Japanese Psychological Research

THE JAPANESE PSYCHOLOGICAL ASSOCIATION

Japanese Psychological Research
2022, Volume 64, No. 2, 156–169
Special issue: Culture and Health

doi: 10.1111/jpr.12405

Cultural Differences in Self-Rated Health: The Role of Influence and Adjustment[1]

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Abstract: Previous studies have demonstrated cross-cultural differences in the levels of self-rated health (SRH), an individual's overall perception of their health, and that Korea and Japan tend to show relatively poor SRH despite higher life expectancy compared to countries like the United States. While it has been suggested that response styles and macro-level cultural values contribute to such differences, there is limited research on what other factors might be. The present study focused on influence and adjustment strategies as a potential cultural factor that could partly explain the cultural differences in SRH. Results from structural equation modeling have shown that Americans reported greater influence and positive reappraisal, plus a lower adjustment of goals than Japanese individuals, which partially explained the higher SRH among Americans than in the Japanese. These patterns were found even when a more objective measure of health (i.e., chronic conditions) was controlled for. Together, the findings highlight the role of influence and adjustment in understanding cultural differences in SRH.

Key words: self-rated health, influence and adjustment, culture.

Self-rated health is an individual's overall perception of his or her physical and mental health (OECD, 2019) determined through a variety of factors from general physical function and health behaviors (Krause & Jay, 1994; Molarius & Janson, 2002) to social disconnectedness and weight perception (Cornwell & Waite, 2009; Idema, Roth, & Upchurch, 2020). Self-rated health has also been suggested as a powerful predictor of morbidity and mortality risk even after accounting for known demographic, social, and medical risk factors (Benyamini & Idler, 1999; Franks, Gold, & Fiscella, 2003; Idler, Russell, & Davis, 2000; Latham & Peek, 2013), and a useful indicator of objective health (Wu et al., 2013). At the same time, beyond an overall evaluation of one's state of health and related practices, self-rated health has also been thought to be influenced by regulatory efforts to achieve important health-related goals (Bailis, Segall, & Chipperfield, 2003), as well as different sociodemographic factors (Peersman, Cambier, De Maeseneer, & Willems, 2012).

While the cross-cultural comparability of self-rated health has been discussed (Jurges, 2007; Lee & Shinkai, 2003; Sadana, Mathers, Lopez, Murray, & Iburg, 2002), little is known about the specific cultural values and beliefs that influence self-rated health. Here, it is argued that cultural differences in self-rated health may be partly explained by cultural differences in

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control strategies, either through influence (primary control) or adjustment (secondary control; Rothbaum, Weisz, & Snyder, 1982), which are known to play significant roles in maintaining and improving both objective and subjective health (Chipperfield, Hamm, Perry, & Ruthig, 2017; Morling & Evered, 2006). This study thus considered influence and adjustment as predictors of self-rated health and used it to explain cultural differences in self-rated health using midlife samples from the US and Japan.

Cultural Differences in Self-Rated Health

Cross-national differences in self-rated health have been constantly examined in world organizational reports (OECD, 2017, 2019). According to population reports by the Organization for Economic Co-operation and Development (OECD, 2019), Korea and Japan show relatively poor self-rated health compared to their high life expectancy. Conversely, self-rated health in the US, Canada, and Australia tends to lean towards the positive side and on average tends to be higher, despite relatively low life expectancies in these countries compared to Korea and Japan (OECD, 2017). Such reports have discussed the possibility of cultural factors and beliefs that may contribute to cultural differences in self-rated health beyond objective health status.

Some studies have examined response styles regarding the rating of subjective health at the cultural level (Jurges, 2007; Lee & Shinkai, 2003). For instance, using data from the 2004 Survey of Health, Aging and Retirement in Europe (SHARE), Jurges (2007) examined cross-country variations in the reporting of self-rated health beyond variations in objective health indices: certain European countries (e.g., Sweden, Denmark) tended to overestimate their health, whereas others (e.g., Germany) underestimated their health status. Further, within East Asia, Lee and Shinkai (2003) examined self-rated health among older adults in Korea and Japan, where in each culture they showed a response tendency to rate their health as "average". Yet, findings concerning response styles and biases in self-rated health across cultures are not consistent. A cross-national study comparing Australia, the United States, Japan, and South Korea found that East Asian respondents tended to show a more extreme response compared to Western respondents (French et al., 2012), suggesting the need to further examine cultural values and beliefs that may play a role in the cross-cultural variation in self-rated health.

