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Active coping shields against negative aging self-stereotypes contributing to psychiatric conditions

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Abstract

Rationale: Psychiatric conditions are often falsely considered inherent to aging. We examined whether negative age stereotypes, which older individuals tend to assimilate from the environment across their lifespan, contributed to an increased risk of developing four psychiatric conditions, and, if so, whether this risk was reduced through active coping.

Method: The sample consisted of participants aged 55 years and older, free of the psychiatric conditions at baseline, drawn from the National Health and Resilience in Veterans Study, a nationally representative sample. New cases of posttraumatic stress disorder, suicidal ideation, generalized anxiety disorder, and major depressive disorder were assessed during three waves spanning a four-year period.

Results: As predicted, participants holding more-negative age stereotypes were more likely to develop the psychiatric conditions, and their engagement in active coping reduced the risk of their developing these conditions.

Conclusion: Our findings suggest that prevention and treatment efforts designed to reduce psychiatric conditions in later life may benefit from bolstering active coping as well as positive age stereotypes.

Keywords

Age stereotypes; Coping; Mental health; PTSD; Depression; Anxiety; Suicidal ideation; Social determinants; Aging

1. Introduction

One in six adults aged 60 years and older suffers from a psychiatric condition, including posttraumatic stress disorder (PTSD), suicidal ideation (SI), generalized anxiety disorder

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Appendix A. Supplementary data

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(GAD), and major depressive disorder (MDD) (Karel et al., 2012; World Health Organization, 2018). Despite their high prevalence and profound impact on later life, these conditions are often untreated or undertreated, in part because of the assumption that mental problems are an inherent part of aging (American Psychological Association, 2014). Therefore, it is important to better understand factors that contribute to the development of psychiatric conditions in later life and whether there are measures that can be taken to reduce their impact. The current study examined whether negative age stereotypes increase the risk of developing psychiatric conditions (i.e., PTSD, SI, GAD, and MDD) and whether active coping can reduce the risk of negative age stereotypes contributing to the development of these psychiatric conditions.

There are both theoretical and empirical reasons for predicting that negative age stereotypes may increase the risk of developing psychiatric conditions. According to the stress-vulnerability model, individuals with greater exposure to environmental stressors are more likely to experience a variety of psychiatric conditions, compared to those who are less exposed (Nahum-Shani et al., 2015; Zubin and Spring 1977). Further, according to stereotype embodiment theory, age stereotypes are an environmental stressor insofar as they are assimilated from the surrounding culture starting in childhood and reinforced over time; when individuals reach old age, these age beliefs tend to be applied to themselves, which can then influence functioning and health (Levy, 2009).

The hypothesized contribution of negative age stereotypes to the development of psychiatric conditions stems from previous research, which includes: (1) an experimental study with older individuals that demonstrated exposure to negative age stereotypes can act as an environmental stressor; whereas, positive age stereotypes can act as an environmental-stress buffer (Levy et al., 2000); (2) a longitudinal study that showed older individuals who had assimilated negative age stereotypes were more likely to show patterns of cumulative stress, as measured by cortisol levels, across 30 years (Levy et al., 2016); and (3) a cross-sectional study that found negative age stereotypes were associated with greater prevalence of PTSD, SI, and GAD (Levy et al., 2014). In the latter study, the analyses revealed a dose-response association between age stereotypes and these conditions; each one-point increase in negative age stereotypes was associated with a 17%, 18%, and 20% increased probability of screening positive for SI, PTSD and GAD, respectively, after adjusting for relevant covariates. However, given the cross-sectional design of that study, the direction of association between age stereotypes and the psychiatric conditions could not be ascertained.

In the current study, we sought to build on these previous findings in order to examine longitudinally whether negative age stereotypes predicted the development of new psychiatric conditions. We also considered whether active coping moderated the relationship between negative age stereotypes and risk of developing new psychiatric conditions. Active coping is defined as challenging external sources of stress, whereas passive coping is defined as avoidance of addressing stressors (Hertel et al., 2015; Polanco-Roman et al., 2016).

A meta-analysis concluded that although there has been ample research demonstrating the adverse impact of prejudice-related stress on health, there has been “scant research” examining whether coping strategies can mitigate this impact (Pascoe and Richman, 2009, p.

533). The few studies that have been conducted on this topic have focused on sexism and racism, rather than ageism. They found that active coping was the most effective strategy to buffer the impact of these experiences, whereas passive coping tended to exacerbate them (e.g., Pascoe and Richman, 2009). We extended these studies by examining, for the first time, whether active coping also buffers the impact of ageism, as reflected in societal-based negative age stereotypes.

