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Original Research Report

Confucian Values as a Buffer Against Age-Based Stereotype Threat for Chinese Older Adults

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Abstract

Objectives: Research has shown that stereotype threat can impair older adults' memory in Western cultures. We tested whether this also occurs for older adults from the East Asian Chinese culture. We also tested whether an intervention that highlighted Confucian principles would protect Chinese older adults from stereotype threat's detrimental effects.
Method: Culturally-Chinese older adults residing in the United States completed a memory test either under age-based stereotype threat about cognitive decline or not. Prior to this, some participants were also reminded of Confucian traditions of filial piety and were assured these values had been transmitted to the younger generation.
Results: Stereotype threat impaired Chinese older adults' memory performance. However, our intervention was effective in eliminating this deficit. When the Chinese participants were reminded of the Confucian principle of filial piety they did not exhibit stereotype threat effects.
Discussion: Confirming that younger adults have an obligation to respect their elders can eliminate the social-evaluative pressure of stereotype threat for Chinese older adults. These findings are noteworthy since population aging is happening at an unprecedented pace in East Asia. Although our results suggest that stereotype threat can adversely affect older adults' cognitive performance in these societies, we also identify a culturally-based intervention to alleviate this impairment.

Keywords: Chinese cultural groups, Memory, Stereotype threat

Stereotype threat occurs in situations where there is a concern of confirming that a negative, self-relevant, stereotype is true. As a result, people often underperform compared to their potential (Steele, Spencer, & Aronson, 2002). For example, when older adults are placed in situations where they could confirm the stereotype that older adults are forgetful and cognitively incompetent, they can experience age-based stereotype threat and underperform on memory tests (Hess, Auman, Colcombe, & Rahhal, 2003; for reviews, see Barber & Mather, 2014; Chasteen, Kang, & Remedios, 2012). Although a meta-analysis found that age-based stereotype threat is a reliable effect (Lamont, Swift, & Abrams, 2015), prior studies have only examined it in Western cultures. Given that population aging is happening at an unprecedented pace in the Asia-Pacific region (National Research Council, 2012), and given that the U.S. older adult population is also becoming more racially and ethnically diverse (Ortman, Velkoff, & Hogan, 2014), understanding whether age-based stereotype threat affects older adults from non-Western cultures is important.

Although the East–West distinction is an oversimplification, theorists have argued that people from Eastern cultures are more likely to view themselves as fundamentally connected to the collective whole (e.g., Cousins, 1989; Markus & Kitayama, 1991; Nisbett, Peng, Choi, & Norenzayan, 2001). Because of this, people from Eastern cultures are thought to prioritize relational harmony among all members of society, and in particular to respect

the societal hierarchy. In the Chinese culture, this is often reflected in the Confucian principles of filial piety, which dictate behaviors that involve self-sacrifice, commitment to family obligations, and honoring, obeying, and supporting older people. Even in modern times, younger adults in East Asian cultures are expected to place older adults in a more esteemed role (e.g., Cheng & Chan, 2006; Dong, Zhang, & Simon, 2014; Usita & Du Bois, 2005). Furthermore, it is often expected that younger adults' fulfillment of their filial responsibilities will be unconditional and unlimited (e.g., Dai & Dimond, 1998). Thus, filial responsibilities do not depend upon the older adults' abilities or behavior.

Because young adults in Eastern cultures honor elders through their behavior (see Sung, 2001a), they are often assumed to have positive personal perceptions of aging as well, especially as compared to "youth-oriented" Western cultures (e.g., Palmore, 1975). Some studies have supported this by finding more positive aging attitudes in Eastern cultures (e.g., Levy & Langer, 1994; Yoon, Hasher, Feinberg, Rahhal, & Winocur, 2000). However, others have found cross-cultural similarity in aging attitudes (e.g., Ng, 2002), or have found the opposite, with more negative aging attitudes in Eastern cultures (e.g., Luo, Zhou, Jin, Newman, & Liang, 2013; Ota, Gallois, & Giles, 2002; Yun & Lachman, 2006). In still other cases, the pattern of results has been more mixed (e.g., Boduroglu, Yoon, Luo, & Park, 2006). For example, in one study participants from an Eastern culture reported both more positive (e.g., admiration) and more negative (e.g., contempt) attitudes toward older adults as compared to participants from a Western culture (Vauclair, Hanke, Huang, & Abrams, 2017).

