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Ageism Comes of Age

Brief Report

Resiliency Over Time of Elders' Age Stereotypes After Encountering Stressful Events

Becca R. Levy,[1] Martin D. Slade,[2] Pil H. Chung,[3] and Thomas M. Gill[2]

[1]Social and Behavioral Sciences Division, Yale School of Public Health, New Haven, Connecticut.
[2]Department of Internal Medicine, Yale School of Medicine, New Haven, Connecticut. [3]Department of Sociology and Demography, University of California at Berkeley.

Correspondence should be addressed to Becca R. Levy, PhD, Social and Behavioral Sciences Division, Yale School of Public Health, 60 College Street, New Haven, CT 06520-8034. E-mail: Becca.Levy@yale.edu.

Abstract

Objective. To examine whether the age stereotypes of older individuals would become more negative or else show resiliency following stressful events and to examine whether age-stereotype negativity would increase the likelihood of experiencing a stressful event (i.e., hospitalization).
Method. Age stereotypes of 231 participants, 70 years and older, were assessed across 10 years, before and after the occurrence of hospitalizations and bereavements.
Results. Age-stereotype negativity was resilient despite encountering stressful events. In contrast, more negative age stereotypes were associated with a 50% greater likelihood of experiencing a hospitalization.
Discussion. The robustness of negative age stereotypes was expressed in their capacity to resist change as well as generate it.

Key Words: Aging—Resiliency—Stereotypes—Stress—Bereavement—Hospitalization—Longitudinal

It has been demonstrated in a laboratory setting that negative age stereotypes can increase the stress of older individuals (Levy, Hausdorff, Hencke, & Wei, 2000). Much is otherwise unknown about this association, including how stereotypes and stress are related to each other in the community and over time. Specifically, it was not known whether the age stereotypes of older individuals would become more negative over time or whether they would show resiliency following the occurrence of stressful events. Exploring this question was the goal of the current study.

Based on stereotype embodiment theory (SET; Levy, 2009), we expected to find that there would be resiliency of the negative age stereotypes. According to SET, these stereotypes are (a) internalized, as suggested by numerous studies that have shown they are held by children, as young as five, through assimilation from surrounding cultures (e.g., Kwong See, Rasmussen, & Pertman, 2012; Robinson, Callister, Magoffin, & Moore, 2007); (b) reinforced throughout childhood and adulthood (Levy, 2009; Levy, Zonderman, Slade, & Ferrucci, 2009); (c) often acquired and applied unconsciously (Levy & Banaji, 2002; Marques, Lima, Abrams, & Swift, 2014); (d) more salient in later life when they become self-relevant (Jankowski, Diedrichs, Williamson, Christopher, & Harcourt, 2014; Levy, Zonderman, Slade, &

Ferrucci, 2012); and (e) strengthened by their operation in old age on psychological, behavioral, and physiological levels (Levy, 2009; Levy, Slade, Murphy, & Gill, 2012).

In the current study, negative age stereotypes were examined before and after stressful events. The events considered here, hospitalization and the death of a family member or friend, are among the most stressful experienced by older individuals (Hardy, Concato, & Gill, 2002; Holmes & Rahe, 1967; Phillips, Der, & Carroll, 2008). Both types of events are associated with debilitation, which is a major theme of negative age stereotypes (Levy & Leifheit-Limson, 2009). In the current study, these events were assessed at monthly intervals over the course of 10 years.

To explore the potential reciprocity of a relationship between stressful events and age stereotypes over time among community-living older individuals, this study undertook the first examination of whether negative age stereotypes would increase the risk of hospitalizations. We expected to find this association because research with older individuals has shown that negative age stereotypes predict worse health-behavior outcomes and worse physical health (Levy, Slade, et al., 2012; Levy et al., 2000; Meisner, 2012; Stewart, Chipperfield, Perry, & Weiner, 2012; Wurm, Tesch-Römer, & Tomasik, 2007).

We hypothesized that (a) the negativity of age stereotypes held by older individuals would show resiliency over time, despite experiencing hospitalizations, as well as deaths of a family member or friend; and (b) older individuals with more negative age stereotypes would have a greater risk of experiencing hospitalizations than those with more positive age stereotypes.

