

Stereotype Threat Among Older Employees: Relationship With Job Attitudes and Turnover Intentions

Courtney von Hippel, Elise K. Kalokerinos, and Julie D. Henry
University of Queensland

Stereotype threat, or the belief that one may be the target of demeaning stereotypes, leads to acute performance decrements and reduced psychological well-being. The current research examined stereotype threat among older employees, a group that is the target of many negative stereotypes. Study 1 surveyed older workers in two different organizations regarding their experiences of stereotype threat, their job attitudes and work mental health, and their intentions to resign or retire. Across both samples, feelings of stereotype threat were related to more negative job attitudes and poorer work mental health. In turn, these negative job attitudes were associated with intentions to resign and (possibly) retire. In Study 2, younger and older employees were surveyed. The results indicated that only for older employees were feelings of stereotype threat negatively related to job attitudes, work mental health, and intentions to resign. The implications of these findings for understanding job attitudes and intentions among older workers are discussed.

Keywords: stereotype threat, older employees, job attitudes, retirement intentions, turnover

Gains in some aspects of cognitive function are now well documented in late adulthood (Verhaeghen, 2003), but the predominant picture is of reduced functioning, most notably in the domains of cognitive control, memory, and processing speed (Phillips & Henry, 2008; Rabbitt, 2002). Lay stereotypes of aging generally align with this profile, acknowledging some gains in “wisdom,” but primarily emphasizing reductions in “wit” (Löckenhoff et al., 2009). It is of particular concern that stereotypes of older workers are overwhelmingly negative (Ostroff & Atwater, 2003; Van Dalen, Henkens, & Schippers, 2010), as such stereotypes might have consequences for older employees’ work attitudes. Indeed, emotional well-being is related to satisfaction with one’s work environment across the adult life span (Nolen-Hoeksema & Ahrens, 2002). The primary goal of the current research is to better understand potential effects of negative stereotypes relating to older workers.

Although numerous reviews have demonstrated that age is generally unrelated to job performance (e.g., Ng & Feldman, 2008), there are nevertheless “persistent negative perceptions pertaining to older workers” (Ostroff & Atwater, 2003, p. 729; see also Posthuma & Campion, 2009). Not only are older workers perceived to be less productive than their younger counterparts, they are also perceived as being less flexible, with reduced physical and mental capacities and reduced willingness to learn new technologies (Van Dalen et al., 2010). Findings such as these suggest that

older workers are likely to be susceptible to *stereotype threat* in the workplace.

Stereotype threat is the psychological threat of confirming or being reduced to a negative stereotype about a group to which one belongs (Steele, Spencer, & Aronson, 2002). Detrimental effects of stereotype threat on performance have been documented across a wide range of groups and tasks, including African Americans in academics (Steele & Aronson, 1995), women in math and driving (Spencer, Steele, & Quinn, 1999; Yeung & von Hippel, 2008), and older adults’ memory (Hess, Auman, Colcombe, & Rahhal, 2003).

Although research on stereotype threat has focused primarily on its debilitating effect on acute performance, more recent research has shown stereotype threat to be associated with negative attitudes and psychological well-being (e.g., Keller & Dauenheimer, 2003; Shapiro & Neuberg, 2007; von Hippel, Issa, Ma, & Stokes, 2011). For example, female employees in male-dominated fields had more negative job attitudes, reported increased intentions to resign their jobs, and had reduced confidence that they would reach their career aspirations to the extent that they experienced stereotype threat (von Hippel et al., 2011). However, no research has examined the relationship between stereotype threat and older workers’ attitudes and well-being at work. The goal of the current research is to fill this gap.

Steele’s (1997) original theorizing suggests that stereotype threat can lead to disidentification, or disengagement from the task domain. Disengagement from work is associated with a variety of negative job attitudes, such as lower job satisfaction and commitment (Brown & Leigh, 1996; Saks, 2006). Furthermore, stereotype threat sometimes leads to stress and anxiety (Blascovich, Spencer, Quinn, & Steele, 2001; Bosson, Haymowitz, & Pinel, 2004; Inzlicht & Ben-Zeev, 2003), which provides an additional route to negative job attitudes and reduced mental health at work (Glazer & Beehr, 2005; Podsakoff, LePine, & LePine, 2007). In light of these findings, we predicted that older employees who experience ste-

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Courtney von Hippel, Elise K. Kalokerinos, and Julie D. Henry, School of Psychology, University of Queensland.

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Correspondence concerning this article should be addressed to Courtney von Hippel, School of Psychology, University of Queensland, St Lucia, QLD 4072, Australia. E-mail: c.vonhippel@uq.edu.au

reotype threat at work will have more negative job attitudes and poorer work mental health.

Negative job attitudes and poorer work mental health are important variables in their own right, but reduced job satisfaction and commitment, and to a lesser extent work mental health, are also associated with increased intentions to resign and retire (Adams & Beehr, 1998; Adams, Prescher, Beehr, & Lepisto, 2002; Griffeth, Hom, & Gaertner, 2000; Hanisch & Hulin, 1990). These associations raise the possibility that negative job attitudes (and possibly poor work mental health) may play a mediating role between stereotype threat and intentions to resign and retire. That is, older employees who experience stereotype threat should have more negative job attitudes and poorer work mental health, which in turn, should be associated with increased intentions to resign or retire.

To test these predictions, Study 1 surveyed older workers in two different organizations regarding their experiences of stereotype threat, their job attitudes and work mental health, and their intentions to resign or retire.¹ To determine whether the experience of stereotype threat is unique to older employees, Study 2 included both young and old employees. Because a substantial portion of the variance in job attitudes is driven by individual differences rather than job characteristics (e.g., Staw & Ross, 1985; Steel & Rentsch, 1997), in these studies we also measured overall life satisfaction. If stereotype threat uniquely predicts job attitudes and work mental health, beyond their common relationship with general life satisfaction, then these relationships should emerge when controlling for life satisfaction.