Even though the pattern of results has varied across studies, when considered as a whole, a recent meta-analysis by North and Fiske (2015) suggests that individuals in Eastern cultures (particularly in East Asia) have more *negative* aging attitudes than individuals in Western cultures. This is in part be due to global trends in population aging. In Eastern countries there has been a rapid rate of population aging whereas in Western countries there has been a more gradual increase. In the North and Fiske meta-analysis, higher speeds of population aging were in turn associated with more negative aging attitudes. This could be because abrupt changes in societal structure can be difficult to accommodate and can spark intergenerational conflict over resources. Furthermore, high speeds of population aging often reflect both increases in longevity as well as decreases in birth rates. This combination increases the younger generation's obligations to financially and emotionally support their elders. Because younger adults are expected to unconditionally bear this burden in Eastern cultures, this may be why North and Fiske (2015) also found that within modern times (i.e., studies published from 1984 to 2014), the higher the country's level of collectivism the worse their aging attitudes.

To some, this finding that individuals in Eastern cultures have more negative aging attitudes than individuals in Western cultures may be surprising given that behavioral mandate of elder respect based upon Confucian principles. However, it is important to note that personal and cultural values are not always aligned (e.g., Na, et al., 2010; Zhang et al., 2016). Thus, whereas Eastern cultures may have obligations to respect their elders, and more generally carry out actions that show filial piety, this does not necessarily translate into positive personal perceptions about aging.

It is also important to note that cultural variability in aging stereotypes varies across subdomains. Some stereotypes, such as older adults being forgetful and prone to "senior moments", are actually based upon normative biological changes (see Hedden & Gabrieli, 2004). Given this kernel of truth, it is not surprising that there is nearly universal agreement that cognitive abilities decline with age. In contrast, other stereotypes that are less based upon biological realities (such as older adults' having poorer well-being) show more cultural variability (Löckenhoff et al., 2009).

Given that people in Eastern cultures have negative aging attitudes and expect cognitive abilities to decline with age, we hypothesized that older adults in Eastern cultures should be susceptible to age-based stereotype threat about memory abilities. In testing this, we focused on culturally-Chinese older adults. These older adults were all residing in the United States at the time of testing but were educated in China, Hong Kong, and Taiwan and still used Chinese as their primary (or only) language.

As noted above, despite holding negative personal attitudes about aging, in many Eastern cultures this coexists with requirements for behavioral actions to fulfill filial piety. For example, in Chinese societies, the principles of honoring the aged and the wise and respect for teachers and the moral virtues that rule the society are important values that guide behavior. These deeply-rooted Confucian traditions emphasize the higher status of older adults, and issue a behavioral mandate for younger people to respect and revere them through actions and behaviors. Thus, we reasoned that reminding older adults of these values should create an emotionally and socially-favorable context, which would buffer them from the evaluative pressure of age-based stereotype threat—at least when the testing environment consisted only of ingroup members.

Because stereotype threat is a concern about confirming a societal stereotype, our intervention also focused on a sociocultural norm that could potentially reduce its negative impact. It consisted of two key pieces of information. First, we reminded these participants about the honored role of older adults in their cultural group based upon Confucian values and doctrines. We reasoned that making salient the Confucian mandate to exhibit filial piety would reduce the extent to which these older adults (who have been deeply influenced by Confucian principles) would experience the social-evaluative pressure of age-based stereotype threat and would also remind older adults of a positive aging

stereotype (i.e., that older adults are wise teachers). Second, after reminding the Chinese participants about their own cultural values, we affirmed that these values had been successfully transmitted to the younger generation. This served as reassurance that the younger generation (including the in-group researcher) would behave in line with the Confucian mandates.

Method

Design

Participants were randomly assigned them to one of three stereotype conditions: stereotype alleviation, stereotype threat, or intervention + stereotype threat. Assignment to condition was done immediately following consent in a sequential manner (i.e., every third participant successfully recruited was assigned to the same condition). Because the experimenter monitored each participant's progress and answered questions, she was not blind to condition. However, as described below, all experimental manipulations and instructions were printed in the study material booklets and thus were standardized across participants.