Method

Participants

The cohort consisted of participants in the Precipitating Events Project, an ongoing study of individuals who were aged 70 or older at baseline, and lived independently in the community within greater New Haven, CT (Gill, Desai, Gahbauer, Holford, & Williams, 2001). An additional inclusion criterion was that participants responded to age-stereotype measures 10 years apart. These criteria were met by 231 individuals.

At baseline, the mean age was 76 years (standard deviation [*SD*] = 4.2), years of education were 12.5 (*SD* = 2.7), number of chronic conditions (Gill et al., 2001) was 1.5 (*SD* = 1.2), 11-item form of the Center for Epidemiologic Studies Depression (CESD) scale score (Kohout, Berkman, Evans, & Cornoni-Huntley, 1993; Radloff, 1977) was 6.9 (*SD* = 7.3), and the Mini-Mental State Examination (MMSE) score (Folstein, Folstein, & McHugh, 1975) was 27.5 (*SD* = 2.3). The majority of the sample was female (67%) and white (89%).

Measures

Age stereotypes

Participants were asked the open-ended Image-of-Aging question: "What are the first five words or phrases that come to mind when you think of an older person?" (Levy & Langer, 1994). Two independent raters scored responses on a Likert scale ranging from 1 (*very negative*) to 5 (*very positive*). The age-stereotype measure was assessed at baseline and at follow-up 10 years later (*SD* = 0.31). Interrater reliability, using the Spearman Brown formula, was 0.84%. This measure produces responses rated as stereotypical of old age (Galinsky & Moskowitz, 2000; Levy, Slade, & Gill, 2006), predicts physical recovery (Levy, Slade, et al., 2012), and shows expected variability and cross-cultural patterns (Levy & Langer, 1994; Marques et al., 2014).

Intervening stressful event: hospitalization

Every month, participants were asked during a telephone interview: "Since we last talked, have you stayed at least overnight in a hospital?" Seventy-nine percent of the sample reported they had one or more hospitalizations. The number of months in which hospitalizations occurred ranged from 1 to 17.

Intervening stressful event: bereavement

Stressful bereavements were ascertained through affirmative responses to both of the following questions, asked monthly by telephone: "Since we last talked, have you experienced the death or loss of a family member or friend?" and "Did this loss cause you to stay in bed at least half the day or to cut down your usual activities?" Twenty-six percent of the sample reported they had at least one stressful bereavement. The number of months in which these bereavements occurred ranged from 1 to 10.

Covariates

The following covariates were included because they have been found to be associated with age stereotypes or stressors: age, sex, race, years of education, MMSE score, CESD scale, and physical frailty (Hardy et al., 2002; Levy, 2009). To assess physical frailty, participants were asked to walk 20 ft; a score of longer than 10 s indicated physical frailty (Gill, Williams, & Tinetti, 1999). We used the continuous version of age, years of education, MMSE score, and CESD scale in the models.

Analytic Plan

To examine whether age stereotypes were resilient after experiencing stressful events, a series of linear regression models were conducted with follow-up age-stereotype score as a function of time (i.e., the number of days separating the two age-stereotype assessments), stressful event (yes/no), the baseline age-stereotype score, and the covariates. Our premise was that if age-stereotype negativity was resilient over time, the baseline age-stereotype score would be a significant predictor of the second age-stereotype score, whereas time and the stressful event would not be significant.

Stratified analyses were conducted in order to determine whether the results were consistent for different subgroups.

In these analyses, we stratified at or below and above the median: age of 76, MMSE score of 28, chronic conditions number of 2, and CESD score of 5. Analyses were also conducted for those categorized as physically frail or not, and those categorized as ethnic minority or white.

To examine whether participants with more negative age stereotypes would have a greater likelihood of experiencing hospitalizations, we conducted a logistic-regression model, adjusting for all covariates.

Results

Consistent with the first hypothesis, hospitalizations did not significantly change the second age-stereotype score, $\beta = .06$, $t = 0.52$, standard error (SE) = 0.12, $p = .60$, whereas the baseline age-stereotype score significantly predicted the second age-stereotype score, $\beta = .55$, $t = 10.74$, $SE = 0.05$, $p < .001$. Similarly, in the fully adjusted model, hospitalizations did not significantly change the negativity of the second age-stereotype score, $\beta = .07$, $t = 0.57$, $SE = 0.12$, $p = .57$, whereas the negativity of the baseline age-stereotype score significantly predicted the second age-stereotype score, $\beta = .56$, $t = 10.32$, $SE = 0.05$, $p < .001$ (Table 1). Further, the number of months in which hospitalizations occurred did not significantly change the second age-stereotype score, $\beta = .03$, $t = 1.56$, $SE = 0.02$, $p = .12$, after adjusting for the baseline age-stereotype score, time, and all covariates.