The current study benefits from following a sample of United States military veterans because compared to their civilian counterparts, they experience significantly higher rates of psychiatric conditions, such as PTSD and MDD (Ikin et al., 2007; Fanning and Pietrzak, 2013; Lehavot et al., 2018; Milanak et al., 2013). To our knowledge, no prior study has examined whether aging-related cultural factors, such as age stereotypes, may contribute to the risk of developing psychiatric conditions among older veterans.

The hypotheses for the current study were that among older individuals, (1) those holding more-negative age stereotypes will be more likely to develop PTSD, SI, GAD, and MDD than their same-aged peers holding more-positive age stereotypes; and (2) engagement in active coping will reduce the risk of negative age stereotypes contributing to the development of these conditions.

2. Method

2.1. Participants

The study cohort consisted of participants in the National Health and Resilience in Veterans Study (NHRVS), a nationally representative, prospective cohort study of United States veterans. The NHRVS sample was drawn from KnowledgePanel, a survey panel of over 50,000 American households that is maintained by GfK Knowledge Networks. For inclusion in NHRVS, participants needed to answer “Yes” to an initial screening question: “Have you ever served on active duty in the United States Armed Forces, Military Reserves, or National Guard?” and had to be 55 years or older at baseline. Of the 4750 survey panelists that met this criterion, 3157 (66.5%) participated in the baseline NHRVS survey. It included three waves of data spanning a four-year period. The baseline survey was conducted in 2011, wave two in 2013, and wave three in 2015. The average response rate was 94% (Pietrzak and Cook, 2013). Additional details regarding the survey methodology appear elsewhere (Tsai and Pietrzak, 2017).

To be included in the current study, participants also had to screen negative for PTSD, SI, GAD, and MDD at baseline. In order to maximize the number of participants in each model, we only excluded participants who already had the psychiatric condition examined for a particular model. Thus, for the PTSD model we started with 2117 participants free of PTSD at baseline, then 1523 participants (71.9%) were resurveyed at the first follow-up and 1013 participants (66.5%) were resurveyed at the second follow-up. For the SI model, we started with 2292 participants free of SI at baseline, then 1694 participants (73.9%) were resurveyed at the first follow-up and 1124 participants (66.4%) were resurveyed at the second follow-up. For the GAD model, we started with 2246 participants free of GAD at baseline, then 1642 participants (73.1%) were resurveyed at the first follow-up and 1089 participants

(66.3%) were resurveyed at the second follow-up. For the MDD model we started with 2353 participants free of MDD at baseline, then 1638 participants (69.6%) were resurveyed at the first follow-up and 1087 participants (66.4%) were resurveyed at the second follow-up.

One of the advantages of our event-history modeling strategy is that it provides a natural mechanism to account for attrition by examining the amount of time spent in the survey in conjunction with information about the reason for their exit (incidence of outcome or loss to follow-up).

The average age of participants was 68 years ($SD = 7.9$). Most of the participants had attended college (84.4%), and were male (94.5%), white (87.6%), and married (79.3%). They reported an average of 3.2 ($SD = 2.6$) lifetime traumas and 3.0 ($SD = 2.0$) medical conditions. In addition, 49.1% of the participants reported earning incomes of less than \$60,000 and 36.7% had been in combat.

Participants with more-negative age stereotypes and more-positive age stereotypes, based on splitting the sample into those below and those above or equal to the mean, did not significantly differ by educational level, race, marital status, combat status, or number of lifetime traumas. In contrast, the groups significantly differed by income and age: Those with more-negative age stereotypes tended to have higher income and were older than those with more-positive age stereotypes. All of these variables were included as covariates in the model to determine whether age stereotypes predicted the development of psychiatric conditions above and beyond these factors. Our dataset had very few missing values (less than 0.05%).

2.2. Assessments

2.2.1. Predictor: age stereotypes—At baseline, negative age stereotypes were assessed using a three-item version of the Expectations Regarding Aging (ERA) questionnaire (Sarkisian et al., 2005), which included items with the strongest factor loadings on each of physical-, mental-, and cognitive-age-stereotype domains of the full scale (Sarkisian et al., 2005): “Every year that people age, their energy levels go down,” “It’s normal to be depressed when you are old,” and “Forgetfulness is a natural occurrence just from growing old.” This short-form version has been found to be valid (Levy et al., 2014).