Study 1

Method

Participants and procedure

Sample 1. Participants were 602 employees aged 50 to 75 (352 males, 246 females, 4 unknown) working in a large Australian media company who responded to an email from their organization with a web link inviting them to complete the online survey.² Employees aged 50 and over comprised 26.6% of the total workforce. The average age of participants was 56.31 years ($SD = 4.65$) and the average tenure in the organization was 21.33 years ($SD = 10.76$). The sample was skewed toward the younger range of this age distribution, with 42.02% ($n = 253$) of participants between the ages of 50–54, 34.05% ($n = 205$) of employees between the ages of 55–59, and 23.92% ($n = 144$) of the sample over 60 years of age.

Sample 2. Participants were 473 employees aged 50 to 71 (322 males and 151 females) working in law enforcement who responded to an e-mail from their employer inviting them to complete the online survey. Employees aged 50 and over comprised 15% of the total workforce. The average age of participants was 54.83 years ($SD = 4.09$) and the average tenure in the organization was 16.11 years ($SD = 11.10$). Similar to Sample 1, 56.69% ($n = 271$) of participants were 50–54, 28.45% ($n = 136$) of employees were 55–59, and 14.85% ($n = 71$) of the sample were over 60 years of age.

Measures. Unless otherwise indicated, participants responded to survey items using a 7-point scale (1 = *Strongly disagree*) and 7 = *Strongly agree*).

Stereotype threat. Stereotype threat ($\alpha = .85$) was measured using a 5-item scale adapted from von Hippel et al.'s (2011) measure of stereotype threat among working women (e.g., "Some of my colleagues feel that I'm not as committed to my career because of my age").

Job satisfaction. Job satisfaction ($\alpha = .88$) was assessed with a 5-item version of Brayfield and Rothe's (1951) job satisfaction scale designed to measure overall job satisfaction (e.g., "Most days I am enthusiastic about my work").

Organizational commitment. Commitment ($\alpha = .77$) was assessed with five items from Allen and Meyer's (1990) Affective Commitment Scale (e.g., "I really feel as if [this organization's] problems are my own").

Intention to resign. Intention to resign ($\alpha = .95$) was assessed with Boroff and Lewin's (1997) 2-item intent to quit scale (e.g., "I am seriously considering quitting this job for an alternative employer").

Retirement intentions. Intention to retire ($\alpha = .91$) was assessed with three items from Adams and Beehr's (1998) retirement intentions scale (e.g., "I plan to retire in the near future").

Work mental health. Work mental health ($\alpha = .92$) was assessed with Warr's (1990) 12-item scale. Participants read, "Thinking of the past few weeks, how much of the time has your job made you feel each of the following," which was followed by adjectives such as *tense*, *depressed*, *optimistic*, *enthusiastic*. Responses were provided on a 6-point scale ranging from 1 (*never*) to 6 (*all of the time*). Items were reverse coded as necessary such that higher numbers indicate better work mental health.

Life satisfaction. Life satisfaction ($\alpha = .89$) was assessed with Diener, Emmons, Larsen, and Griffin's (1985) 5-item scale (e.g., "In most ways, my life is close to ideal").

Data Analysis

To test the hypothesized relationships between stereotype threat, job attitudes, and intentions to resign or retire, Structural Equation Modeling (SEM) was conducted using the AMOS 20 program with a full information maximum likelihood estimation approach to estimate missing data (Arbuckle, 1996, 2011). In the current study, the data were analyzed using the two-step approach to SEM recommended by Anderson and Gerbing (1988). The first step involved analyzing the measurement model to establish relationships between latent factors and observed indicators. The second step involved analyzing the hypothesized structural model.

Because there were no differences in results when the control variables of gender, tenure, and life satisfaction were included, they were excluded in order to simplify the model. Due to the sensitivity of χ^2 in large samples such as those used in the current studies, practical fit indices are more appropriate to assess model

¹ Although intentions to resign or retire, and not actual resignation or retirement, served as our primary dependent measures, intentions to quit and retire are the strongest predictors of actual resignation and retirement (van Breukelen, van der List, & Steensma, 2004; Prothero & Beech, 1984). Additionally, intentions have an advantage over actual behaviors in that they are less influenced by environmental factors such as the availability of alternative employment (Gerhart, 1990).

² Fifty is the cut-off age for older workers used by the Work in America Institute and the National Advisory Committee on the Future of Older Workers in America.

fit (Kline, 2011). Thus, we used the root mean square error of approximation (RMSEA) and the comparative fit index (CFI; see Hu & Bentler, 1995, for a discussion of fit indices). The RMSEA should be at or below .06 for a well-fitting model (Hu & Bentler, 1999) and at or below .08 for a reasonably fitting model (Browne & Cudeck, 1993). The CFI should be above .90 to accept the model, and values close to .95 and above indicate good fit (Hu & Bentler, 1999). To test whether job satisfaction and organizational commitment mediated the relationship between stereotype threat and intentions to resign and retire, we used bias-corrected bootstrapping with 1,000 bootstrap resamples to generate estimates and 95% confidence intervals (CIs) of indirect effects (Cheung & Lau, 2008; Shrout & Bolger, 2002).