Several studies examined macro-level sociocultural determinants of cultural differences in self-rated health (Mackenbach, 2014; Roudijk, Donders, & Stalmeier, 2017). Mackenbach (2014), for instance, studied the association between cultural dimensions (e.g., traditional versus rational/secular, survival versus self-expression) and health among European countries at the cultural level and found self-expression to have the most consistent association with health behavior and indicators. Similarly, Roudijk et al. (2017) focused on cultural dimensions and health using the World Values Survey (WVS) data from 51 countries, where they found that greater self-expression values (i.e., trust, tolerance, and political activism vs. economic and physical security) and traditional values (i.e., religion, authority, national pride, and parent–child ties), respectively, are associated with better self-rated health both within and between countries. However, their findings did not take into account differences in objective health, and thus may mainly reflect differences in objective health status (e.g., better health in cultures high in self-expression values).

Beyond such findings, very little is known about the role of other cultural factors that explain self-rated health beyond objective health, and there is further variance that requires exploration. Specifically, it can be predicted that cultural variation in self-rated health may be further explained by differences in influence and adjustment strategies.

Cultural Differences in Influence and Adjustment

According to Rothbaum et al. (1982), influence and adjustment (or primary and secondary control) have been suggested as two of the major approaches whereby people attempt to gain control across cultures. Influence (or primary control) involves efforts to gain control by changing one's surroundings to fit one's wishes and goals, while adjustment (or secondary

control) is attempting to gain control through shaping and changing internal conditions to "fit in" to one's environment and situation, affording some control over the psychological impact of outside factors. Adjustment can be further divided into subconstructs, including adjustment of goals (i.e., changing one's goals according to the situation) and positive reappraisal (i.e., reinterpreting the situation in a more positive light; Chipperfield et al., 2017; Heckhausen, Wrosch, & Schulz, 2010).

While individuals, in general, utilize a combination of these types of control strategies, cultural systems may contribute to a preference for certain control strategies over others (Morling, Kitayama, & Miyamoto, 2002; Rothbaum & Wang, 2011; Zhou, He, Yang, & Baumeister, 2012). Cross-cultural studies have, in fact, found cultural differences in the use of these strategies: an emphasis or preference for influence in Western cultures, particularly in the United States, in contrast to a preference for adjustment of goals in non-Western cultures (Japan; Heckhausen & Schulz, 1995; Morling et al., 2002; Weisz, Rothbaum, & Blackburn, 1984; Wrosch, Heckhausen, & Lachman, 2000). For example, using the recall of past experiences, Morling et al. (2002) found US individuals to remember situations involving influence with greater frequency, whereas Japanese individuals reported adjustment situations more. Other studies used the scale of control strategies to examine cultural differences. Comparing self-report measures of control among North American, German, Malaysian, and Japanese students, Seginer, Trommsdorff, and Essau (1993) found a preference for secondary control greatest among Malaysians, followed by the Japanese, North Americans, and Germans. Further, a study comparing European Canadians, East Asian Canadians, and Japanese university students found that most internally targeted control strategies (i.e., secondary control; self-control, distancing, acceptance of the situation, and waiting things out) were more prevalent among East Asian participants compared to those with Western English-speaking backgrounds (Tweed, White, & Lehman, 2004). However, there are some inconsistencies in cultural differences regarding positive reappraisal: some studies show the tendency of reappraising prevalent across cultures (Matsumoto, Yoo, & Nakagawa, 2008), while other studies suggest that it is more prevalent among Western English-speaking cultures, potentially because it entails a positive view of the self (Tweed et al., 2004). As such, while this study expected cultural differences in influence and adjustment of goals, no specific predictions were made relating to positive reappraisal.

Culture, Control, and Self-Rated Health

Cultural differences in the influence and adjustment of goals are likely to have implications for self-rated health. A wealth of studies on how control is related to self-rated health have generally focused on influence, which has been found to be related to better self-rated health both within and across cultures (Bobak, Pikhart, Hertzman, Rose, & Marmot, 1998; Bobak, Pikhart, Rose, Hertzman, & Marmot, 2000; Carlson, 1998; Infurna & Okun, 2015). For instance, using the 1992 World Value Survey data, Carlson (1998) found that people with lower perceived control over their life reported lower perceptions of their own health status. Further, greater perceived control over life and health was strongly related to better perceived health in Russian countries (Bobak et al., 1998) and those in Central and Eastern Europe (Bobak et al., 2000). Longitudinal research also suggests that influence promotes physical health (Infurna & Okun, 2015) and predicts better global self-rated health (Chipperfield, Campbell, & Perry, 2004; Menec, Chipperfield, & Perry, 1999).