Also consistent with the first hypothesis, bereavements did not significantly change the second age-stereotype score, $\beta = -.01$, $t = -0.11$, $SE = 0.11$, $p = .92$ and $\beta = -.03$, $t = -0.27$, $SE = 0.11$, $p = .79$, whereas the baseline age-stereotype score significantly predicted the second age-stereotype score, $\beta = .55$, $t = 10.64$, $SE = 0.05$, $p < .001$. Similarly, in the fully adjusted model, bereavements did not significantly change the negativity of the second age-stereotype score, $\beta = -.03$, $t = -0.27$, $SE = 0.11$, whereas the negativity of the baseline age-stereotype score significantly predicted the second age-stereotype score, $\beta = .56$, $t = 10.31$, $SE = 0.06$, $p < .001$. Further, the number of bereavements did not significantly change the second age-stereotype score, $\beta = -.04$, $t = -0.08$, $SE = 0.04$, $p = .42$, after adjusting for the baseline age-stereotype score, time, and all covariates.

Consistent with the second hypothesis, participants holding more negative age stereotypes at baseline, defined as those below the median score of 1.80, were at greater risk of experiencing hospitalizations in the next decade than those at or above the median age-stereotype score, odds ratio = 1.50 (95% confidence interval = 1.04, 2.16), $p = .03$, after adjusting for all covariates. In other words, those in the more-negative-age-stereotype group had a 50% greater likelihood of experiencing a hospitalization than those in the more-positive-age-stereotype group.

The resiliency of age-stereotype negativity was consistently observed when we examined the cohort within subgroups defined on the basis of sex, ethnicity, MMSE score, depression, number of chronic conditions, physical frailty, and age, after adjusting for time and the first age-stereotype measure. In these models, the first age-stereotype measure significantly predicted the second age-stereotype measure (all at $p < .05$), and the two stressful events did not significantly alter the second age-stereotype measure (all $p > .05$).

A calculation with 80% power and 95% level of significance was conducted to confirm the sample size was adequate for the models. To be conservative, we selected the model with the smallest sample size (i.e., the one that examined the association between number of bereavements and the resiliency of age-stereotype negativity). The smallest detectable difference in the age-stereotype measure was found to be 0.26 of a point, which is 12% of the mean age-stereotype score of 2.20. This suggests that the resiliency of age-stereotype negativity, despite the stressful events, is not due to the sample size being too small. All other analyses would be able to detect a smaller difference.

To examine whether the resiliency results were maintained within a shorter period than 10 years, we repeated the analyses with both types of events that occurred during the 6 months preceding the second age-stereotype measure. Neither hospitalizations nor bereavements significantly contributed to the second age-stereotype measure, $\beta = .20$, $t = -1.48$, $SE = -1.35$, $p = .14$ and $\beta = -2.19$, $t = -0.21$, $SE = 0.30$, $p = .47$, respectively, adjusting for the baseline age-stereotype measure, time, and all covariates.

Discussion

As expected, the negativity of age stereotypes held by older individuals displayed resiliency across 10 years among those who experienced hospitalizations and bereavements.

Table 1. Resiliency of Second Age-Stereotype Measure After Stressful Events

Variable	Multivariate models with stressful events	
	Hospitalization (β)	Death of family member or friend (β)
Baseline age stereotype	.56**	.56**
Hospitalization	.07	—
Death of family member or friend	—	−.03
Time (days)	−.04	−.04
Age (years)	−.02	−.02
Female	.01	<−.01
Non-white	−.08	−.09
Education (years)	−.08	−.09
Mini-Mental State Examination	.01	.01
Depressive symptoms[a]	.14	.14
Physical frailty[b]	−.08	−.06

Notes. [a]As assessed by Center for Epidemiologic Studies Depression scale.
[b]As assessed by gait speed.
**$p < .001$.

Within the 10-year time frame of this study, the resiliency of negative age stereotypes was found among those who were at least aged 76, as well as those younger than 76, even though the older group experienced a significantly greater number of hospitalizations and bereavements. Additionally, resiliency was found regardless of sex, race, education, depression, physical frailty level, MMSE score, and number of chronic conditions.