We took a multiple-group modeling approach to assess the model fit for Samples 1 and 2 simultaneously, and to investigate whether the model demonstrated measurement and structural invariance across samples. Measurement invariance is concerned with the relationships between the measured variables and the latent constructs, and structural invariance is concerned with the relationships between the latent constructs. Measurement invariance across models means that there are no differences in the ways that the measured variables load on to the latent variables across samples. Structural invariance demonstrates that the latent constructs are related in the same way across both samples, indicating that the predicted pattern of relationships between the latent variables is similar across samples.

To investigate measurement and structural invariance, we relied on Δ CFI because, as noted earlier, χ^2 statistics are sensitive to sample size (Cheung & Rensvold, 2002). With the use of a large sample size, $\Delta\chi^2$ often becomes significant because of trivial differences in fit between models. Δ CFI determines whether there are practical differences in model fit between models, making it a more appropriate statistic to use with large samples (Cheung & Rensvold, 2002). Cheung and Rensvold (2002) suggest that the null hypothesis of invariance not be rejected when Δ CFI is less than .01. We also report $\Delta\chi^2$ statistics to examine statistical invariance, but because using $p < .05$ as the critical value for the difference in χ^2 is often too liberal for multigroup SEM with large sample sizes, we used $p < .01$ as our critical significance level (cf. Cooper, Gomez, & Aucote, 2007).

The items that composed each scale formed the indicators in the measurement and structural models, except for the work mental health scale. This strategy accounts for the error term associated with each scale item separately, and has the added advantage of including each item without assuming that each item has equal weighting. Consistent with Warr's (1990) recommendations, items for the work mental health scale were averaged to form two indicators: job-related anxiety/contentment and job-related depression/enthusiasm. Two latent variables (work mental health and intentions to resign) had only two indicators, which is the minimum for an identified model (Kline, 2011); the other latent variables had three or more indicators.

Because all items were assessed via self-report, it is likely that they share measurement error. In cases where variables may share measurement error, allowing the error terms of these variables to correlate is acceptable (Schumacker & Lomax, 2004). Therefore, the paths between the error terms of job satisfaction, organizational commitment, and work mental health were freed. Model modification indices also indicated that the paths between the errors of

stereotype threat items 4 and 5 should be freed. These items were similarly worded, assessed on the same scale, and appeared next to each other in the survey, and therefore we allowed the path between these two error terms to be freed.

Results

Table 1 presents the means, standard deviations, and intercorrelations of the measures for both samples.³ For Sample 1, consistent with previous research, employees' work attitudes and intentions to resign or retire were significantly intercorrelated in the anticipated directions. Specifically, levels of job satisfaction, commitment, and work mental health were positively correlated. These job attitudes were negatively correlated with intention to quit and retirement intentions. More importantly, stereotype threat was related to all of these variables in the predicted direction. Age and the control variables of gender and tenure were all unrelated to stereotype threat, although life satisfaction was significantly negatively correlated with stereotype threat. The pattern of correlations found in Sample 2 was similar to that found in Sample 1, with the exception that retirement intentions were not related to either stereotype threat or the job attitude variables.

Measurement model. The measurement model indicated that for both samples, all items loaded significantly onto their respective factors ($p < .001$). The latent factors were allowed to correlate. Examination of fit indices showed good fit between the measurement model and the data (RMSEA = .04 [90% confidence interval (CI), .041–.046], CFI = .95), indicating that these indicator variables were satisfactory to use in the structural model.

We also tested for measurement invariance by constraining the relationships between the indicators and latent variables to equivalence across samples. We found that there was little difference in practical fit between the unconstrained and measurement models (Δ CFI = .002), suggesting practical measurement invariance. A $\Delta\chi^2$ test revealed that there was a significant difference between the unconstrained model and the measurement model, which suggested that statistically, the measurement model varied across groups ($\Delta\chi^2 = 49.40$; $df = 16$; $p < .001$). Further investigation suggested that this statistical variation in fit was occurring in the retirement intentions and organizational commitment scales. When the relationships between these latent variables and their indicators were allowed to vary across samples, there was no significant difference between the unconstrained model and the measurement model, demonstrating measurement invariance ($\Delta\chi^2 = 17.18$; $df = 10$; $p = .07$). Finally, the change in practical fit between models was small (Δ CFI = .001).

Structural model. Figures 1a and 1b present the hypothesized model with standardized path coefficients and significance levels for Sample 1 and Sample 2, respectively. Initial examination revealed that work mental health did not significantly predict intentions to resign or retire in either sample, so to increase model parsimony these paths were removed from the model. Examination of fit indices showed a good fit between the model and the data (RMSEA = .04 [90% CI, .040–.046], CFI = .95).

As displayed in Figure 1a, for Sample 1 the paths between stereotype threat and job satisfaction, stereotype threat and organizational commitment, and stereotype threat and work mental

³ Note that all variables were normally distributed in the three samples.

Table 1
 Summary of Intercorrelations, Means and Standard Deviations of Study Variables For Study 1, Sample 1 and Sample 2