It is unclear whether engaging in influence strategies is related to better self-rated health beyond objective health conditions, but this relationship can be implied from studies on perceived control and optimistic bias (i.e., an individual's tendency to think they are less at risk than their peers, not equal to optimism; Klein & Helweg-Larsen, 2002). According to a meta-analysis by Klein and Helweg-Larsen (2002), even though the link was stronger among US samples compared to non-US samples, higher perceived control was related to greater optimistic bias across cultures (e.g., US, United Kingdom, Netherlands, Germany, Israel). Therefore, it was predicted that influence is linked to higher self-rated health beyond objective health, and that the relatively

high rating of one's health examined among US individuals beyond objective health conditions could be partly explained by their greater influence tendencies compared to the Japanese (Heckhausen & Schulz, 1995; Morling et al., 2002; Weisz et al., 1984; Wrosch et al., 2000).

While not as extensively examined as influence, both the adjustment of goals and positive reappraisal have also been linked to how people perceive their health, especially within low-influence contexts. The adjustment of goals has generally been linked to worse self-rated health (though showing limited beneficial effects among adults aged over 80; Chipperfield, Perry, & Menec, 1999; Menec et al., 1999), whereas positive reappraisal was related to better self-rated health (Chipperfield et al., 2012). While it is unclear if these patterns remain even after controlling for objective health, it can be predicted that the relationships will be largely in line with previous findings. Specifically, adjusting one's goals can be considered as a means to "fit in" and adapt to the environment (Morling & Evered, 2006). Thus, it is possible that individuals are likely to be more attentive to their surroundings and environment, further taking their situation into account when perceiving their own health status. Such a relationship can be implied from studies on context-sensitive self-views, or one's awareness of one's beliefs, attitudes, and values, stemming from interactions with the environment (Kashima et al., 2004). Cross-cultural studies have suggested that more context-dependent (Cousins, 1989; Kanagawa, Cross, & Markus, 2001; Kashima et al., 2004) and more critical (Bond & Cheung, 1983; Kanagawa et al., 2001; Suh, 2007) self-views among East Asians (compared to Americans) should help them identify and address their shortcomings (Heine et al., 2001). Based on such findings, it can be reasoned that individuals who prefer to adjust their goals may also demonstrate more context-sensitive, and subsequently less positive, self-views: this could lead them to take a relatively more moderate, receptive, and context-dependent approach to their health. That is, people who prefer to adjust their goals could be taking a relatively more accurate approach to their health. The prediction is that the adjustment of goals is linked to lower self-rated health beyond objective health, and that the relatively lower self-rated health among the Japanese would be partly explained by their higher adjustment of goals, compared to US individuals (Tweed et al., 2004).

Positive reappraisal, on the other hand, may show a different pattern from that of the adjustment of goals. As discussed above, positive reappraisal has been linked to better self-rated health (Chipperfield et al., 2012). While some part of the association may be driven by objective health conditions, positive reappraisal is likely to be related to better self-rated health beyond objective health. Positive reappraisal, a self-protective approach by perceiving positive aspects of the self and situation when coping with a stressor (Heckhausen et al., 2010), may partly reflect a tendency to hold a positive view of the self (Tweed et al., 2004). To the extent that such tendency extends to the perception of one's health status, it can be assumed that people with greater positive reappraisal tendencies are likely to report subjective health more positively. Therefore, while no specific predictions for cultural differences in positive reappraisal were made due to mixed findings (Matsumoto et al., 2008; Tweed et al., 2004), greater positive reappraisal was expected to be linked to higher self-rated health beyond objective health.

Current Study

This study used structural equation modeling to test a hypothetical path model estimating the direct effect of culture on self-rated health and the mediating effects of influence and adjustment between culture and self-rated health (Figure 1) using a random sample of American and Japanese mid-life adults. Specifically, it was predicted that self-rated health would be higher among US individuals compared to Japanese individuals, and such cultural difference would be partially explained by higher tendencies of influence and lower tendencies of adjustment among American than Japanese individuals. Further, the current study examined whether influence and adjustment can explain cultural differences in self-rated health over and beyond objective health, considering the strong link between subjective and objective

health (Wu et al., 2013), which has not been considered in previous studies examining the role of psychosocial factors in explaining cultural differences in self-rated health. In addition, despite the assumption that measurement of influence and adjustment is comparable across nations, the meaning of items may differ for people from different countries. Therefore, first, a factor analysis was conducted to establish measurement invariance of influence and adjustment to make sure that differences across groups in means or correlates of influence and adjustment are not due to measurement error or bias.

Methods

Sample

A subset of the Midlife in the United States (MIDUS) survey and the corresponding Midlife in Japan (MIDJA) survey conducted in 2008 was used. For the United States sample, the MIDUS Project 1 of the second wave of the MIDUS (i.e., MIDUS II, 2002–2009) was employed. MIDUS II is the longitudinal follow-up data from the MIDUS I (1995–1996). Adults from the random-digit-dialing sample (Radler & Ryff, 2010) were used. This sample included non-institutionalized, English-speaking adults randomly selected from working telephone banks in the 48 contiguous states. For the Japanese sample, the MIDJA survey data (2008–2009), a probability sample of Japanese adults from the Tokyo metropolitan area was used. Participants with the predictor variable and at least one outcome variable were included in the final analysis sample. As a result, the United States sample consisted of 1,792 adults (815 females; $M_{age} = 56.83$ years, age range = 30 to 84 years), while the final Japanese sample comprised 1,013 adults (496 females $M_{age} = 54.23$ years, age range = 30 to 79 years).

