Levy, B.R., Ashman, O., & Slade, M.D. (2009). Age attributions and aging health: Contrast between the United States and Japan. *Journal of Gerontology: Psychological Sciences, 64B(3)*, 335–338, doi:10.1093/geronb/gbp002, Advance Access publication on April 1, 2009

Brief Report

Age Attributions and Aging Health: Contrast Between the United States and Japan

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Older Americans often attribute health problems to old age, rather than to extenuating circumstances. Previous studies of Americans found that age attributions predict adverse health outcomes. We examined whether culture influences both the tendency to make age attributions and their effect on aging health. We found that (a) Japanese were significantly more likely to make age attributions than Americans; (b) age attributions were significantly associated with worse functional health among older Americans, but not older Japanese; (c) interdependence was significantly higher among older Japanese; and (d) older participants higher in interdependence were less likely to experience the association between greater age attributions and worse functional health. This study suggests the association is not inevitable when culture provides a countervailing force.

Key Words: Aging—Japan—Attribution—Culture—Health.

THE use of "senior moment" to describe a lapse in memory has become increasingly popular after it was coined in the mid-1990s (McFedries, 2004). This phrase exemplifies the tendency to explain cognitive or physical problems in terms of an age attribution—defined here as blaming these problems on the aging process, rather than an extenuating circumstance. Older individuals who make age attributions tend to: experience worse physical functioning, delay or not seek treatment for health problems, and have an increased risk of mortality (Rakowski & Hickey, 1992; Sarkisian, Hays, & Mangione, 2002; Williamson & Fried, 1996). Yet, it is not known what factors prompt age attributions when health problems are encountered, nor whether this tendency and its association with negative health consequences extends to older individuals living in non-Western countries.

In the current study, we addressed these questions by conducting a cross-generational study of age attributions in the United States and Japan. We selected these countries because their populations tend to differ in styles of causal thinking and ways of both perceiving and treating older individuals (e.g., Mezulis, Abramson, Hyde, & Hankin, 2004; Palmore, 2005).

We predicted that the tendency to make age attributions would be greater in old age because a social identity based on age is a likely contributor to these attributions. In the United States and Japan, self-awareness about aging tends to increase as individuals are increasingly treated as old on both interpersonal and institutional levels (e.g., Butler, 2006; Martinez, 2004). As the aging process becomes more self-relevant, information processing related to old age, including age attributions, is likely to become more accessible (Levy, 2003).

We also predicted that the tendency to make age attributions would be explained by a culturally based tendency to engage in certain forms of causal thinking. Americans tend to attribute their problems to either external causes or to internal but unstable factors, referred to as self-enhancement (e.g., Miller & Ross, 1975). In contrast, Japanese tend to attribute failure to internal and stable factors, referred to as the self-critical bias (e.g., Mezulis et al., 2004). Because attributing one's own cognitive and physical problems to old age represents blaming an internal and stable cause (Banziger & Drevenstedt, 1982; Erber & Long, 2006), we assumed that Japanese participants would have a greater tendency than Americans to engage in age attributions.

Finally, based on prior research, we predicted that a greater propensity for forming age attributions would be associated with worse health (e.g., Williamson & Fried, 1996). We extended this research by examining a non-Western country. As far as we know, this is the first study to compare causal thinking related to aging in these two countries.

In summary, we hypothesized that (a) older individuals will be more likely to make age attributions than younger individuals, (b) the Japanese will tend to make more age attributions than the Americans, and (c) among older participants, greater age attributions will be associated with worse functional health, after adjusting for relevant covariates.

Methods

Participants

The sample consisted of 227 American participants (141 between the ages of 18 and 33; 86 over the age of 60)

and 327 Japanese participants (172 between the ages of 18 and 33; 155 over the age of 60). We recruited the American participants from Greater Boston and the Japanese participants from the city of Matsumoto. Younger participants attended universities and older participants engaged in senior center activities. Inclusion criteria consisted of being able to read, write, and live independently in the community.

The age groups from each country did not differ by financial status, gender distribution, or marital status. Within the older groups, the Japanese participants were significantly younger ($M = 69$, $SD = 4.7$ years) than the American participants ($M = 74$, $SD = 8.7$ years). Therefore, we adjusted for age in the analyses and repeated all analyses of the older participants with a subset in which the two groups were equated by age.

