N = 3,294); whereas two waves of the MIDJA study were conducted in 2008 (N = 1,027; aged 30–79) and in 2012 (N = 657).

Because MIDJA had two waves of data, the present study chose the latter two waves of MIDUS data for comparison as their survey dates were closer to those of the two waves of MIDJA. The time elapsed between these two waves (T1 and T2) differed for MIDUS (approximately 9 years) and MIDJA (4 years). Due to the present study's focus on middle-aged and older adults, data for those aged 40 or older at T1 of MIDUS and MIDJA were selected. The selected respondents consisted of 4,455 American adults with an average age of 57.6 (SD = 11.3) at T1 and 827 Japanese adults with an average age of 59.2 (SD = 11.3).

Separately for MIDUS and MIDJA, their two waves of data were merged and multiple imputation was conducted with NORM (Schafer, 1999) using the multivariate normal distribution for estimating parameters and imputing missing values. Although it was impossible to verify the degree to which each missing data mechanism was involved, those missing data due to attrition and nonresponse were likely to involve missing at random or missing completely at random processes, for which multiple imputation could lead to making less biased conclusions (Little, 2013). In the present study, 20 imputations were conducted, each of which consisted of 200 iterations of the data augmentation chain (Enders, 2010). In imputing missing data, all variables selected in the present study (i.e., two waves [T1 and T2] of perceived control, self-rated health, chronic health conditions, and functional limitations as well as T1 age, sex, education, and emotional disorder; Ryff et al., 2017, 2018a, 2018b, 2019) were included in the multivariate normal model (see Author Note 1). After multiple imputation was conducted, all subsequent analyses were conducted using the set of the imputed 20 data sets with Mplus Version 8 (Muthén & Muthén, 1998), which produced average estimates for effects of interest among these multiple data sets.

Measures

From the various measures included in MIDUS and MIDJA (Ryff et al., 2017, 2018a, 2018b, 2019), the following were selected: demographic characteristics and emotional disorder at T1 as covariates; perceived control, self-rated health, number of chronic health conditions, and functional limitations at T1 and T2 as predictors or outcomes. MIDJA used translated versions of the same measures as MIDUS, but the scale of response options for each item of the measures for perceived control and functional limitations was coded in a reversed order. Below, the procedures for coding and computing scales are described referring to the original measures for MIDUS.

Demographic characteristics

The age of the respondents at T1 was used as their baseline age (in years). Sex was coded as male = 0 and female = 1. The respondents' highest level of education completed was recorded as a dichotomous variable: completion of a 4-year college degree or higher = 1 and less than 4-year college education completed = 0.

Emotional disorder

MIDUS and MIDJA respondents reported whether they have experienced or been treated for anxiety, depression, or

some other emotional disorder in the past 12 months. Their answer (yes = 1, no = 0) was used as a measure of reported emotional disorder.

Perceived control

Using a 7-point scale that ranged from 1 (*strongly agree*) to 7 (*strongly disagree*), the respondents reported how much they agreed with 12 statements including four items related to personal mastery and eight items related to perceived constraints (Lachman & Weaver, 1998). Examples of the personal mastery items (reverse-coded so that higher scores would mean higher perceived control) included "I can do just about anything I really set my mind to"; whereas, those of perceived constraints included "There is little I can do to change the important things in my life" (Lachman & Weaver, 1998). All 12 items were averaged as an overall score of perceived control. Cronbach's alphas at the two waves were 0.87 and 0.87 for MIDUS and 0.80 and 0.81 for MIDJA.

Self-rated health

The respondents rated their health answering the following question: "Using a scale from 0 to 10 where 0 means 'the worst possible health' and 10 means 'the best possible health', how would you rate your health these days?" This single item was used as a scale for self-rated health.

Chronic health conditions

MIDUS and MIDJA participants reported whether they had chronic health conditions (e.g., high blood pressure, stroke, and diabetes) in the past 12 months. The number of their reported chronic conditions was used as an overall score.