Variables

Self-rated health. Self-rated health was measured using a single-item scale ("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?").

Influence and adjustment. To measure influence and adjustment tendencies, items from primary and secondary control were employed,

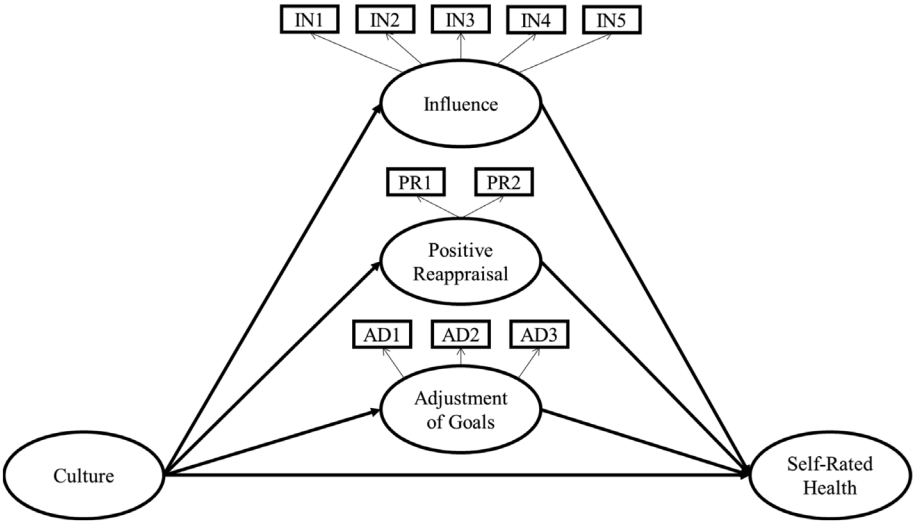

Figure 1 Structural Equation Model. While not presented, the model controls for age, gender, and number of chronic conditions and symptoms.

Table 1 Exploratory factor analysis of primary and secondary control items

Item	IN	PR	AD
When things do not go according to my plans, my motto is, "Where there's a will, there's a way."	0.61	0.21	0.01
When faced with a bad situation, I do what I can to change it for the better.	0.65	0.19	0.06
Even when I feel I have too much to do, I find a way to get it all done.	0.65	0.08	−0.02
When I encounter problems, I do not give up until I solve them.	0.81	−0.08	−0.02
I rarely give up on something I am doing, even when things get tough.	0.80	−0.06	−0.04
I find I usually learn something meaningful from a difficult situation.[a]	0.41	0.30	0.03
When I am faced with a bad situation, it helps to find a different way of looking at things.[a]	0.46	0.24	0.09
Even when everything seems to be going wrong, I can usually find a bright side to the situation.	−0.02	0.90	−0.02
I can find something positive, even in the worst situations.	0.04	0.82	−0.01
When my expectations are not being met, I lower my expectations.	0.03	0.02	0.64
To avoid disappointments, I do not set my goals too high.	−0.05	−0.06	0.61
I feel relieved when I let go of some of my responsibilities.	0.01	0.02	0.44
Variance explained	0.26	0.15	0.09

Note. IN = Influence; PR = Positive Reappraisals; AD = Adjustment of Goals.
[a] While theorized as an item for positive reappraisal, item loaded onto different factor. Item was excluded from analyses.

specifically targeting influence (primary control; i.e., persistence in goal striving) and adjustment (secondary control; i.e., adjustment of goals, positive reappraisals). The items were adapted from the Optimization in Primary and Secondary Control (OPS) scales (Wrosch et al., 2000). Participants rated how well the items described them on a scale ranging from 1(= *not at all*) to 4 (= *a lot*). A factor analysis was used to confirm the underlying structure of these items and examine cross-cultural comparability of the scales (see Results section and Table 1 for the factor analyses and items).

Control variables. Control variables included characteristics of age (continuous), gender (0 = male, 1 = female), and educational level (1 = 8th grade/junior high school or less, 8 = attended or graduated from graduate school) and number of chronic illnesses and symptoms (e.g., diabetes, arthritis, asthma, stroke, etc; continuous [maximum = 30]), which were used as a measure of objective health.