Measures

Predictor: age attributions.—Participants were presented with two vignettes. To examine age attributions in the cognitive domain, participants were asked: "If you misplaced your keys," how much it would be due to an age attribution (*I am losing my memory*) and how much it would be due to an extenuating circumstance (*I must have been busy with something else when I put down the keys*). For the physical domain, participants were asked: "If you wake up in the morning with an ache in your leg," how much it would be due to an age attribution (*I seem to be getting old*) and how much it would be due to an extenuating circumstance (*I slept in an uncomfortable position*). Responses were on 6-point Likert scales ranging from 1 = *strongly disagree* to 6 = *strongly agree*.

Because both age attribution responses were significantly correlated, as were both extenuating circumstance responses ($r = .42$, $p < .0001$ and $r = .28$, $p < .0001$, respectively), we averaged the scores for both pairs. The pair of age attribution responses and the pair of extenuating circumstance responses were internally consistent when combined (Cronbach coefficient $\alpha = .59$ and $\alpha = .50$, respectively).

Predictor: country.—Japan was coded as 0 and the United States was coded as 1.

Outcome: functional health.—The outcome variable for older participants, functional health, was the Health Scale for the Aged (Rosow & Breslau, 1966) that asks participants which of six physical activities they are able to do. It significantly correlates with physical performance measures among older persons (e.g., Alexander et al., 2000).

Cultural variable: interdependence.—Interdependence, which tends to be higher among Japanese than among Americans, is defined as "the fundamental connectedness among individuals within a significant relationship," including those of different generations (Kitayama Markus, Matsumoto, & Norasakkunkit 1997, p. 1247). It was assessed using the Revised Scale of Independent and Interdependent Construals of Self (Kiuchi, 1996). Participants were asked to rate the accuracy of 16 items (e.g., *I agree with the opinions of others*). Scores were divided into 40 and above, indicating "an interdependent-priority person," and below 40, indicating "an independent-priority person" (Kiuchi, 1996). The scale, originally developed in Japanese, has been back-translated into English; both versions have been successfully used (Kiuchi, 1996).

Covariates.—The covariates included in all the multivariate models were age, gender, marital status, years of education, and financial security (measured by a 5-point Likert scale ranging from *not enough* to *more than I need* in response to the question, "Do you have enough money to meet your needs?").

Results

As predicted, older individuals in both countries were more likely to make age attributions than younger individuals, $\beta = 1.1$, $t(1) = 2.92$, $p = .004$. Within each country, chronological age was the only predictor variable to remain in the model with backward elimination for both the United States, $\beta = 1.1$, $t(1) = 7.86$, $p < .0001$, and Japan, $\beta = 1.6$, $t(1) = 14.83$, $p < .0001$. The extenuating-circumstance attributions showed the opposite pattern, with older individuals in both countries less likely to make these attributions than younger individuals, $\beta = -1.07$, $t(1) = 9.89$, $p < .0001$.

Also, as predicted, the Japanese of all ages tended to make more age attributions than similar-aged Americans, $\beta = -.72$, $t(1) = -8.01$, $p < .0001$. The tendency to make extenuating-circumstance attributions, however, did not significantly differ between the two countries.

For the third hypothesis, we conducted a regression analysis with age attributions, country, and an interaction of age attributions and country as predictors and with functional health as the outcome. Unexpectedly, the interaction was significant, suggesting that the association between age attributions and functional health was different by country, $\beta = -.42$, $t(1) = -3.05$, $p = .003$. When extenuating-circumstance attributions were added to the model, they did not significantly predict functional health, whereas age attributions still showed a significant interaction with country in predicting functional health. Thus, remaining analyses focused on age attributions.

Among the older Americans, a higher age attribution score was significantly associated with a lower functional health score, $\beta = -.13$, $t(1) = -2.37$, $p = .02$. However, among the older Japanese, a higher age attribution score was not significantly associated with functional health, $\beta = .01$, $t(1) = .15$, $p = .88$ (see Figure 1).

Although we adjusted for age in all the analytic models, we created two age-matched cohorts by selecting American and Japanese participants who were 61–80 years old in

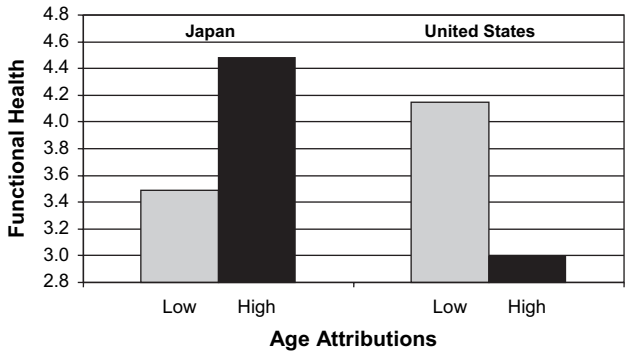

Figure 1. Age attributions and functional health by country among older participants.