Functional limitations

Adopting the Medical Outcomes Study 36-item short-form health survey (SF-36; Ware & Sherbourne, 1992), MIDUS and MIDJA used a seven-item measure of functional limitations. Respondents reported on a 4-point scale that ranged from 1 (*a lot*) to 4 (*not at all*) how much their health limited seven activities including "lifting or carrying groceries," "climbing several flights of stairs," "bending, kneeling, or stooping," "walking more than a mile," "walking several blocks," "moderate activities (e.g., bowling, vacuuming)," and "vigorous activities (e.g., running, lifting heavy objects)." After reverse-coding the scores to indicate that higher scores signify greater difficulty in those activities, the seven items were averaged as an overall score of functional limitations. Cronbach's alphas at the two waves were 0.94 and 0.94 for MIDUS and 0.88 and 0.89 for MIDJA.

Analysis Strategy

In order to address longitudinal, reciprocal associations between perceived control and health, a path model of cross-lagged panel design was constructed separately for each health measure (i.e., self-rated health, chronic health conditions, or functional limitations) as seen in Figure 1. In these path models, the continuous predictors/covariates were centered at the average of the two nationalities' means. For these models, multigroup analyses were conducted for two national groups of American and Japanese aging adults, with maximum likelihood using Mplus Version 8 (Muthén & Muthén, 1998). First, the effects of predictors/covariates on residualized changes (i.e., each T2 outcome controlling for its baseline level at T1 as well as other covariates) in each health measure and in perceived control were freely estimated for each nationality. In addition, in order to determine whether the effects of the predictors differed by age, interaction terms of age by T1 perceived control (predicting change in each health measure) and of age by the matched T1 health measure (predicting change in perceived control) were added and assessed. Interaction terms found to be nonsignificant were removed, and then cross-national comparisons were conducted for each model to address: whether the effect of T1 age on changes from T1 to T2 in perceived control and each health measure varied between the two nationalities and whether the associations of each T1 health measure with change in perceived control and/or of T1 perceived control with change in each health measure differed cross-nationally. Specifically, the

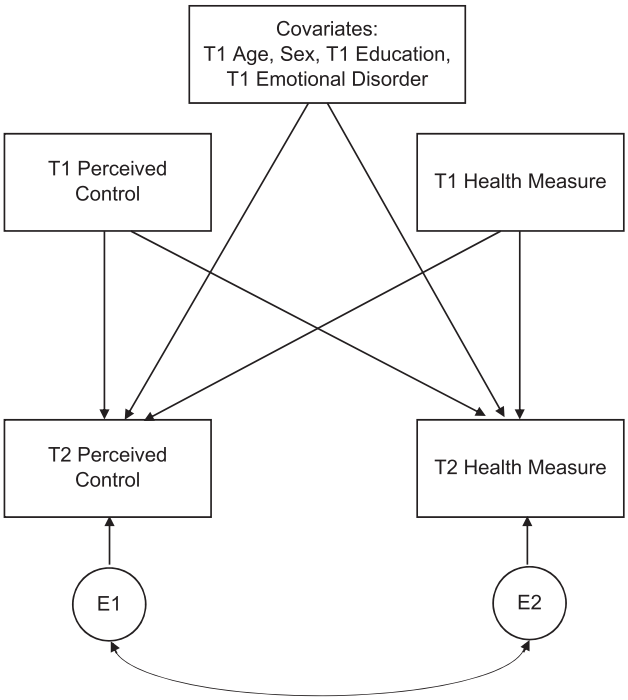

Figure 1. Path model for a reciprocal relationship between perceived control and each health measure. *Note:* Three models were analyzed separately for different health measures including self-rated health, chronic health conditions, and functional limitations. In each model, all exogenous variables were allowed to correlate with each other (so the model was just-identified); their covariance arrows and variance arrows are omitted from the above figure.

magnitude of the unstandardized coefficients of each of these predictors, including T1 age and T1 perceived control for predicting change in health, and T1 age and T1 health measure for predicting change in perceived control, was compared between the two nationalities. For these cross-national comparisons, the Wald chi-square test of parameter constraints (Muthén & Muthén, 1998–2017) was adopted because this test is suitable for testing equality constraints between groups in multigroup analyses with multiply imputed data (Enders, 2017).

Results

Descriptive statistics after conducting multiple imputation for American and Japanese aging adults and the results of inferential statistics comparing the two nationalities are summarized in Table 1.