Statistical Analysis

First, a factor analysis was conducted to examine the underlying factor structure of Primary and Secondary control items using both exploratory (EFA) and confirmatory factor analyses (CFA). Model fit was evaluated using Chi-square, the root mean square error of approximation (RMSEA), the standardized root mean square residual (SRMR), the normed fit of index (NFI), the goodness of fit (GFI), and the comparative fit index (CFI). Cut-off points were used as follows: GFI, CFI, and NFI were all 0.90 or greater; the RMSEA and SRMR were 0.08 or lower (Browne & Cudeck, 1993). Once a well-fitting baseline model was supported, measurement invariance of the scale was also conducted, to see if the scale was comparable across the two datasets, using multigroup confirmatory factor analysis (MGCFA) modeling. Multiple group confirmatory factor analysis (MGCFA) using maximum likelihood robust estimation (Rosseel, 2012) was conducted to test measurement invariance. Measurement invariance was tested at three levels: configural invariance (i.e., each group has the same factor structure, although loadings, intercepts, and residual variance can vary); metric invariance (i.e., loadings are fixed to be equal across groups); and scalar invariance (i.e., loadings and intercepts are fixed to be equal across groups [Putnick & Bornstein, 2016]). It was first determined whether the model for

configural invariance had an adequate fit, followed by testing for metric and scalar invariance. Specific standards to determine model fit followed suggestions from Putnick and Bornstein (2016). CFI was used as the main criterion, supplemented with RMSEA or SRMR. When testing for metric invariance (i.e., fixed loading) against configural invariance, the cutoff point used for CFI was −.020, RMSEA was .015, and SRMR was .030.

Based on the factor structure with the best fit, structural equation modeling (SEM) was further conducted, where the control strategies were entered as potential mediators of the association between culture and self-rated health. In other words, the final model consisted of both the measurement model for the control strategies and the structural model for the mediation (Figure 1). Cultural differences in self-rated health were examined with the influence and adjustment factors entered as mediators to the model. The effects of age, gender, education, and the number of chronic conditions on self-rated health were controlled for. Model fit was evaluated using the same criteria as the CFA model.

Results

Factor Structure of Primary and Secondary Control across MIDUS and MIDJA

Random sampling was employed to split the sample into Sample 1 ($N = 1{,}411$) for the exploratory factor analysis (EFA), and Sample 2 for the confirmatory factor analysis (CFA; $N = 1{,}394$). There was no significant difference in age, gender, and cultural composition between the two randomized samples.[2] First, EFA was employed, using maximum likelihood estimation and oblique solution to assess the underlying factor structure and examine whether the items loaded onto the theorized factor structure. The decision on the number of factors to extract was based on parallel analysis (Horn, 1965). Exploratory factor analysis results suggested retaining three factors that accounted for a meaningful variance. Exploratory factor analysis results are presented in Table 1. While most items loaded onto their theorized constructs, two items (positive reappraisal: "I find I usually learn something meaningful from a difficult situation" and "When I am faced with a bad situation, it helps to find a different way of looking at things.") loaded onto a construct other than what was initially theorized (i.e., influence; factor loading >0.40). Based on these results, confirmatory factor analysis was conducted comparing three models: the original theorized factor model (Model 1), a factor model based on our EFA outcome (Model 2), and a factor model based on our EFA outcome but excluding the two items that did not load onto their theorized factor (Model 3).

CFA results showed that Model 1 has poor fit ($\chi^2 = 687.13$, $p < .001$, $df = 51$, CFI = 0.880, RMSEA = 0.101 [0.095, 0.108], SRMR = 0.061), while both Model 2 and Model 3 showed adequate fit (Model 2: $\chi^2 = 466.44$, $p < .001$, $df = 51$, CFI = 0.920, RMSEA = 0.083 [0.076, 0.090], SRMR = 0.044; Model 3: $\chi^2 = 291.55$, $p < .001$, $df = 32$, CFI = 0.935, RMSEA = 0.083 [0.074, 0.092], SRMR = 0.040). Considering the model fit indices, the Model 3 factor structure was used for measurement-equivalence testing and as the measurement model in the main structural equation modeling (SEM) analysis.

Measurement Invariance: Can the Factor Scale be Used Across Cultures?

Further examination determined whether the scale was comparable across the two groups (i.e., measurement invariance). The results from multiple group confirmatory factor analysis (MGCFA) are presented in Table 2. Both the model for configural invariance (RMSEA = 0.086, SRMR = 0.053, CFI = 0.922) and for metric invariance (RMSEA = 0.083, SRMR

[2]The mean age of Sample 1 was 55.97 years ($SD = 13.10$ years) and 52.09% from Sample 1 indicated their gender as female, with 63.22% from the MIDUS dataset. For Sample 2, the mean age was 55.91 years ($SD = 13.33$ years) and 54.45% reported their gender as female, with 64.56% from MIDUS. The samples did not significantly differ in age ($t = -0.07$, $p = .900$), gender composition ($z = -0.09$, $p = .930$), or cultural composition ($z = -0.49$, $p = .620$).