Response options were definitely false, somewhat false, somewhat true, or definitely true. Consistent with an earlier study, responses to each ERA item were dichotomized (Levy et al., 2014). If participants accepted the stereotype by responding definitely true, they were assigned a score of 0; if they responded with *definitely false*, *somewhat false*, or *somewhat true*, they were given a score of 1 to indicate different levels of resistance to the stereotype. Responses to the three items were summed and divided into four categories: no resistance = 0 (none of the negative age stereotypes were resisted); slight resistance = 1 (one of the negative age stereotypes was resisted); moderate resistance = 2 (two of the negative age stereotypes were resisted); and full resistance = 3 (three of the negative age stereotypes were resisted). These responses were then reverse-coded, so that higher scores indicated more-negative age stereotypes were held. To ensure that results were not driven by the scoring of the instrument, we also examined results generated from models with ERA scored as a

continuous variable, so that responses to the items were scored from 0 = *definitely false* to 3 = *definitely true* and summed. Total scores ranged from 0 to 9, with a higher score indicating more-negative age stereotypes. The average score in our sample was 4.67 ($SD = 1.70$).

2.2.2. Moderator: active coping—Individuals were given a list of 14 coping techniques selected from the Brief COPE instrument, which assesses coping reactions (Carver, 1997), and were asked to pick the three that they “most commonly use” to deal with symptoms related to their “worst traumatic event.” Choices included active coping (i.e., taking action to eliminate or reduce the stressor) and passive coping techniques, such as denial (i.e., refusing to believe that the stressor happened) and self-blame (i.e., condemning oneself for the stressor) (Carver, 1997; Carver et al., 1989). Consistent with a recent study that successfully used this version of the measure in the NHRVS (Contractor et al., 2016), we compared those who endorsed using active coping to those who did not. There is evidence of good convergent and discriminant validity for the scale from which this measure was derived (Carver, 1997; Carver et al., 1989). In our sample, 19.3% of the participants reported an active-coping technique.

2.2.3. Outcome: new-onset psychiatric conditions—Dependent variables consisted of new-onset cases of PTSD, SI, GAD, and MDD. These cases were recorded at each of the follow-up waves, two years and four years after baseline. PTSD was assessed using the PTSD Checklist for DSM-IV (Weathers et al., 1993). SI was assessed with the SI item from the Patient Health Questionnaire-9 (Kroenke et al., 2001), which has been used to identify individuals at increased risk of suicide deaths and attempts. MDD and GAD were assessed with the Patient Health Questionnaire-4 (Kroenke et al., 2009). Positive screens for these psychiatric conditions were examined with standard clinical cut-points. In our sample, during the four years studied, there were 35 new cases of PTSD, 46 new cases of SI, 70 new cases of GAD, and 69 new cases of MDD.

2.2.4. Covariates—Covariates that have been found to be related to age stereotypes, and/or the psychiatric conditions, included: age, sex, race/ethnicity, annual household income, education, marital status, number of medical conditions, trauma-related variables of combat exposure, and number of lifetime traumas (Levy, 2009; Tsai and Pietrzak, 2017). All covariates were assessed at baseline.

2.2.5. Statistical analysis—To examine our first hypothesis that older individuals holding more-negative age stereotypes will be more likely to develop PTSD, SI, GAD, and MDD than their same-aged peers holding more-positive age stereotypes, we conducted a series of event-history analyses (Singer and Willett, 2003). Because the new-onset psychiatric conditions are events that could have occurred over any of two follow-up periods (discrete windows of two years and four years after baseline) with the possibility of right-censoring, we adopted a discrete time event-history framework to model the time-varying risk of those events as a function of age stereotypes, adjusting for covariates (Singer and Willett, 2003). As the sample consisted of those who were free of PTSD, SI, GAD, and MDD at baseline, these models allowed us to examine new diagnoses of the psychiatric conditions that were reported two years or four years after baseline. This examination

involved fitting logistic regression models to our data, which were first re-arranged into person-period format. Because our primary predictor variable was included in our models as a categorical variable, we performed Wald tests to assess the joint significance of their effects.

To assess our second hypothesis that engagement in active coping will reduce the risk of negative age stereotypes contributing to the development of PTSD, SI, GAD, and MDD, we conducted a series of moderator analyses (Baron and Kenny, 1986), with active coping as the moderator, age stereotypes as the predictor, and each of the four psychiatric conditions as the outcomes; a significant interaction of age stereotypes and active coping, with the predictor and moderator also entered as independent effects, indicated a moderator effect. In these models, the negative-age-stereotype group included those with an ERA score of three, the most-negative age stereotypes. In these analyses, which utilized event-history models that included the three time points of the psychiatric conditions, we adjusted for all covariates, as well as time to development of psychiatric conditions. The interaction was displayed graphically to examine the pattern of the interaction.