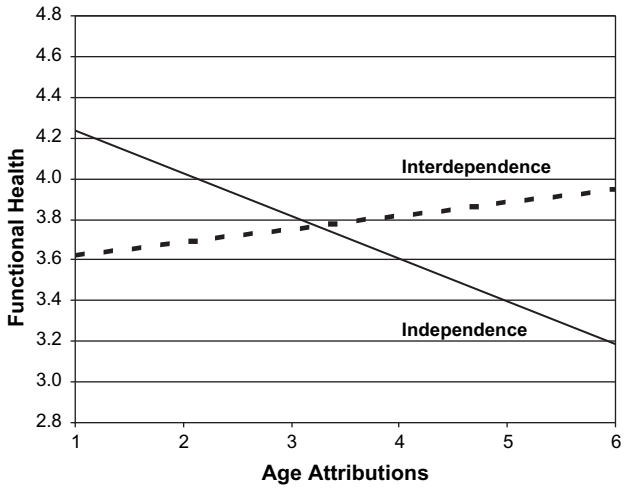

Figure 2. Functional health's association with age attributions by interdependence groups among older participants. Note: All covariates are set at their median value. The interdependence group includes those who scored above 40 and the independence group includes those who scored at 40 or below on the Interdependence Scale.

order to increase our confidence that the cross-cultural patterns observed were not due to the older average age of the Americans. These cohorts did not significantly differ by age. We found the same pattern as with the full sample when we repeated all the analyses, so that it appears the findings are not due to the age difference.

In follow-up analyses with the initial data, we considered why the Japanese were protected from the association between age attributions and poor functional health. Accordingly, we examined a distinguishing characteristic of Japanese culture as a potential moderator: interdependence. It was significantly higher among the Japanese, $\beta = 5.76$, $t(1) = 11.35$, $p < .0001$, after adjusting for all the covariates. This was the case for both the younger participants, $\beta = 4.91$, $t(1) = 7.14$, $p < .0001$, and the older participants, $\beta = 7.21$, $t(1) = 9.69$, $p < .0001$.

Interdependence met the criteria for a moderator (Baron & Kenny, 1986). Among older participants, an interaction existed between interdependence and age attributions in determining functional health, $\beta = .28$, $t(1) = 2.03$, $p = .04$ (see Figure 2). Older participants who were higher in interdependence were less likely to experience the association between greater age attributions and worse functional health.

Discussion

Older individuals were significantly more likely to make age attributions than younger individuals in both countries, and the Japanese were significantly more likely to make them than the Americans. Further, the relationship between greater age attributions and worse functional health was found only among the Americans. This cross-cultural difference was explained, in part, by interdependence, which was significantly higher among the Japanese.

Interdependence includes the Confucian precept that adult children should respect and support parents, in exchange for the upbringing that was provided by the parents and for the wisdom the adult children continue to receive (Takagi & Silverstein, 2006). Interdependence manifests itself in Japan's high rate of older parents and their adult children living together, compared with the United States (Martinez, 2004; Takagi & Silverstein, 2006). Therefore, less fear of aging in Japan than in the United States (Lock, 1993) may be among the benefits provided by interdependence. Consequently, age attributions are likely to have more positive connotations for the Japanese.

The significantly higher rate of independence that was found among the American participants corresponds to the tendency in the United States to highly value individualism (e.g., Luborsky & McMullen, 1999). Yet, a study showed that 78% of community-dwelling older Americans expected their functional independence to decline with age (Sarkisian et al., 2002). The resulting dissonance can limit the capacity to cope with health problems (Luborsky, 1994). This may help to explain the finding, among older Americans, that age attributions generate a sense of losing control over health problems, resulting in a reduced belief in the efficacy of, and tendency to engage in, preventive health behaviors, which, in turn, could damage functional health (e.g., Gump et al., 2001).

Although it may be interesting for future researchers to consider the effect of additional vignettes, it is striking that two pairs of responses (representing the cognitive and physical domains) were sufficient to distinguish between the two countries. The age attribution responses were significantly correlated, even though one of them directly referred to "getting old," whereas the other did so indirectly (i.e., "losing my memory").

This study suggests that the association of age attributions with worse functional health among older individuals is not inevitable. It can be thwarted when an aspect of the culture provides a countervailing force.

Acknowledgments

The authors gratefully acknowledge the assistance of Kimihiro Shiomura, as well as grants from the National Institute on Aging (K01AG001051) and the Patrick and Catherine Weldon Donaghue Medical Research Foundation awarded to the first author.