Stereotypes have been described as "well-defined images" (Ichheiser, 1970, p. 61). This would help to explain resiliency in the case of participants holding predominantly negative age stereotypes at baseline. That is, insofar as the stressful events were related to a prevailing theme of negative age stereotypes, debilitation, they would be consistent with the "images," or stereotypes, that were "well defined," or set in place through internalization. In contrast, the stressful events could be inconsistent for participants who held predominantly positive age stereotypes at baseline. However, this potential inconsistency was likely to generate coping mechanisms that preserved the stereotypes (Sherman, Stroessner, Conrey, & Azam, 2005) by, for instance, perceiving the stressful events as exceptions (Allport, 1954).

The term "resiliency" is used throughout this article to describe the phenomenon under consideration because it is defined as "having a tendency to rebound, recoil, or return to a state" (*Shorter Oxford English Dictionary on Historical Principles*, 2002, p. 2544). Resiliency, therefore, allows for the possibility that changes in age-stereotype negativity occurred during the period covered by this study; but, if so, they would have been transitory, due to activation that was short-term—as suggested by the long-term outcome.

Also as expected, the negativity of age stereotypes contributed to hospitalizations in this community-dwelling sample. A benefit of having two age-stereotype time points was that they demonstrated the directionality of the effect was from negative age stereotypes to hospitalizations.

In sum, the stressful events did not increase the negativity of the age stereotypes over time; rather, the negativity of the age stereotypes predicted a stressful event. These outcomes of omission and commission highlight the robustness of negative age stereotypes, which was expressed in their capacity to resist change as well as generate it.

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References

Allport, G. W. (1954). *The nature of prejudice*. Cambridge, UK: Addison-Wesley.

Folstein, M. F., Folstein, S. E., & McHugh, P. R. (1975). "Mini-mental state." A practical method for grading the cognitive state of patients for the clinician. *Journal of Psychiatric Research*, **12**, 189–198. doi:10.1016/0022-3956(75)90026-6

Galinsky, A. D., & Moskowitz, G. B. (2000). Perspective-taking: Decreasing stereotype expression, stereotype accessibility, and in-group favoritism. *Journal of Personality and Social Psychology*, **78**, 708–724. doi:10.1037/0022-3514.78.4.708

Gill, T. M., Desai, M. M., Gahbauer, E. A., Holford, T. R., & Williams, C. S. (2001). Restricted activity among community-living older persons: Incidence, precipitants, and health care utilization. *Annals of Internal Medicine*, **135**, 313–321. doi:10.7326/0003-4819-135-5-200109040-00007

Gill, T. M., Williams, C. S., & Tinetti, M. E. (1999). The combined effects of baseline vulnerability and acute hospital events on the development of functional dependence among community-living older persons. *Journal of Gerontology: Medical Sciences*, **54**, 377–383. doi:10.1093/gerona/54.7.M377

Hardy, S. E., Concato, J., & Gill, T. M. (2002). Stressful life events among community-living older persons. *Journal of General Internal Medicine*, **17**, 841–847. doi:10.1046/j.1525-1497.2002.20105.x

Holmes, T. H., & Rahe, R. H. (1967). The social readjustment rating scale. *Journal of Psychosomatic Research*, **11**, 213–218. doi:10.1016/0022-3999(67)90010-4

Ichheiser, G. (1970). *Appearances and realities: Misunderstandings in human relations*. San Francisco, CA: Jossey-Bass.

Jankowski, G. S., Diedrichs, P. C., Williamson, H., Christopher, G., & Harcourt, D. (2014). Looking age-appropriate while growing old gracefully: A qualitative study of ageing and body image among older adults. *Journal of Health Psychology*. Advance online publication. doi:10.1177/1359105314531468

Kohout, F. J., Berkman, L. F., Evans, D. A., & Cornoni-Huntley, J. (1993). Two shorter forms of the CES-D (Center for Epidemiological Studies Depression) depression symptoms index. *Journal of Aging Health*, **5**, 179–193. doi:10.1177/089826439300500202

Kwong See, S. T., Rasmussen, C., & Pertman, S. Q. (2012). Measuring children's age stereotyping using a modified Piagetian conservation task. *Educational Gerontology*, **38**, 149–165. doi:10.1080/03601277.2010.515891

Levy, B. (2009). Stereotype embodiment: A psychosocial approach to aging. *Current Directions in Psychological Science*, **18**, 332–336. doi:10.1111/j.1467-8721.2009.01662.