Table 2 Measurement invariance across MIDUS and MIDJA

	df	χ^2	RMSEA	SRMR	CFI	$\Delta\chi^2$	Δdf	Invariant
Configural[a]	64	673.01***	0.086	0.053	0.922			
Metric[b]	71	673.81***	0.083	0.055	0.920	0.80***	7	Yes
Scalar[c]	78	894.12***	0.092	0.063	0.892	220.31***	7	No
Partial Scalar[d]	77	771.53***	0.085	0.057	0.908	97.72***	6	Yes

Note. RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual; CFI = comparative fit index.
[a] Configural invariance = an unrestricted model in which each group has the same factor structure, but loadings and intercepts can vary. [b] Metric invariance = a model in which loadings are fixed to be equal across groups. [c] Scalar invariance = a model in which loadings and intercepts are fixed to be equal across groups. [d] Partial Scalar invariance = a model in which all loadings and a subset of intercepts (i.e., excluding one item) are fixed to be equal across groups.
* $p < .05$, ** $p < .01$, *** $p < .001$.

= 0.055, CFI = 0.920) showed adequate fit. Further, based on the measurement invariance criterion, metric invariance was supported. Testing for scalar invariance (i.e., constrained loadings and intercepts to be equal across groups) was conducted and found partial scalar invariance to be supported. Specifically, when all loadings and intercepts were constrained to be equal across groups, the model showed poor fit. As the next step, testing for partial scalar invariance took place, where the constraints for one item were freed (i.e., "When things don't go according to my plans, my motto is 'Where there's a will, there's a way'".). After relaxing the equality constraints of this intercept, the model showed adequate fit, RMSEA = .086, SRMR = .057, CFI = .908[3] and passed the invariance cut-off criterion, thus supporting partial scalar invariance. Together, these findings provide strong support for the three-factor structure of the scale and also show that the scale is compatible across the two cultural groups of interest.

[3]To manage partial non-invariance, Chen (2008) suggested comparing the means across groups using a partially invariant model (i.e., constraining intercepts of invariant items only) to those using a fully invariant model (i.e., constraining intercepts on all items). If the substantive conclusions using the two models are similar, it can be concluded that non-invariance had little impact on the results. When comparing the two models with this study's data, there was no substantial difference between the two models. Therefore, the partial scalar invariance model was accepted and used to test further measurement invariance.

Descriptive Analysis for Variables of Interest

Based on the CFA model, latent scores of each factor were first computed for the main analysis (Influence: $\alpha_{US} = 0.78$, $\alpha_{Japan} = 0.81$; Positive Reappraisal: $\alpha_{US} = 0.80$, $\alpha_{Japan} = 0.86$; Adjustment of Goals: $\alpha_{US} = 0.56$, $\alpha_{Japan} = 0.61$).This was to compare sample differences in control strategies and self-rated health (Table 3). Scores for all latent variables were significantly different across the samples, with higher influence, positive appraisal, and self-rated health, and lower adjustment of goals in MIDUS than MIDJA ($|t| > 8.88$, $p < .001$). Further, all three strategies were significantly correlated among both samples. Adjustment of goals was negatively related to both influence and positive reappraisal ($r < -0.14$), respectively, while influence and positive reappraisal were positively correlated ($r > 0.68$).

Main Analysis: The Mediating Effect of Influence and Adjustment

Before the model was tested, self-rated health was regressed on culture to examine if cultural differences do exist in self-rated health following previous findings (World Health

Table 3 Descriptive analysis and zero-order correlations by sample

	MIDUS		MIDJA					
	α	*M* (*SD*)	α	*M* (*SD*)	1	2	3	4
1. Influence[a]	0.79	0.29 (0.79)	0.83	−0.51 (0.92)	–	0.78	−0.16	0.18
2. Positive reappraisal[a]	0.87	0.17 (0.90)	0.86	−0.31 (0.92)	0.69	–	−0.15	0.21
3. Adjustment of goals[a]	0.59	−0.10 (0.83)	0.60	0.18 (0.77)	−0.28	−0.19	–	−0.09 [c]
4. Self-rated health[a,b]	–	7.28 (1.63)	–	6.23 (1.95)	0.22	0.20	−0.16	–

Note. Values for influence, positive reappraisal, and adjustment of goals are composite scores based on CFA results. Correlations above the diagonal represent correlations for the MIDJA sample; correlations below the diagonal represent those of the MIDUS sample.
[a]Significantly different ($p < .001$) between MIDUS and MIDJA. [b]Because self-rated health is a single-item scale, no reliability value is reported. All correlations are significant at *p*-value of .001, except for [c]$p = .050$.