Path Models for Perceived Control and Health Measures

In all path models, none of the interactions of T1 age with T1 perceived control predicting change in health or with T1 health measure predicting change in perceived control were significant for either nationality. These results indicate that the magnitude of the effects of the predictors did not significantly differ by age for American or Japanese respondents. Thus, all the interaction terms were removed from the models, and these models with no interaction terms were just-identified so had a "perfect" model fit (i.e., $\chi^2 = 0$, root mean square error of approximation (RMSEA) = 0, comparative fit index (CFI) = 1, and standardized root mean square residual (SRMR) = 0). The results for each model are summarized in Table 2 for self-rated health, in Table 3 for chronic health conditions, and in Table 4 for functional limitations. As seen in these tables, there were different tendencies in the effects of covariates between the two nationalities. As these covariates (excluding T1 age, which was a predictor of interest) were not the focus of the present study, their cross-national differences were not assessed.

Predicting change in each health measure

As seen in Tables 2–4, for the American respondents, T1 perceived control significantly predicted change in the health measures of all models (self-rated health: $\beta = 0.100$, $p < .001$; chronic health conditions: $\beta = -0.104$, $p < .001$; functional limitations: $\beta = -0.067$, $p < .001$), indicating that higher perceived control predicted less decline (or more improvement) in health. In contrast, for the Japanese respondents, while T1 perceived control predicted change in functional limitations significantly ($\beta = -0.087$, $p < .05$) and change in self-rated health marginally ($\beta = 0.065$, $p < .10$), it did not predict change in chronic health conditions. The results of Wald tests also indicate this cross-national difference: the effect of T1 perceived control differed only for change in chronic health conditions between the two nationalities.

With regard to age differences, older T1 age significantly predicted more health decline in all models (self-rated health: $\beta = -0.074$, $p < .001$; chronic health conditions: $\beta = 0.061$, $p < .01$; functional limitations: $\beta = 0.201$, $p <$

Table 1. Descriptive Statistics for MIDUS and MIDJA Respondents Aged 40 or Older

Variable	American (MIDUS; *N* = 4,455) Mean (*SD*)/%	Japanese (MIDJA; *N* = 827) Mean (*SD*)/%	Differences between American and Japanese respondents
T1 age	57.6 (11.3)	59.2 (11.3)	$p < .001$
Female (men = 0; women = 1)	53%	51%	No difference
T1 education/college graduate (college graduate = 1 or not = 0)	36%	30%	$p < .001$
T1 emotional disorder (yes = 1, no = 0)	19%	8%	$p < .001$
T1 perceived control	5.5 (1.0)	4.6 (0.8)	$p < .001$
T2 perceived control	5.4 (1.0)	4.6 (0.8)	$p < .001$
T1 self-rated health	7.3 (1.6)	6.2 (2.0)	$p < .001$
T2 self-rated health	7.2 (1.7)	6.1 (2.0)	$p < .001$
T1 chronic health conditions	2.6 (2.6)	2.4 (2.0)	$p < .05$
T2 chronic health conditions	3.6 (3.2)	2.2 (1.8)	$p < .001$
T1 functional limitations	1.8 (0.9)	1.5 (0.8)	$p < .001$
T2 functional limitations	2.1 (0.9)	1.6 (0.8)	$p < .001$

Notes: MIDJA = Midlife in Japan; MIDUS = Midlife in the United States. For continuous variables, means and standard deviations (*SD*; in parentheses) are reported; for dichotomous variables, percentages are reported. For the differences between American and Japanese respondents, the results (i.e., *p* values) of linear regressions (for continuous variables) and logistic regressions (for dichotomous variables) of nationality predicting each variable are reported. In addition, the results of Wald tests examining differences between the two waves (not included in the above table) indicated: for the American respondents, all perceived control, self-rated health, chronic health conditions, and functional limitations differed significantly ($p < .001$) between T1 and T2; for the Japanese respondents, there were significant or marginal differences in self-rated health ($p < .05$), chronic health conditions ($p < .10$), and functional limitations ($p < .001$) between T1 and T2, but perceived control did not differ between the two waves.