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References

Alexander, N., Guire, K., Thelen, D., Ashton-Miller, J., Schultz, A., Grunawalt, J., & Giordani, B. (2000). Self-reported walking ability predicts functional mobility performance in frail older adults. *Journal of the American Geriatrics Society*, *48*, 1408–1413.

Banziger, G., & Drevenstedt, J. (1982). Achievement attributions by young and old judges as a function of perceived age of stimulus person. *Journal of Gerontology*, *37*, 468–474.

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*, 1173–1182.

Butler, R. (2006). Combating ageism: A matter of human and civil rights. In *Ageism in America*. New York City: International Longevity Center.

Erber, J. T., & Long, B. A. (2006). Perceptions of forgetful and slow employees: Does age matter? *Journal of Gerontology: Psychological Science*, *61*, 333–339.

Gump, B. B., Matthews, K. A., Scheier, M. F., Schulz, R., Bridges, M. W., & Magovern, G. J., Sr. (2001). Illness representations according to age and effects on health behaviors following coronary artery bypass graft surgery. *Journal of the American Geriatrics Society*, *49*, 284–289.

Kitayama, S., Markus, H., Matsumoto, H., & Norasakkunkit, V. (1997). Individual and collective processes of self-esteem management: Self-enhancement in the United States and self-depreciation in Japan. *Journal of Personality and Social Psychology, 72*, 1245–1267.

Kiuchi, A. (1995). Construction of a scale for independent and interdependent construals of the self and its reliability and validity. *Japanese Journal of Psychology*, *66*, 100–106.

Kiuchi, A. (1996). Independent and interdependent construals of the self: Cultural influences and relations to personality traits. *Japanese Journal of Psychology*, *67*, 308–313.

Levy, B. (1996). Improving memory in old age by implicit self-stereotyping. *Journal of Personality and Social Psychology*, *71*, 1092–1107.

Levy, B. R. (2003). Mind matters: Cognitive and physical effects of aging self-stereotypes. (Directions in Aging Research). *Journal of Gerontology: Psychological Sciences*, *58*, 203–211.

Lock, M. (1993). *Encounters with aging: Mythologies of menopause in Japan and North America*. Berkeley: University of California Press.

Luborsky, M. (1994). The cultural adversity of physical disability: Erosion of full adult personhood. *Journal of Aging Studies*, *8*, 239–253.

Luborsky, M. R., & McMullen, C. K. (1999). Culture and aging. In J. C. Cavanaugh & S. K. Whitbourne (Eds.), *Gerontology: An interdisciplinary perspective*. New York: Oxford University Press.

Martinez, D. P. (2004). *Identity and ritual in a Japanese diving village: The making and becoming of person and place*. Honolulu: University of Hawaii Press.

McFedries, P. (2004). *Word spy: The word lover's guide to modern culture*. New York: Broadway.

Mezulis, A. H., Abramson, L. Y., Hyde, J. S., & Hankin, B. L. (2004). Is there a universal positivity bias in attributions? A meta-analytic review of individual, developmental, and cultural differences in the self-serving attributional bias. *Psychological Bulletin*, *130*, 711–747.

Miller, D. T., & Ross, M. (1975). Self-serving biases in the attribution of causality: Fact or fiction? *Psychological Bulletin*, *82*, 213–225.

Nisbett, R. E. (2003). *The geography of thought: How Asians and Westerners think differently and why*. New York: Simon and Schuster.

Palmore, E. (2005). Japan. In E. Palmore, L. Branch, & D. Harris (Eds.), *Encyclopedia of ageism*. New York: Haworth.

Rakowski, W., & Hickey, T. (1992). Mortality and the attribution of health problems to aging among older adults. *American Journal of Public Health*, *82*, 1139–1141.

Rosow, I., & Breslau, N. (1966). A Guttman health scale for the aged. *Journal of Gerontology*, *21*, 556–559.

Sarkisian, C. A., Hays, R. D., & Mangione, C. M. (2002). Do older adults expect to age successfully? The association between expectations regarding aging and beliefs regarding healthcare seeking among older adults. *Journal of the American Geriatrics Society*, *50*, 1837–1843.

Takagi, E., & Silverstein, M. (2006). Intergenerational co-residence of the Japanese elderly. *Research on Aging*, *28*, 473–492.

Williamson, J. D., & Fried, L. P. (1996). Characterization of older adults who attribute functional decrements to "old age." *Journal of the American Geriatrics Society*, *44*, 1429–1434.

Received January 9, 2008
Accepted December 23, 2008
Decision Editor: Rosemary Blieszner, PhD