Levy, B. R., & Banaji, M. B. (2002). Implicit ageism. In T. D. Nelson (Ed.), *Ageism: Stereotyping and prejudice against older persons* (pp. 49–75). Cambridge, MA: MIT Press.

Levy, B. R., Hausdorff, J. M., Hencke, R., & Wei, J. Y. (2000). Reducing cardiovascular stress with positive self-stereotypes of aging. *Journal of Gerontology: Psychological Sciences*, **55**, 205–213. doi:10.1093/geronb/55.4.p205

Levy, B. R., & Langer, E. (1994). Aging free from negative stereotypes: Successful memory in China among the American deaf. *Journal of Personality and Social Psychology*, **66**, 989–997. doi:10.1037/0022-3514.66.6.989

Levy, B. R., & Leifheit-Limson, E. (2009). The stereotype-matching effect: Greater influence on functioning when age stereotypes correspond to outcomes. *Psychology and Aging*, **24**, 230–233. doi:10.1037/a0014563

Levy, B. R., Slade, M. D., & Gill, T. M. (2006). Hearing decline predicted by elders' age stereotypes. *Journals of Gerontology:*

Psychological Sciences and Social Sciences, **61B**, P82–P87. doi:10.1093/geronb/61.2.p82

Levy, B. R., Slade, M. D., Murphy, T. E., & Gill, T. M. (2012). Association between positive age stereotypes and recovery from disability in older persons. *Journal of the American Medical Association*, **308**, 1972–1973. doi:10.1001/jama.2012.14541

Levy, B. R., Zonderman, A. B., Slade, M. D., & Ferrucci, L. (2009). Age stereotypes held earlier in life predict cardiovascular events in later life. *Psychological Science*, **20**, 296–298. doi:10.1111/j.1467-9280.2009.02298.x

Levy, B. R., Zonderman, A. B., Slade, M. D., & Ferrucci, L. (2012). Memory shaped by age stereotypes over time. *Journal of Gerontology: Psychological Sciences*, **67**, 432–436. doi:10.1093/geronb/gbr120

Marques, S., Lima, M. L., Abrams, D., & Swift, H. (2014). Will to live in older people's medical decisions: Immediate and delayed effects of aging stereotypes. *Journal of Applied Social Psychology*. Advanced online publication. doi:10.1111/jasp.12231

Meisner, B. (2012). A meta-analysis of positive and negative age stereotype priming effects on behavior among older adults. *Journal of Gerontology: Psychological Sciences*, **67**, 13–17. doi:10.1093/geronb/gbr062

Phillips, A. C., Der, G., & Carroll, D. (2008). Stressful life-events exposure is associated with 17-year mortality, but it is health-related events that prove predictive. *British Journal of Health Psychology*, **13**, 647–657. doi:10.1348/135910707X258886

Radloff, L. S. (1977). The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, **1**, 385–401. doi:10.1177/014662167700100306

Robinson, T., Callister, M., Magoffin, D., & Moore, J. (2007). The portrayal of older characters in Disney animated films. *Journal of Aging Studies*, **21**, 203–213. doi:10.1016/j.jaging.2006.10.001

Sherman, J. W., Stroessner, S. J., Conrey, F. R., & Azam, O. A. (2005). Prejudice and stereotype maintenance processes: Attention, attribution, and individuation. *Journal of Personality and Social Psychology*, **89**, 607–622. doi:10.1037/0022-3514.89.4.607

Shorter Oxford English Dictionary on Historical Principles. (2002). New York, NY: Oxford University Press.

Stewart, T. L., Chipperfield, J. G., Perry, R. P., & Weiner, B. (2012). Attributing illness to "old age:" Consequences of a self-directed stereotype for health and mortality. *Psychology and Health*, **27**, 881–897. doi:10.1080/08870446.2011.630735

Wurm, S., Tesch-Römer, C., & Tomasik, M. J. (2007). Longitudinal findings on aging-related cognitions, control beliefs, and health in later life. *Journal of Gerontology: Psychological Science*, **62**, 156–64. doi:10.1093/geronb/62.3.p156