Variable	1	2	3	4	5	6	7	8	9	10	M	SD
Sample 1												
1. Stereotype threat	—	-.40***	-.26***	-.36***	.11**	.28***	-.33***	.04	-.03	-.03	3.13	1.42
2. Job satisfaction		—	.48***	.70***	-.25***	-.53***	.41***	.16***	-.07	.04	5.49	1.17
3. Commitment			—	.31***	-.17***	-.44***	.23***	.16***	.05	.09*	5.10	1.11
4. Work mental health				—	-.18***	-.44***	.50***	.21***	-.04	.01	3.39	.82
5. Retirement intentions					—	.09*	.00	.15***	.26***	-.01	3.77	1.82
6. Intentions to resign						—	-.23***	-.18***	-.06	-.09*	2.43	1.63
7. Life satisfaction							—	.09***	.02	.04	4.62	1.23
8. Age								—	.22***	.03	56.31	4.65
9. Tenure									—	-.19***	21.33	10.76
10. Gender										—	—	—
Sample 2												
1. Stereotype threat	—	-.37***	-.37***	-.43***	-.01	.29***	.30***	-.04	.04	-.01	3.59	1.53
2. Job satisfaction		—	.52***	.43***	-.03	-.44***	.57***	.15***	.07	-.02	5.16	1.15
3. Commitment			—	.43***	-.03	-.48***	.48***	.13*	.12*	.04	4.36	1.26
4. Work mental health				—	-.06	-.44***	.56***	.20***	.02	.03	3.30	.91
5. Retirement intentions					—	-.06	.08	.07	.30***	-.14**	4.04	1.82
6. Intentions to resign						—	-.32***	-.07	-.09*	-.03	2.47	1.71
7. Life satisfaction							—	.14**	.10*	.01	4.59	1.32
8. Age								—	-.12*	-.06	54.83	4.09
9. Tenure									—	-.28***	16.11	11.10
10. Gender										—	—	—

Note. Spearman's Rho was used for all correlations with gender (with 0 = men and 1 = women).

* $p < .05$. ** $p < .01$. *** $p < .001$.

health were all significant. In turn, the paths between job satisfaction and intentions to resign and retire were also significant. The path between organizational commitment and intentions to resign was significant, but organizational commitment failed to significantly predict retirement intentions. As can be seen in Figure 1b, for Sample 2 the paths between stereotype threat and job satisfaction, stereotype threat and organizational commitment, and stereotype threat and work mental health were significant. In turn, the path between organizational commitment and intentions to resign was significant, and the path between job satisfaction and intentions to resign approached significance. Both organizational commitment and job satisfaction failed to predict retirement intentions.

To investigate whether the two samples fit the structural model similarly, we also tested for structural invariance. We did this by constraining the relationships between the latent constructs to equality across both samples. A measure of practical fit suggested that there was structural invariance between samples ($\Delta CFI = .001$). A $\Delta\chi^2$ test showed that the structural model differed significantly across the two groups ($\Delta\chi^2 = 32.96$; $df = 8$; $p < .001$). The relationships between retirement intentions and the other study variables in Sample 2 were not in line with hypotheses, suggesting that this statistical variance between samples occurs because retirement intentions are working differently across Samples 1 and 2. To investigate this possibility, we conducted these analyses again, allowing the relationships between the job attitudes and retirement intentions to differ across samples, but constraining all other relationships among latent variables to equality. This time, the structural model did not differ significantly from the measurement model, demonstrating that the model is considered to be equal across groups ($\Delta\chi^2 = 14.39$; $df = 6$; $p = .026$).

Mediation analyses. To test whether job satisfaction and organizational commitment mediated the relationship between stereo-

reotype threat and intentions to resign and retire, we conducted mediation analyses separately for Sample 1 and Sample 2. For Sample 1, these analyses revealed that the relationship between stereotype threat and intention to resign was significantly mediated through job attitudes (standardized indirect effect = .277, $p = .001$, $SE = .037$, 95% CI: .205, .348), as was the relationship between stereotype threat and intention to retire (standardized indirect effect = .111, $p = .002$, $SE = .026$, 95% CI: .064, .163). For Sample 2, the relationship between stereotype threat and intention to resign was significantly mediated through job attitudes (standardized indirect effect = .285, $p = .002$, $SE = .034$, 95% CI: .219, .359), but the relationship between stereotype threat and retirement intentions was not (standardized indirect effect = $-.024$, $p = .239$, $SE = .024$, 95% CI: $-.080$, .017).

Alternative model comparisons. In order to determine whether the causal story we propose has optimal fit with the data, we compared the proposed model to other plausible competing models. In the first alternative model, job satisfaction, organizational commitment, and work mental health predicted stereotype threat, which in turn predicted intentions to resign and retire. According to this model, negative attitudes at work lead to stereotype threat, which in turn predicts resignation and retirement intentions. A chi-square difference test revealed that this alternative model had significantly worse fit than the proposed model ($\Delta\chi^2 = 384.65$; $df = 6$; $p < .001$).

In the second alternative model, job satisfaction and organizational commitment predicted intentions to resign and retire, which in turn predicted stereotype threat. Work mental health was also included as a predictor of stereotype threat. Support for such a model would suggest that negative job attitudes lead to increased intentions to exit the workforce. Older workers may then share these intentions with their coworkers, leading them to show greater