Table 2. Estimated Standardized Effects for Path Model for Reciprocal Association Between Perceived Control and Self-Rated Health

Predictors	Standardized coefficients β (standard errors in parentheses)		Cross-national differences (results of the Wald test)
	American	Japanese	
T2 self-rated health predicted by:			
T1 perceived control	0.100 (0.019)***	0.065 (0.036)†	No difference
T1 age	−0.074 (0.017)***	−0.045 (0.036)	No difference
Sex	0.018 (0.016)	0.097 (0.039)*	—
T1 education	0.046 (0.016)**	0.069 (0.037)†	—
T1 emotional disorder	−0.041 (0.018)*	−0.019 (0.035)	—
T1 self-rated health	0.501 (0.018)***	0.508 (0.036)***	—
R^2 for T2 self-rated health	0.328***	0.308***	
T2 perceived control predicted by:			
T1 self-rated health	0.086 (0.018)***	0.049 (0.036)	Marginal ($p = .057$)
T1 age	−0.144 (0.016)***	−0.041 (0.032)	$p < .001$
Sex	0.012 (0.013)	0.087 (0.038)*	—
T1 education	0.058 (0.013)***	0.048 (0.042)	—
T1 emotional disorder	−0.037 (0.016)*	−0.049 (0.036)	—
T1 perceived control	0.612 (0.012)***	0.580 (0.030)***	—
R^2 for T2 perceived control	0.479***	0.401***	

Notes: In addition to the standardized coefficients of the predictors, the values of R^2 are provided above for each endogenous (dependent) variable. Cross-national differences were assessed only for the effects of T1 age, T1 perceived control, and T1 self-rated health by conducting Wald tests, which compared their unstandardized coefficients between nationalities.
***$p < .001$, **$p < .01$, *$p < .05$, †$p < .10$.

Table 3. Estimated Standardized Effects for Path Model for Reciprocal Association Between Perceived Control and Chronic Health Conditions

Predictors	Standardized coefficients β (standard errors in parentheses)		Cross-national differences (results of the Wald test)
	American	Japanese	
T2 chronic health conditions predicted by:			
T1 perceived control	−0.104 (0.018)***	−0.051 (0.036)	$p < .05$
T1 age	0.061 (0.018)**	0.041 (0.038)	No difference
Sex	0.043 (0.016)**	0.071 (0.037)†	—
T1 education	−0.043 (0.013)**	0.021 (0.039)	—
T1 emotional disorder	−0.006 (0.017)	0.025 (0.038)	—
T1 chronic health conditions	0.558 (0.017)***	0.523 (0.036)***	—
R^2 for T2 chronic health conditions	0.387***	0.311***	
T2 perceived control predicted by:			
T1 chronic health conditions	−0.086 (0.021)***	−0.059 (0.039)	No difference
T1 age	−0.131 (0.016)***	−0.033 (0.032)	$p < .001$
Sex	0.021 (0.013)	0.092 (0.037)*	—
T1 education	0.061 (0.013)***	0.046 (0.042)	—
T1 emotional disorder	−0.014 (0.017)	−0.035 (0.037)	—
T1 perceived control	0.624 (0.012)***	0.587 (0.030)***	—
R^2 for T2 perceived control	0.478***	0.402***	

Notes: In addition to the standardized coefficients of the predictors, the values of R^2 are provided above for each endogenous (dependent) variable. Cross-national differences were assessed only for the effects of T1 age, T1 perceived control, and T1 chronic health conditions by conducting Wald tests, which compared their unstandardized coefficients between nationalities.
***$p < .001$, **$p < .01$, *$p < .05$, †$p < .10$.

Table 4. Estimated Standardized Effects for Path Model for Reciprocal Association Between Perceived Control and Functional Limitations

Predictors	Standardized coefficients β (standard errors in parentheses)		Cross-national differences (results of the Wald test)
	American	Japanese	
T2 functional limitations predicted by:			
T1 perceived control	−0.067 (0.014)***	−0.087 (0.037)*	No difference
T1 age	0.201 (0.015)***	0.207 (0.038)***	No difference
Sex	0.030 (0.014)*	0.000 (0.039)	—
T1 education	−0.068 (0.013)***	−0.098 (0.038)*	—
T1 emotional disorder	0.036 (0.013)**	0.060 (0.035)†	—
T1 functional limitations	0.578 (0.012)***	0.337 (0.044)***	—
R^2 for T2 functional limitations	0.523***	0.270***	
T2 perceived control predicted by:			
T1 functional limitations	−0.080 (0.016)***	−0.004 (0.042)	$p < .05$
T1 age	−0.122 (0.017)***	−0.037 (0.037)	$p < .01$
Sex	0.025 (0.013)†	0.089 (0.038)*	—
T1 education	0.057 (0.013)***	0.047 (0.042)	—
T1 emotional disorder	−0.039 (0.016)*	−0.058 (0.034)†	—
T1 perceived control	0.619 (0.012)***	0.593 (0.029)***	—
R^2 for T2 perceived control	0.478***	0.399***	