Organization, 2019). As expected, US individuals reported higher self-rated health compared to Japanese individuals ($\text{Mean}_{\text{US}} = 7.28$, $\text{Mean}_{\text{Japan}} = 6.23$; $\beta = -0.26$, $p < .001$). The conceptual model (Figure 1) was then tested, while controlling for the effects of age, gender, education, and number of chronic conditions. Goodness of fit in the hypothetical path model was $\chi^2 = 1{,}120.20$ ($p < .001$), CFI = 0.909, GFI = 0.926, NFI = 0.903, RMSEA = 0.071, and SRMR = 0.041. Figure 2 lists the path coefficients. In line with predictions, US individuals reported greater influence ($\beta = -0.46$, $SE = 0.02$, 95% CI [−0.49, −0.42], $p < .001$) and lower adjustment ($\beta = 0.17$, $SE = 0.02$, 95% CI [0.15, 0.24], $p < .001$) compared to Japanese individuals. US individuals also reported greater positive reappraisal than Japanese individuals ($\beta = -0.21$, $SE = 0.02$, 95% CI [−0.25, −0.17], $p < .001$). Further, paths from influence ($\beta = 0.12$, $SE = 0.03$, 95% CI [0.05, 0.18], $p < .001$) and positive reappraisal ($\beta = 0.09$, $SE = 0.03$, 95% CI [0.03, 0.14], $p = .002$) to self-rated health were positive, while the path from adjustment of goals to self-rated health was negative ($\beta = -0.06$, $SE = 0.02$, 95% CI [−0.10, −0.02], $p = .006$). As a result, the estimated paths of the indirect effects through influence ($\beta = -0.05$, $SE = 0.01$, 95% CI [−0.08, −0.02], $p < .001$),

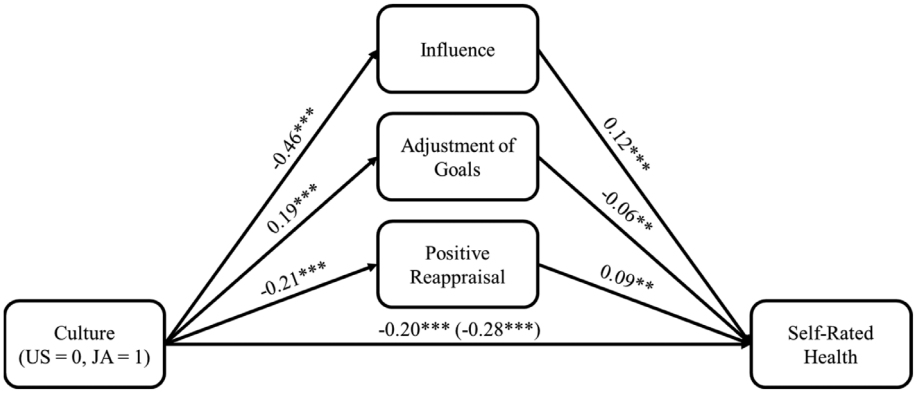

Figure 2 The Model Estimation Results. Standardized path coefficients are presented. The value within parentheses is the standardized path coefficient without the mediators. Model was controlled for age, gender, and number of chronic conditions and symptoms. ** $p < .01$. *** $p < .001$.

positive reappraisal (β = −0.01, *SE* = 0.005, 95% CI [−0.021, −0.003], $p = .009$), and adjustment (β = −0.02, *SE* = 0.01, 95% CI [−0.03, −0.01], $p = .003$) were significant. The path from culture to self-rated health was still significant, even after adding mediators β = −0.20, *SE* = 0.02, 95% CI [0.05, 0.18], $p < .001$.

Discussion

Using a midlife sample from both the US and Japan, the extent to which control strategies explain cultural differences in self-rated health beyond objective health was examined. In line with previous world reports, self-rated health was higher among US individuals compared to their Japanese counterparts. US adults reported higher influence and positive reappraisal and lower adjustment of goals compared to Japanese adults. Higher influence and positive reappraisal were related to better self-rated health, while the opposite pattern was found for adjustment of goals. This pattern was significant even after controlling for chronic health conditions, suggesting that control strategies have unique contributions to explaining how people perceive their health beyond their actual health status. The findings suggest that Americans' greater tendency to gain control by influencing their surroundings to pursue their goals, and the tendency to look at the positive side of low-control situations contribute to a more positive perception of their health status. Conversely, a greater tendency to adjust one's goals accordingly seems to partially explain Japanese's relatively modest perception of their health status.

Although US adults were expected to report greater levels of influence than Japanese adults based on prior literature (Morling & Evered, 2006; Rothbaum et al., 1982), specific predictions were not made for positive reappraisal due to mixed findings from prior studies (Matsumoto, Yoo, & Nakagawa, 2008; Tweed et al., 2004). In the current study, US adults reported higher positive reappraisal than Japanese adults, which partially explained the cultural differences in self-rated health. Future research should examine whether the mediating role of positive reappraisal in the link between culture and subjective health depends on the nature of the sample (e.g., college students vs. older adults) or the measure of reappraisal (e.g., Emotion Regulation Questionnaire vs. current measure).