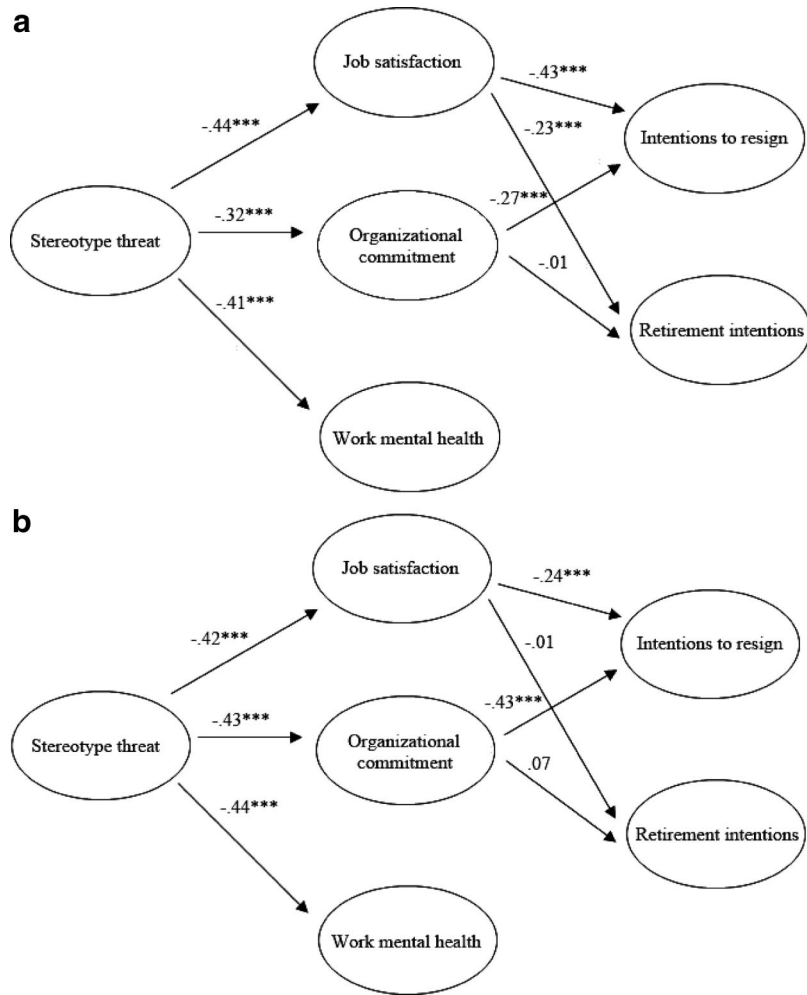


Figure 1. Model of the relationships between stereotype threat, job attitudes, and behavioral intentions in Study 1: (a) in sample 1; (b) in sample 2. Numbers are standardized beta coefficients. * $p < .05$. ** $p < .01$. *** $p < .001$.

endorsement of the stereotype threat items (e.g., “Some of my colleagues feel I’m not as committed to my career because of my age”). A chi-square difference test revealed that this alternative model had significantly worse fit than the proposed model ($\Delta\chi^2 = 50.65$; $df = 2$; $p < .001$). Taken together, these analyses indicate that neither alternative model provides as good a fit to the data as the proposed model.

Finally, it should be noted that across both samples there was no interaction between age and stereotype threat or gender and stereotype threat in predicting job satisfaction, organizational commitment, work mental health, or intention to resign or retire. These findings suggest that in these two organizations, feelings of stereotype threat have similar relationships with job attitudes and intentions to resign or retire among men and women from age 50 through to 75.

Discussion

The results of Study 1 indicate that feelings of stereotype threat are negatively related to job attitudes, work mental health, and intentions to resign or retire. Across two diverse

samples, older employee’s feelings of stereotype threat were associated with more negative job attitudes and decreased mental health at work. Lower commitment and job satisfaction in turn were related to an increased interest in resigning. Additionally, in Sample 1 lower job satisfaction was also associated with increased intentions to retire. Although stereotype threat was associated with work mental health, and work mental health correlated with intentions to resign and retire, work mental health did not predict independent variance in either of these outcome variables when job satisfaction and organizational commitment were included in the models.

The primary discrepancy between the two samples was the finding that retirement intentions were not related to stereotype threat in Sample 2. This differential relationship with retirement intentions across the two samples is likely due to aspects of the organizations in which data were collected. Sample 1 consisted of employees working in a more traditional office setting, whereas Sample 2 consisted of employees in law enforcement. Because law enforcement requires physical activity, and until recently had mandatory retirement in place, it seems possible that retirement

intentions are less malleable in this sample compared to a more traditional office environment.

Study 2

Study 1 demonstrated potential negative consequences for older employees who experience stereotype threat, but it did not assess whether age-related stereotype threat is unique to older workers. Young adults might also feel stereotype threat in the workplace, as younger workers are often perceived to be less reliable, less committed to the organization, and less socially skilled (Van Dalen et al., 2010). Nevertheless, it is unclear whether stereotype threat in a younger cohort would relate to job attitudes and turnover intentions. Young workers are expected to climb the career ladder over the course of their career, and thus youth and inexperience naturally diminish with time, whereas age and encroaching retirement do not (cf. Garstka, Schmitt, Branscombe, & Hummert, 2004). Thus, while younger adults might feel stereotyped about their youth and inexperience, they know that this problem is surmountable and that they are also judged as having a great deal of potential. For these reasons, we predicted that experiences of stereotype threat will be less related to job attitudes and turnover intentions among younger than older adults. Indeed, it seemed likely that there would be no relationship between these variables among the younger sample. To test this prediction, Study 2 included both young and old employees across numerous industries and positions.

Method

Participants and procedure. Participants were 401 full-time workers from the United States, recruited using an online data collection company (SocialSci). Participants worked in a range of diverse industries. The largest percentage of participants worked in education (19.4%, $n = 78$), followed by science and technology (14.93%, $n = 60$), health and community services (13.43%, $n = 54$), business services and finance (8.21%, $n = 33$), hospitality and entertainment (6.47%, $n = 26$), retail (5.97%, $n = 24$), and manufacturing (4.97%, $n = 20$). The older workers consisted of 202 participants aged 50 years and older (59 males, 142 females, 1 unknown). The average age of the older participants was 57.26 years ($SD = 5.17$), and their average tenure at their organization was 11.88 years ($SD = 9.79$). The age distribution of the older sample was similar to the distributions of the two samples used in Study 1: 33.33% ($n = 67$) of participants were 50–54, 39.80% ($n = 80$) of employees were 55–59, and 26.87% ($n = 54$) were over 60. The younger workers group consisted of 199 participants aged between 19 and 30 years (99 males, 100 females). The average age of the younger participants was 24.58 years ($SD = 3.03$) and their average tenure at their organization was 2.14 years ($SD = 1.91$).