Notes: In addition to the standardized coefficients of the predictors, the values of R^2 are provided above for each endogenous (dependent) variable. Cross-national differences were assessed only for the effects of T1 age, T1 perceived control, and T1 functional limitations by conducting Wald tests, which compared their unstandardized coefficients between nationalities.
***$p < .001$, **$p < .01$, *$p < .05$, †$p < .10$.

.001) for the American respondents but predicted only more increased functional limitations (β = 0.207, $p < .001$) for the Japanese respondents. However, these apparent cross-national differences were not supported by Wald tests: the magnitude of the effect of age on the health measure of each model did not significantly differ between the two nationalities. Thus, the apparent differences in the effects of age for self-rated health and chronic health conditions between the two nationalities may be negligible.

Predicting change in perceived control

As seen in Tables 2–4, for the American respondents, the T1 health measure of each model (self-rated health: β = 0.086, $p < .001$; chronic health conditions: β = −0.086, $p < .001$; functional limitations: β = −0.080, $p < .001$) significantly predicted change in perceived control, indicating that poorer health predicted greater decrease in perceived control. In contrast, the T1 health measure did not predict change in perceived control in any of the models for the Japanese respondents. These results partially correspond to those of Wald tests, indicating that the magnitude of the effects of functional limitations differed significantly and that of the effects of self-rated health differed marginally between the two nationalities. There was no significant or marginal difference in the magnitude of the effect of chronic health conditions.

In all models, older T1 age predicted a greater decrease in perceived control (β = −0.122 to −0.144, $p < .001$) for the American respondents but not for the Japanese respondents. Wald tests also indicated that the effect of T1 age differed between the two nationalities in all models.

Discussion and Implications

The present study investigated longitudinal reciprocal associations between perceived control and multiple aspects of health for American and Japanese aging adults. While the magnitude of either direction of these associations was not found to vary by age for each nationality (see Author Note 2), this study revealed some cross-national differences as discussed in detail below: for only the American respondents, older age and poorer health were associated with a greater decrease in perceived control and lower perceived control was associated with a greater increase in chronic health conditions. At the same time, similar tendencies were found between the two nationalities of lower perceived control predicting decreased self-rated health and increased functional limitations over time. These unique findings contribute to the cross-cultural aging literature on perceived control and health by improving the knowledge of such associations for aging adults with distinct cultural backgrounds. Moreover, the present findings highlight important implications and directions for future research as described below.

Cultural Differences in Implications of Age and Health for Change in Perceived Control

Aligned with previous findings (Lachman et al., 2009; Slagsvold & Sørensen, 2008), older age was associated with a greater decline in perceived control over time for the

American respondents, even despite controlling for baseline health. However, it was not for the Japanese respondents, and this cross-national difference was significant as we speculated. For American aging adults, it seems it is not just poor health, but also being old, or perception of aging (Coudin & Alexopoulos, 2010; Levy, 2009), that has negative impacts on perceived control. On the other hand, none of the baseline health measures predicted change in perceived control for the Japanese respondents. Thus, neither being old nor poor health appear to have notable implications for decreasing perceived control for Japanese aging adults.

Previous research suggests that age-related experiences, which can include having poorer health compared to younger individuals, may lead to lowering perceived control for American aging adults (Lachman et al., 2011). However, the present findings imply that this tendency may not be applicable to Japanese adults. Such a cross-cultural difference may be indicative of American and Japanese individuals' different perceptions of being old and having a sense of control. Although being old can have both positive and negative stereotypes, negative stereotypes, such as *confused*, *dependent*, *forgetful*, *incompetent*, and *senile*, predominate in American society (Levy et al., 2000). These stereotypes may be internalized and self-fulfilling, negatively affecting self-efficacy (Hausknecht et al., 2020; Levy et al., 2000) which is closely related to perceived control (Lachman et al., 2011). In contrast, being old may have more positive implications associated with maturity in the Japanese society where older people are more respected with traditions and practices influenced by Confucian teachings (e.g., filial piety; Ryff, Boylan et al., 2015). Moreover, Asian individuals may be more accepting of their experiences (e.g., aging-related experiences), without attempting to control those experiences (Cheng et al., 2013). Thus, aging and health decline may be less relevant to sense of control among Japanese aging adults. As these are speculations, future research should address whether and how specific cultural values may or may not affect relationships between aging experiences and perceived control.