Additionally, the significant direct path from culture to self-rated health, even after taking into account the indirect effects of control strategies, as well as the relatively small effect sizes of the indirect effects, imply that other cultural factors and beliefs beyond influence and adjustment may also play a role in the cultural difference in self-rated health. As previous studies have noted, other factors (e.g., survival/self-expression and/or response styles) may also contribute to the cultural variance in subjective health found in the current study. Moreover, there may be further sociocultural determinants (e.g., optimism) that have yet to be examined in relation to self-rated health. It is an open question whether the indirect effects from the current study will remain when these other variables are additionally considered. Future research is thus required to examine how influence, adjustment, and other potential factors jointly contribute to variance in self-rated health.

The present study also tested cross-cultural measurement invariance of influence and adjustment measures. Despite its use across different cultural contexts, whether the Optimization in Primary and Secondary Control (OPS) scales (Wrosch et al., 2000) can be used cross-culturally has not been thoroughly examined. This study supports the use of influence, adjustment of goals, and positive reappraisal measures at least across US and Japanese middle-to-older adults. It should be noted that there were two items that did not make it to the final scales that were used in the study as they did not load onto their initially theorized latent factor. As this may be specific to this study sample, further psychometric studies on the factor structure of the short version of the Optimization in Primary and Secondary Control (OPS) scales (Wrosch et al., 2000) will be necessary.

Given the cultural differences in adjustment and influence shown in various studies, including the current paper, one may wonder if there are also cultural differences in the links between adjustment/influence and self-rated health. Thus, additional analyses were conducted to explore such possibilities and it was found that the links between adjustment to goals and self-rated health, and between influence and self-rated health, were not moderated by cultural background.[4] It is possible that, across cultures, individuals who prefer to adjust their goals may tend to perceive their health status accurately (rather than positively) to identify and address potential problems. Conversely, individuals who prefer to maintain control through changing their surroundings may tend to perceive themselves to have better health status. It is speculated that the findings may change for biological measures of health, as cultural differences in the link between psychological factors and health tend to be more evident for biological health measures than for self-rated measures (Miyamoto & Ryff, this issue).

Some limitations of the study should be noted. The current study utilized items adopted from the OPS scale (Wrosch et al., 2000) that were available from the MIDUS and MIDJA survey data, focusing particularly on measures of influence, adjustment of goals, and positive reappraisal. The scale, however, does not include other aspects of adjustment that have been suggested in previous studies, including downward social comparison (Bailis & Chipperfield, 2006) and acceptance (Chipperfield et al., 2012, 2017). Moreover, the OPS scale was developed within the Western cultural context and thus may not fully cover the conceptual difference of secondary control that has been found across cultures (Morling & Evered, 2006). Adjustment of goals, in particular, showed relatively low reliability (<0.61) across both groups in the current study, thus interpreting that the mediating role of adjustment of goals in the link between culture and self-rated health should be approached with caution. Together, this study's measures of adjustment may not have captured the full scope of adjustment. Future research incorporating a more comprehensive measure of adjustment will be necessary to better understand how adjustment beliefs in various forms can help explain cultural variance in subjective health.

Despite these caveats, the findings highlight the role of influence and adjustment in explaining cultural differences in self-rated health. While self-rated health is widely used in academic research and population studies as a measure of health, there exists large cross-cultural variability beyond health correlates, response styles, and macro-level cultural factors. This is not yet fully understood. The current study provides preliminary evidence on individual-level factors that may partly underlie cultural variation in self-rated health, contributing to the existing literature by expanding understanding of why cultural variations are seen in perceived health status. Moreover, extending the previous research suggesting that self-rated health reflects regulatory efforts beyond current health conditions (Bailis et al., 2003), this study's findings showed the role of both influence and adjustment strategies on self-rated health beyond objective health. In addition, the possibility is presented that, even among adjustment strategies, specific approaches may differ in how they relate to subjective health. Together, the findings of this study contribute to a more comprehensive understanding of how regulatory beliefs and strategies relate to self-rated health, and how they contribute to cultural variation in subjective health status.

Conflict of Interests

The authors declare no conflicts of interest associated with this manuscript.

[4]Controlling for age, gender, and education, there were no significant cultural differences in the link between adjustment of goals and self-rated health, $b = 0.07$, $F(1, 2{,}782) = 0.61$, $p = .434$, nor in the link between influence and self-rated health, $b = -0.07$, $F(1, 2{,}782) = 0.91$, $p = .341$.

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(Received April 29, 2021; accepted December 28, 2021)