Measures. The measures of stereotype threat ($\alpha = .81$), job satisfaction ($\alpha = .87$), organizational commitment ($\alpha = .85$), intentions to resign ($\alpha = .91$), work mental health ($\alpha = .93$), and life satisfaction ($\alpha = .90$) were identical to those used in Study 1. The retirement intentions scale was omitted from this survey because it was not a meaningful measure to use with a sample of younger adults. However, the stereotype threat scale was appropriate for both age cohorts because the items were broad in nature

and mentioned age generally, rather than older age more specifically (e.g., “Some of my colleagues feel I have less ability because of my age”; “Some of my colleagues feel that I have less to contribute because of my age”). One additional measure, described below, was included in this study.

Job status. To determine whether job status impacts experiences of stereotype threat, participants were asked to rate their job level in their organization by placing themselves on a ladder with seven rungs. Participants were asked to think of this ladder as representing the different job levels in the place where they work. It was explained that the top rung of the ladder (equivalent to a 7) represents employees who are at the top of the organizational chart, such as high-ranking executives. The bottom rung of the ladder (equivalent to a 1) was described as representing employees who are in entry-level or beginning positions. Participants then indicated where their job fits within this ladder. This strategy allows comparisons to be made across diverse industries and organizational positions.

Data Analysis

As in Study 1, Structural Equation Modeling was used to analyze the data and bias-corrected bootstrapping was used to test for mediation. We used a multiple-group modeling approach to test whether there were differences in model fit for younger and older employees and we tested for structural and measurement invariance using a chi-square difference test. Because the samples used in this study were smaller than those used in Study 1, chi-square was appropriate to use with this sample, but we also report ΔCFI . Demonstrating measurement invariance is particularly important in aging research, as demonstrating that the measures work in the same way for older and younger adults allows for clearer interpretation of the data (Horn & McArdle, 1992). In contrast, if structural invariance is not demonstrated, there are differences in the relationships between latent variables across groups, which was the pattern predicted in the current samples.

To further investigate structural noninvariance across the two samples, for each sample we took a nested modeling approach, comparing the full structural model to a nested model, in which the paths between stereotype threat and job attitudes were constrained to zero. If there is no significant difference between the full model and the nested model, it would be consistent with the prediction for younger adults that the nested model, in which stereotype threat has no predictive effect on job attitudes, can account for the data equally well. Finally, to test whether the paths were significantly different in strength among the younger and older employees, we used the approach outlined by Kunzmann, Little, and Smith (2000) and Heyl and Wahl (2012). This approach computes a Δz statistic, and for a two-tailed test, the two paths significantly differ at the $p < .05$ level when $\Delta z > |1.96|$.

Results

As can be seen in Table 2, the pattern of correlations among older employees in Study 2 was similar to the pattern in Study 1. That is, correlations between stereotype threat and the model variables among older employees were significant and moderate to strong in magnitude. For the young employees, however, correlations between stereotype threat and the model variables were

Table 2
Summary of Intercorrelations, Means and Standard Deviations of Study Variables For Study 2, Older Adults and Younger Adults

Variable	1	2	3	4	5	6	7	8	9	10	M	SD
Older adults												
1. Stereotype threat	—	-.40***	-.43***	-.50**	.39***	-.17*	-.41***	.04	-.09	-.10	3.14	1.28
2. Job satisfaction		—	.63***	.76***	-.54***	.16*	.44***	.07	.08	.15*	5.25	1.27
3. Commitment			—	.58***	-.59***	.25***	.45***	-.00	.14*	.12	4.78	1.33
4. Work mental health				—	-.53***	.13	.53***	.12	.12	.12	4.27	1.04
5. Intentions to resign					—	-.14*	-.32***	-.07	-.24***	-.11	2.70	1.80
6. Job Status						—	.25***	.03	.10	.02	4.31	1.46
7. Life satisfaction							—	.09	.08	.27***	4.60	1.53
8. Age								—	.16*	.00	57.26	5.17
9. Tenure									—	.00	11.88	9.79
10. Gender										—	—	—
Younger adults												
1. Stereotype threat	—	-.15*	-.13	-.16*	.04	-.10	-.04	-.33***	-.01	.01	3.88	1.40
2. Job satisfaction		—	.61***	.71***	-.65***	.09	.45***	-.05	-.13	-.04	4.70	1.30
3. Commitment			—	.46**	-.54***	.18*	.43***	.03	.05	-.04	4.17	1.40
4. Work mental health				—	-.53***	.07	.40***	-.05	-.05	-.15*	3.89	.88
5. Intentions to resign					—	.01	-.27***	.07	.15*	-.06	3.83	1.97
6. Job Status						—	.06	.29***	.29***	-.04	2.38	1.47
7. Life satisfaction							—	.11	.12	-.04	4.33	1.29
8. Age								—	.41***	.00	24.58	3.04
9. Tenure									—	-.05	2.14	1.91
10. Gender										—	—	—

Note. Spearman's Rho was used for all correlations with gender (with 0 = men and 1 = women).
* $p < .05$. ** $p < .01$. *** $p < .001$.

weak, and stereotype threat was not significantly correlated with organizational commitment or intentions to resign.

Consistent with Study 1, age and stereotype threat were not significantly correlated among the sample of older employees. For the young sample, however, age was significantly negatively correlated with stereotype threat, such that younger participants in this sample reported experiencing more stereotype threat. The relationship between status and stereotype threat also differed between the two samples, such that older but not younger employees experienced less stereotype threat when they occupied higher status positions.⁴ It is interesting to note that an independent groups *t* test demonstrated that the younger adults experienced more stereotype threat than the older adults, $t(399) = 5.54, p < .001$.