In order to examine the robustness of our results, two sensitivity analyses were conducted. In the first analysis, we conducted Generalized Estimating Equations models in order to examine whether age stereotypes also predicted prevalence of psychiatric conditions over four years, adjusting for repeated measurements and controlling for all covariates. In this supplementary model, we enlarged the sample to include all participants aged 55 years and older at baseline, regardless of whether they had PTSD, SI, GAD, or MDD at baseline. In the second analysis, even though we had minimal missing values for the measures (less than 0.05%), we reran all our models with imputed values, created with the Amelia II Program set at 5000 iterations. This program is accurate and valid for the event-history models used in the current study (Honaker et al., 2011). Data analyses were conducted in 2018 with R statistical software (R Core Team, 2017).

3. Results

As predicted by our first hypothesis, participants with more-negative age stereotypes, indicated by higher-ERA scores, were significantly more likely than those with more-positive age stereotypes to develop new-onset cases of PTSD, SI, GAD, and MDD in the four years following baseline, adjusting for all covariates (Table 1). Also, a dose-response gradient emerged, such that an increasingly higher ERA score was associated with higher odds of developing the psychiatric conditions: the odds roughly doubled for those in the ERA = 1 category, tripled for those in the ERA = 2 category, and sextupled for those in the ERA = 3 category, relative to those in the baseline-ERA = 0 category. This relationship appeared to hold for all of the psychiatric conditions and all levels of the age-stereotype ERA variable, except in the case of SI among respondents with an ERA score of 1. Wald tests confirmed the overall significance of the positive association between negative age stereotypes and the development of the psychiatric conditions: PTSD, $\chi^2 = 18.7$, $p = .0003$; SI, $\chi^2 = 24.4$, $p < .0001$; GAD, $\chi^2 = 35.5$, $p < .0001$; and MDD, $\chi^2 = 31.5$, $p < .0001$.

The full event-history models that display the contribution of the negative age stereotypes to each of the psychiatric conditions, with values of all covariates listed, appears in the Supplementary Materials. The first sensitivity analysis showed that negative age stereotypes also predicted prevalence of the four psychiatric conditions. That is, the predicted pattern of findings that emerged was the same when we ran generalized estimating equation models as when we ran the event-history models: PTSD, $OR = 1.72, p = .003$; SI, $OR = 1.84, p < .001$; GAD, $OR = 1.82, p < .001$; and MDD, $OR = 1.81, p < .001$. In the second sensitivity analysis, in which the models were rerun with imputed values to replace the minimal amount of missing data, all patterns of significant results remained that were found with the original models.

To illustrate the over-time psychological health burden that is implied by our event-history models, we plotted cumulative predicted probabilities of new diagnosis for PTSD, SI, GAD, and MDD at each-time point for each level of the ERA predictor – holding all other covariates at their modal (categorical variables) or mean (continuous variables) values (Fig. 1).

As predicted by our second hypothesis, for participants with more-negative age stereotypes, engagement in active coping was associated with a dramatic reduction in the detrimental impact of negative age stereotypes on the development of the psychiatric conditions (Fig. 2). That is, the interaction of active coping and age stereotypes for PTSD was $\beta = -11.27, SE = 0.76, p < .01$; for GAD was $\beta = -12.22, SE = 0.65, p < .01$; for SI was $\beta = -12.72, SE = 0.78, p < .01$; and for MDD was $\beta = -11.48, SE = 0.73, p < .01$. (See Supplementary Materials for interaction model with full results.)

The incidence of psychiatric conditions among participants in the positive-age-stereotype group was not impacted by active coping. Yet, those in the negative-age stereotype group who engaged in active coping had a significantly lower risk of developing each of the psychiatric conditions than in this group who did not engage in active coping and those with positive age stereotypes who engaged in active coping ($p < .05$). We determined this latter finding by using a boot-strap technique to generate confidence intervals around the point estimates for the two groups who engaged in active coping.

4. Discussion

As hypothesized, results of the current study revealed that older individuals holding more-negative age stereotypes were more likely to develop PTSD, SI, GAD, and MDD than their same-aged peers holding more-positive age stereotypes. The design of the study, which included an assessment of age stereotypes at baseline among those without these psychiatric conditions and an assessment of new cases of these conditions over the next four years, supports the predicted direction of the findings.