Participants

The participants were 114 culturally-Chinese, community-dwelling, older adults (56 women, 58 men). Participants ranged in age from 55 and 84 (M = 68.50) and had completed an average of 15.28 years of education (Table 1). All participants were currently residing in the United States. They were recruited and tested at a senior center in Mountain View, California or in community parks in Mountain View and Palo Alto, California by the first author, who is a multilingual and multicultural researcher. As noted by others, recruitment of immigrant participants is often difficult due to participants' unfamiliarity with the research process and fears of being deceived or exploited for research purposes (e.g., Lu & Gatua, 2014; Ojeda, Flores, Meza, & Morales, 2011). Because of this, recruitment of participants into this study required the development of trust between the researcher and the participants and the majority of participants had multiple positive interactions with the researcher before they agreed to complete the study (e.g., meals, playing table tennis). When possible, the researcher also had influential community leaders provide introductions to further build trust and rapport. Throughout the recruitment and testing process, the researcher also practiced culturally-appropriate manners and methods of communication (e.g., addressed participants with appropriate titles such as "Uncle Li" or "Aunty Chen," and bowed to participants to gesture greeting and appreciation). These acts of elder respect were done for all participants, regardless of whether or not they were assigned to the intervention condition. For further discussion of the methodological issues associated with recruiting and testing older Asian immigrants, see Lu and Gatua (2014) and also Suh, Kagan, and Strumpf (2009).

To participate, participants were required to be from a Chinese-speaking region (i.e., China, Taiwan, or Hong Kong). All participants' native and current primary language was Mandarin or Cantonese. We did not record the number of participants who spoke each language. All participants were actively involved in Chinese social networks and activities (e.g., Chinese choirs, Chinese folk dancing, Qigong, table tennis, etc.) in which Mandarin and Cantonese are the main languages of communication. Many of these participants also maintained close connections with families and friends in East Asia and frequently

Table 1. Demographic Characteristics of the Participants as a Function of Stereotype Condition

	Stereotype alleviation	Stereotype threat	Intervention + Stereotype threat group
Sample size (n)	35	36	36
Age	68.65 (7.76)	68.11 (8.23)	68.83 (7.51)
Gender	19 men	18 men	18 men
	16 women	18 women	18 women
Years of Education	15.56 (3.49)	14.97 (3.61)	15.49 (2.57)
Retirement status	30 retired	26 retired	30 retired
	2 semiretired	0 semiretired	3 semiretired
	3 not retired	10 not retired	3 not retired
Self-rated health	7.12 (1.85)	6.75 (1.81)	7.28 (1.47)
Performance expectations	3.59 (0.88)	3.45 (0.94)	3.58 (0.91)
Self-perceived stereotype threat	14.11 (2.84)	13.83 (2.88)	13.31 (2.48)
Asian American Identity Scale: Connectedness	16.00 (2.16)	16.42 (2.23)	16.39 (2.63)
Asian American Identity Scale: Family Focus	12.49 (1.72)	12.33 (1.62)	13.08 (1.75)

Note: Numbers in parentheses represent standard deviations. Retirement status was reported as either retired, not retired, or semi-retired but still working part-time. Health was self-reported on a 1 (very poor health) to 9 (very healthy) scale. Not all participants opted to provide all demographic information.

travelled back to this region for family gatherings, duties and obligations, and leisure. We did not assess their immigration status or length of time living in the United States because pilot testing revealed that this question was perceived as invasive and reduced willingness to participate.

Data was collected in two waves. The recruitment and random assignment procedures were the same in each data collection wave. Wave 1 lasted from July to September 2016 and included 60 participants. Wave 2 lasted from April to May 2017 and included 54 participants. Preliminary analyses were conducted on the Wave 1 data. Within these analyses, all results reported here were statistically significant. Despite this, we opted to collect a second wave of data in order to achieve adequate statistical power and increase the reliability of our findings. Seven participants' data were removed from analyses: three who upon debriefing withdrew consent and two pairs who looked at one another's memory test answers. This left a final sample size of 107. A power analysis conducted in GPower 3.1.9.2 (Faul, Erdfelder, Lang, & Buchncer, 2007) showed this sample size provided over 75% power to detect the hypothesized effects. In making this determination we used the effect size of $f = .26$ reported in a meta-analysis for stereotype-based manipulations of threat in older adults (Lamont et al., 2015), and specified an alpha of .05 with three groups and four covariates (age, sex, education, and health). These covariates were included as they relate to older adults' memory performance (e.g., Hultsch, Hammer, & Small, 1993; van Hooren et al., 2007).