Measurement and structural models. We first tested the model specified in Study 1 with older employees to determine if this model fit the Study 2 data. The measurement model showed acceptable fit (RMSEA = .08 [90% CI, .07–.09], CFI = .92), with all items loading significantly on to the respective factors ($p < .001$). The structural model also showed acceptable fit (RMSEA = .08 [90% CI, .07–.09], CFI = .92). We also tested the alternative models specified in Study 1. Both the first ($\Delta\chi^2 = 70.54; df = 2; p < .001$) and second ($\Delta\chi^2 = 17.04; df = 2; p < .001$) alternative models provided significantly worse fit than the hypothesized model.

Mediation analyses. To test whether job satisfaction and organizational commitment mediated the relationship between stereotype threat and intentions to resign, we conducted mediation analyses with the older employees. These analyses showed that the relationship between stereotype threat and intention to resign was significantly mediated through the job attitudes (standardized indirect effect = .314, $p = .002, SE = .057, 95\% CI: .202, .432$).

Measurement invariance. The model for older employees and younger employees was compared. This model did not signif-

icantly differ from an unconstrained model, demonstrating that the measurement model is considered to be equal across groups ($\Delta\chi^2 = 22.83; df = 14; p = .063, \Delta CFI = .002$).

Structural invariance. More importantly for our purposes, we then tested for structural invariance by constraining the relationships between the latent constructs to equality across groups. As hypothesized, this model differed significantly across the two groups ($\Delta\chi^2 = 25.05; df = 6; p < .001, \Delta CFI = .011$).

Nested model. To further investigate this difference in structural model fit across the younger and older groups, we examined the effects of stereotype threat on job attitudes across both models. For both samples, we compared the full structural model to a nested model in which the paths between stereotype threat and job satisfaction, commitment, and work mental health were constrained to zero.

For the older sample, there was a significant difference in fit between the constrained model and the hypothesized model ($\Delta\chi^2 = 42.89; df = 3; p < .001$) indicating that the nested constrained model fits the data significantly worse than the hypothesized model. In contrast, for the younger sample there was no difference in fit between the constrained nested model and the hypothesized model ($\Delta\chi^2 = 3.59; df = 3; p = .310$). That is, for younger adults, the nested model in which the paths were constrained to zero is considered to be equal to the hypothesized model (i.e., effectively, the nested model cannot be rejected). Thus, the younger adults' data can be accounted for equally well by a model in which there is no effect of stereotype threat on job attitudes.

⁴ Stereotype threat is still a unique predictor of the dependent variables when status is included as a control variable.

Path analysis. Finally, we tested whether the paths between stereotype threat and job attitudes for older and younger adults differed in strength. As hypothesized, the effect of stereotype threat on job satisfaction ($\beta_{\text{older}} = -.37$, $\beta_{\text{younger}} = -.07$, $\Delta z = 3.12$), organizational commitment ($\beta_{\text{older}} = -.48$, $\beta_{\text{younger}} = -.13$, $\Delta z = 5.80$) and work mental health ($\beta_{\text{older}} = -.36$, $\beta_{\text{younger}} = -.13$, $\Delta z = 3.79$) was significantly stronger among older employees than younger employees. As demonstrated in Figure 2, all paths between stereotype threat and the job attitudes were significant for older adults, but none were significant for young employees.

Discussion

Consistent with Study 1, stereotype threat was negatively related to job attitudes, work mental health, and intentions to resign among a diverse sample of older employees. This same pattern of relationships failed to emerge among younger employees. Younger employees' feelings of stereotype threat were either unrelated or weakly related to job attitudes, work mental health, and intentions to resign. Indeed, for younger adults, a model in which stereotype

threat and job attitudes were unrelated fit the data just as well as a model in which these relationships were permitted.

Nevertheless, the results also indicate that younger employees do experience stereotype threat. Indeed, young employees experienced more stereotype threat than their older counterparts. But these feelings of stereotype threat did not translate to negative job attitudes, poor work mental health, or intentions to resign. We suggest that this age difference may be explained by whether being stereotyped is appraised as a challenge or a threat. If experiences of being stereotyped are perceived as challenging, people believe that they can overcome the negative stereotypes that are held about them (cf. Vick, Seery, Blascovich, & Weisbuch, 2008). In contrast, stereotypes are perceived as threatening when people are not confident that they can overcome them. It seems likely that younger adults regard age-based stereotypes as challenging (rather than threatening) because they are aware that all young employees before them have confronted and overcome this obstacle. The fact that all of their more senior peers have overcome age-based stereotypes must assuredly communicate that such stereotypes are