Cultural Differences in Implications of Perceived Control for Change in Health

For American respondents, baseline perceived control predicted changes in all three health outcomes over time, which correspond to previous findings for Western populations (Lachman et al., 2011). For the Japanese respondents, similar tendencies were observed for predicting changes in functional health and self-rated health, but not for chronic health conditions.

As a speculation, for Japanese individuals, perceived control may be associated only with subjective, not objective, health outcomes. In the present study, number of chronic health conditions concerned the objective fact of having or not having specific health conditions while the other two measures assessed their subjective evaluation of overall health or functional limitations/abilities. It is possible subjective health may be affected by psychological factors closely related to perceived control, such as optimism and self-efficacy, beyond cultural values. For example, in Western populations, optimism and self-efficacy are associated with self-rated overall health and functional health, independent of health-related behaviors (e.g., exercising; Mullen et al., 2012; Steptoe et al., 2006); similarly, these psychological factors may also lead Japanese aging adults to have a positive outlook on their health and maintain confidence about their functional abilities. If this is the case, one of the potential inquiries in future research would be whether these psychological factors simply inflate subjective perceptions of health or have the potential to influence objective physical conditions and abilities through enhancing such subjective perceptions for Japanese as well as American aging adults. For example, self-rated health predicts mortality beyond health conditions or illnesses for both American (Miller & Wolinsky, 2007) and Japanese aging adults (Murata et al., 2006), so subjective health may serve as a mediator for associations between perceived control and objective health-related outcomes.

In contrast to subjective health, objective aspects of health such as chronic health conditions may be responsive to more directly influential factors on physical or physiological conditions. For American aging adults, having a strong sense of control may lead to their actual behaviors (e.g., exercising) aimed to improve health, which can affect objective health outcomes over years, due to their deeply ingrained value of agency or emphasis on taking responsibility for their actions to obtain desired outcomes (Cheng et al., 2013; Lachman et al., 2011). However, such links between perceived control and actual behaviors may be nonexistent or too weak to make a difference for Japanese aging adults, who may be less likely to take such an action-oriented approach due to their lesser emphasis on independence and agency (Cheng et al., 2013; Kitayama et al., 2010). Thus, one direction of future research may be to investigate how differently perceived control is longitudinally linked to health-related behavioral factors, such as exercising and having a healthy diet, for American and Japanese aging adults, as such factors may be behavioral mediators for the associations of perceived control with objective health outcomes at least among Americans (Lachman et al., 2011).

Theoretical Implications

The present findings suggest the associations between perceived control and health may not necessarily be universal, but rather culture-specific. Life-span developmental

theory addresses normative age-related influences on developmental outcomes (e.g., perceived control and health), noting that influences that are considered normative depend on the societal or cultural context (Baltes & Smith, 2004). Normative age-related influences may differ between American and Japanese societies due to cultural differences in perceptions of aging (i.e., more positive perceptions in Japan), and thus the degree of such influences may vary for their perceived control. This difference may help explain the finding that older age was associated with decreased perceived control only for the American respondents. However, while life-span theory also highlights cultural influences on developmental outcomes, it is too broad to explain the current findings of nuanced cross-national differences or similarities in the associations of perceived control and multiple aspects of health. In order to better explain the present findings, it may be necessary to develop theories or models specific to perceived control taking cultural influences into consideration. One possible direction for advancing the theoretical understanding is to cross-culturally expand Lachman's conceptual model (Lachman, 2006; Lachman et al., 2011) on the reciprocal relationships of perceived control and aging-related outcomes (e.g., health). In the model, cultural factors such as values (e.g., independence and agency) and perceptions of aging could be added to address how these cultural factors can affect perceived control and different aspects of health or alter their relationships with other associated factors (e.g., mediators for the perceived control–health links). These findings and future research should be used to inform theoretical models that can more comprehensively explain cultural differences in the associations of perceived control and health.