Procedure

All study materials were translated from English into Chinese/Mandarin by the first author and then back-translated by a bilingual volunteer. Depending upon each participant's preference, the written study materials were presented in either traditional or simplified written Chinese. These two forms of written Chinese do not differ in how the characters are pronounced or in the characters' definitions. The only difference is that simplified written Chinese requires fewer strokes to write each character than does traditional written Chinese. Because there are regional differences in the writing systems that are commonly used and taught, we prepared our materials in both traditional and simplified Chinese to ensure that all participants could easily read and understand the study materials.

Participants first completed a memory task. Instructions for this varied based upon the experimental condition. In the *stereotype alleviation* condition, participants were told that they would be completing a word-processing exercise to investigate how people remember words. They were told that people of all ages perform equally well because it was a non-age-discriminatory exercise (i.e., "age fair"). In the *stereotype threat* condition, participants were told that they would be taking a test that was diagnostic of memory abilities in order to examine how aging affects memory performance. They were also told their performance would be compared to that of younger adults and were asked to indicate their age, birth month, and birth year. Finally, in the *intervention + stereotype threat* condition, participants first read the following prompt:

> We should be proud of our ancient traditions such as the doctrines of "honoring the aged and the wise" and "respecting your teachers and the moral virtues that rule the society". In fact, research shows that our generation has been very successful in teaching and imbuing our children with the Confucian virtue of filial piety. A recent study showed that although Caucasian-American young adults had negative views about elders, Chinese-American young people had favorable views. We really should be very proud that we have instilled this cultural value and virtue in our children.

Participants in this intervention + stereotype threat condition then rated the extent to which they valued filial piety on a 1 (*not at all important)* to 5 (*extremely important*) scale. They then received the same instructions as in the stereotype threat condition and also indicated their age, birth month, and birth year.

All participants next rated how well they expected to perform on the memory test on a 1 (*extremely poorly*) to 5 (*extremely well*) scale. We included this since some prior research with younger adults has suggested that stereotype threat operates in part by lowering performance expectations (e.g., Cadinu, Maass, Frigerio, Impagliazzo, & Latinotti, 2003). They then received 3 min to study a list of 30 words. Words were five low-frequency exemplars from six categories taken from van Overschelde, Rawson, and Dunlosky (2004). Words were printed in a random order on a single piece of paper, with the traditional and simplified Chinese characters for each word listed side-by-side. Immediately after encoding, participants were given a sheet of paper and asked to recall as many words as possible. Recall was self-paced but completion times were not recorded.

Participants next completed questionnaires. First, all participants completed a 4-item perceived stereotype threat questionnaire (adapted from Chasteen, Bhattacharyya, Horhota, Tam, & Hasher, 2005; observed Cronbach's $\alpha = .74$; sample item: "*Based on my age, people often underestimate my memory ability"*). Questions were answered on a 1 (strongly disagree) to 5 (strongly agree) scale. This was followed by a demographics questionnaire, which assessed only age, gender, education, self-perceived health, retirement status, and primary occupation. Finally, participants also completed a cultural identity questionnaire, adapted from Oyserman and Sakamoto's (1997) Asian American Identity Scale. We adapted two subscales: Connectedness (4 items) and Family Focus (3 items). Because participants were all older adults whose children (if they had any) were grown, we changed the wording of some items. For example, the item '*I want my children to be raised with my group's traditions*' was adapted to '*I want the future generation of Chinese children to be raised with Chinese*

traditions' (which could be answered even if the participant did not have children). Questions were answered on a 1 (strongly disagree) to 5 (strongly agree) scale. Internal consistency of these adapted scales was moderate, with observed Cronbach alpha values of .71 (Connectedness) and .66 (Family focus). On average, participants had no opinion about the importance of connectedness (M = 3.2) but agreed that family focus (including respect for elders) was important (M = 4.2). Participants assigned to the three conditions did not significantly differ in their responses (Table 1). No other questionnaires or tasks were administered. At the end, participants were debriefed and compensated $5. All procedures were approved by the Institutional Review Board at San Francisco State University.