Our study also found that active coping can decrease the likelihood of older individuals experiencing a detrimental health impact from negative age stereotypes. Specifically, as hypothesized, engagement in active coping reduced the risk of negative age stereotypes contributing to the development of the four psychiatric conditions. That is, those holding

more-negative age stereotypes who engaged in active coping had a significantly lower risk of developing the conditions than those with more-negative age stereotypes who did not engage in active coping.

The mental-health advantage of the active copers holding more-negative age stereotypes surpassed the level of those holding more-positive age stereotypes. This finding suggests that the active coping of the more-negative-age-stereotype group provided a benefit beyond reducing the impact of these stereotypes; perhaps the active coping resulted in a sense of empowerment.

The reduced risk of developing psychiatric conditions that was found among those holding more-positive age stereotypes occurred regardless of whether they engaged in active coping. An explanation may be that because this group was spared the stress of negative age stereotypes, there was less need for active coping and, therefore, less benefit from it, so that a ceiling effect was encountered.

4.1. Limitations

The older participants in the current study were drawn from a nationally representative sample of United States veterans, which was predominantly male. Yet, it is likely that our findings are transferable to the general population of older Americans: The process of internalizing age stereotypes begins early in life and tends to remain intact without intervention (Levy, 2009). Further, participants in the current study had widely diverse experiences in the military, most notably as combatants or as non-combatants; but the findings were the same after adjusting for this variable.

An additional potential limitation of the current study is that the active-coping measure does not explicitly refer to negative age stereotypes. Nonetheless, for several reasons, it is plausible to assume that the measure, which asks about coping strategies in response to a traumatic event, would encompass responding to negative age stereotypes because: individuals tend to use the same types of coping strategies in different situations (Regier and Parmelee, 2015); negative age stereotypes generate considerable stress as a consequence of predominantly referring to debilitation (Levy et al., 2000; Levy and Bavishi, 2018; Levy et al., 2016); and research on other types of prejudice has shown that it can be experienced as a trauma (Helms et al., 2012; Kirkinis et al., 2018).

5. Conclusions

The findings of the current study refute the assumption that psychiatric conditions are entirely and inevitably a by-product of aging; we have shown that their development was predicted by a cultural construct, negative age stereotypes. The demonstrated ability of active coping to blunt the adverse impact of these stereotypes offers the prospect of it as an intervention to mitigate the risk for psychiatric conditions in the aging population.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Fig. 1.

Association of Negative Age Stereotypes with Higher Risk of Developing: A. Posttraumatic stress disorder (PTSD); B. Generalized anxiety disorder (GAD); C. Suicidal ideation (SI); and D. Major depressive disorder (MDD).

Note: These are the predicted cumulative rates of the psychiatric conditions (over three time points) derived from our event-history model. The rates are zero-centered at their baseline values. All covariates are held at either their modal value (categorical variables) or mean value (continuous variables). The y-axis shows the number of cases per 1000 people. For example, 20 on the y-axis represents a cumulative risk of 20/1000 or 2%.

Fig. 2. Active Coping as a Protective Factor in Reducing the Risk of Negative Age Stereotypes Contributing to New Cases of: A. Posttraumatic Stress Disorder (PTSD); B. Generalized Anxiety Disorder (GAD); C. Suicidal Ideation (SI); and D. Major Depressive Disorder (MDD).

Note: These figures are based on event-history models using the three time points and adjusting for all covariates. The odds ratios were zero-centered at baseline values. Covariates were held at either their modal value (categorical variables) or mean value (continuous variables).

Table 1
Association of Negative Age Stereotypes with Development of Psychiatric Conditions (odds-ratios).

ERA Score:	Posttraumatic Stress Disorder		Suicidal Ideation		Generalized Anxiety Disorder		Major Depressive Disorder	
	OR	SE	OR	SE	OR	SE	OR	SE
1 (slight resistance)	1.96	0.52 *	1.36	0.34	1.78	0.33 **	2.07	0.37 ***
2 (moderate resistance)	2.68	1.18 *	3.15	1.09 ***	2.97	0.87 ***	2.40	0.75 **
3 (full resistance)	5.67	2.68 ***	6.68	3.13 ***	6.55	2.61 ***	5.81	2.49 ***

* p < .05,
** p < .01,
*** p < .001.

Note: All models include survey wave, age, sex, education, race, marital status, income, combat exposure, number of lifetime traumas, and number of medical conditions as covariates. Individuals with expectancies regarding aging (ERA) = 0 (most positive age stereotypes) were set as the referent category. A higher score on ERA indicates more-negative age stereotypes.