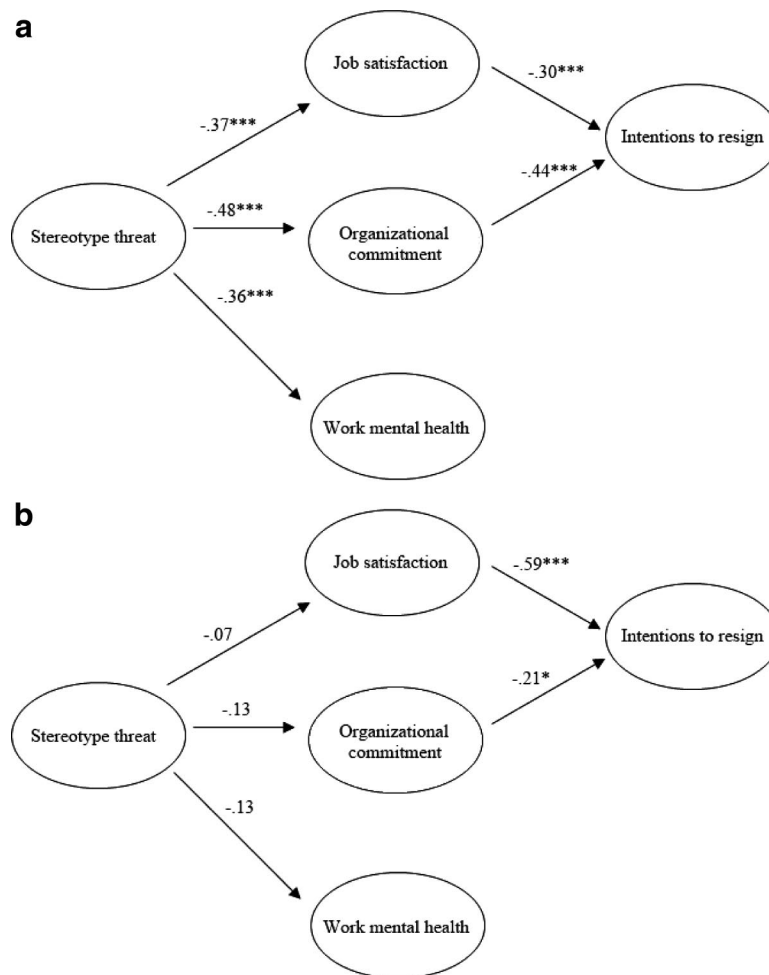


Figure 2. Model of the relationships between stereotype threat, job attitudes, and intentions to resign in Study 2: (a) in older adults; (b) in younger adults. Numbers are standardized beta coefficients. * $p < .05$. ** $p < .01$. *** $p < .001$.

a transient difficulty rather than a permanent obstacle to achievement. This possibility is also consistent with the finding that age and stereotype threat were related in the younger but not the older employee sample. As younger employees aged, they experienced less stereotype threat, suggesting that youth and inexperience naturally diminish with time.

Finally, it should be noted that a relationship between status and stereotype threat emerged in the older adult sample, indicating that in this cohort greater seniority may serve a protective role. The absence of this relationship in the younger employee sample likely reflects floor effects, with most participants in this group at relatively low levels of seniority.

General Discussion

Every job involves being judged by other people, but judgments based on age are group-based stereotypes, and thus can be threatening to employees even if they are confident that the stereotypes are inaccurate in their own case (Steele et al., 2002). Thus, while it is commonplace to experience evaluation apprehension at work, age-based stereotype threat can result in additional concerns for employees. The results of the current studies demonstrate that feelings of stereotype threat are negatively related to job attitudes, work mental health, and intentions to resign or retire among older, but not younger, employees. Across three diverse samples, older employees' feelings of stereotype threat were associated with negative job attitudes and decreased mental health at work. Poor job satisfaction and low levels of commitment, in turn, were related to an increased interest in quitting. Additionally, in Sample 1 lower job satisfaction was also associated with increased intentions to retire. This pattern of relationships was not demonstrated among a sample of young employees; in this cohort, feelings of stereotype threat were either unrelated or weakly related to job attitudes, mental health, and intentions to resign.

It seems likely that experiences of stereotype threat in the workplace also impact older adults in important ways beyond those assessed in the present study. Employment does not simply provide economic security; rather it is also affirmation of social status and provides social interaction, daily structure, and a sense of productivity. If stereotype threat drives older employees out of the workforce, it has the potential to negatively impact their psychological functioning more generally. This possibility is particularly troubling in light of the aging workforce.

Given the negative consequences of stereotype threat suggested by the current research, it is worth considering possible interventions. Research has documented a variety of techniques for minimizing the performance deficits associated with stereotype threat (Ben-Zeev, Fein, & Inzlicht, 2005; Ford, Ferguson, Brooks, & Hagadone, 2004; Johns, Schmader, & Martens, 2005; Marx, Stapel, & Muller, 2005). For example, self-affirmation (reflecting on one's important values, traits, or achievements) can reduce the negative consequences of stereotype threat (Cohen, Garcia, Apfel, & Master, 2006; Cohen, Garcia, Purdie-Vaughns, Apfel, & Brzustoski, 2009; Martens, Johns, Greenberg, & Schimel, 2006). Another approach might be to emphasize the positive stereotypes of older employees by focusing on their experience, wisdom, dependability, and conscientiousness (e.g., see Levy, 1996; Levy & Leifheit-Limson, 2009). An important avenue for future research

will be to test whether interventions such as these can be adapted to minimize stereotype threat among mature-age workers.

Caveat

Although the results of the current study are consistent with predictions, the use of a correlational and cross-sectional design prevents the establishment of causality. Thus, it is possible that the causal order we propose is incorrect, or that some third variable plays a critical role. Nevertheless, the finding that stereotype threat is related to job attitudes and turnover intentions among older but not younger employees suggests that stereotype threat is not a product of negative job attitudes nor is it related to negative job attitudes by virtue of its relationship with a third variable. Thus, theory, parsimony, and testing of viable alternative models converge to support the causal pattern depicted in the structural equation models. Still, the causal nature of the relationships can only be established by longitudinal data and manipulations of stereotype threat.

This limitation notwithstanding, the current research provides the first empirical evidence that stereotype threat is a particular concern in the work place for older adults. Among older employees, stereotype threat was related to negative job attitudes, poor work mental health, and interest in quitting. Taken together, the current data point to the need for further research on the consequences of stereotype threat for older adult workers, and for potential interventions that could ameliorate it.

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