Practical Implications

Particularly for American aging adults, the present findings suggest a possible vicious cycle in which lower perceived control may lead to decreasing health, in turn leading to further lowering perceived control over time. Although such potential impacts of perceived control and health may not necessarily differ by age, promoting perceived control may be important especially for older individuals, who tend to experience more declines in perceived control and health as indicated in the present as well as previous findings. Moreover, enhancing perceived control may be beneficial also for Japanese aging adults, at least for promoting subjective aspects of health. More research is needed to investigate the mechanisms for how perceived control is differently related to subjective and objective health outcomes for Japanese as well as American aging adults, which may involve some contextual factors (e.g., political structure) as well as cultural values (e.g., more/less emphases on independence and agency). Investigating the mechanisms and exploring effective interventions for promoting perceived control and health are important directions of future research for both nationalities.

Limitations

Despite the aforementioned contributions of the present study and its implications indicating directions of future research, there are some limitations to be noted as well. First, as mentioned earlier, the time elapsed between the two waves differed for American (around 9 years) and Japanese adults (4 years). It is possible that by having several more years, the associations between perceived control and health for the American respondents might have changed, which might have resulted in the differences. Future research should design a more comparable cross-national study that will have similar timing and duration. In addition, while research for American and Japanese adults adds value to the literature, this body of literature needs to be expanded to investigate other nationalities who have various levels of independence and other related values. Similarly, the present study did not address diversity within each nationality. In addition to possible differences in cultural values among racial and ethnic groups particularly in the United States, socioeconomic status is a potential factor that can affect perceived control (Lachman et al., 2011). Future research should address the potential for different associations between perceived control and health both across nationalities and among diverse populations within nations.

Another limitation concerns the comparability of MIDUS and MIDJA measures. For example, while Japanese adults reported fewer chronic health conditions and functional limitations indicating better health, their average self-rated health was worse than American adults. These measures used self-report items, which may be influenced by cultural differences in the emphasis on values such as modesty (Karasawa et al., 2011). If this is the case, it may actually be inappropriate to simply compare raw scores from those "same" measures cross-culturally. One possible way to address this issue may be rescaling raw scores considering culture-specific tendencies in self-report (Karasawa et al., 2011), but it would remain challenging to develop methods that could detect real differences between cultural groups. Although it may be possible to adopt more objective, behavioral, or physiological measures (Heine et al., 2002) for some constructs, measures for subjective constructs including self-rated health and perceived control may remain a limitation even in future cross-cultural research.

Conclusions

The present study addressed longitudinal and reciprocal associations between perceived control and different aspects of health for American and Japanese aging adults. Findings suggested some cross-national differences showing that lower perceived control was associated with greater increases in chronic health conditions over time for Americans but not for Japanese aging adults. In contrast, perceived control may have positive implications for self-rated health and functional health for both nationalities.

In addition, age and health were associated with changes in perceived control for American aging adults, but not for Japanese. This study lays the groundwork for further investigations to further the knowledge of close relationships between perceived control and health among aging adults in different cultures.

Author Notes

1. For the selected MIDUS and MIDJA data, there were no missing values for T1 age and sex. For the MIDUS data, 17%–18% of the scores were missing for T1 variables except education (with 0.1% missing) and 39%–41% were missing for T2 variables. For the MIDJA data, less than 2% were missing for T1 variables and 33%–36% were missing for T2 variables. The missing data for T2 variables were mainly due to attrition for both MIDUS and MIDJA. While common tendencies of attrition for MIDUS and MIDJA were that T2 nonparticipants were significantly or marginally more likely to be male, less educated, and overall report poorer health and lower perceived control at T1 (detailed results available upon request), multiple imputation would lead to the best possible estimates using available data (Little, 2013).

2. In our additional analyses, we also compared the magnitude of the effects of the predictors (i.e., T1 perceived control predicting change in each health measure from T1 to T2, the matched T1 health measure predicting change in perceived control from T1 to T2) by replacing the continuous age variable with a dichotomous variable of age group (aged 40–64 [i.e., middle-aged] = 0; aged 65+ [i.e., older] = 1) and including the interaction terms of age group by each predictor for the outcomes in the path models. None of these interactions were significant, suggesting that the magnitude of the effects of these predictors did not differ between the two age groups for each nationality.

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Conflict of Interest

None declared.

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