Results

Our first aim was to test the hypothesis that culturally-Chinese older adults are susceptible to age-based stereotype threat about memory decline. Our second aim was to test whether an intervention that reinforced Confucian principles and affirmed their intergenerational transmission would inoculate culturally-Chinese older adults from this negative effect. To test these hypotheses, we conducted a single factor (stereotype group: stereotype alleviation vs stereotype threat vs intervention + stereotype threat) between-subjects Analysis of Covariance (ANCOVA) on the proportion of words correctly recalled. In all analyses we included the covariates of age, gender, education, and self-reported health, as these factors relate to older adults' memory performance (e.g., van Hooren et al., 2007; Hultsch et al., 1993). Missing demographic data was imputed using the mean value. Within this ANCOVA, all covariates were significantly associated with memory performance (all ps ≤ .036). There was also a significant effect of stereotype group, $F(1, 100) = 3.91$, $MSE = .02$, $p = .023$, $\eta_p^2 = .073$ (Figure 1).

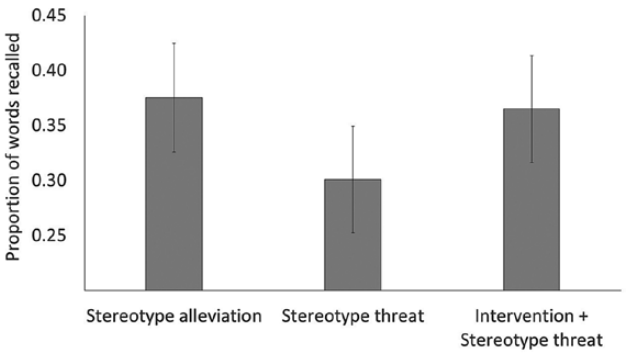

Figure 1. Proportion of words correctly recalled as a function of stereotype condition. Error bars represent 95% confidence intervals. Results showed that the stereotype threat group recalled significantly less than both the stereotype alleviation and the intervention + stereotype threat groups, who in turn did not significantly differ from one another.

Three follow-up single-factor ANCOVAs were next conducted (each with the covariates of age, gender, education, and self-reported health). In our first ANCOVA, we compared performance between the stereotype threat and stereotype alleviation groups. Supporting our first hypothesis, results showed that memory performance was lower for Chinese participants in the stereotype threat group compared to those in the stereotype alleviation group, $F(1, 65) = 5.82$, $MSE = .02$, $p = .019$, $\eta_p^2 = .082$. Thus, we replicated the standard stereotype threat effect in older adults from an Eastern culture.

The focus of this study was to examine age-based stereotype threat in older Chinese adults. However, one might wonder whether our procedure and stimuli would also produce a stereotype threat effect in a Western sample. To address this, after completing both waves of data collection for the study described here, we recruited an additional 86 community-dwelling culturally-American older adults (53 women, 31 men). These participants were recruited from San Francisco State's Osher Lifelong Learning classrooms and were required to be English-speakers. They ranged in age from 56 to 91 years old (M = 71.76, SD = 6.39), and had completed an average of 17.71 years of education (SD = 1.81, range: 12–25 years). We randomly assigned these culturally-American older adults to either the stereotype alleviation (n = 40) or stereotype threat condition (n = 45) used in this study. Procedures were identical to those used with the culturally-Chinese participants. However, these participants did not complete the Asian American Identity Scale. We then conducted a between-subjects ANCOVA (with the covariates of age, gender, education, and self-reported health) on the proportion of words correctly recalled by these culturally-American older adults. Within this analysis, one participant who did not provide any demographic information was excluded. Results confirmed that our stereotype threat manipulation was also associated with poorer memory performance for these Western participants, $F(1, 78) = 7.28$, MSE = .02, $p = .009$, $\eta_p^2 = .085$. This effect size was very similar to that observed in the Chinese participants.

Returning to the data from the Chinese older adults, in our second ANCOVA, we compared performance between the stereotype threat and intervention + stereotype threat groups. Results supported our second hypothesis. We found that memory performance was significantly higher in the intervention + stereotype threat group compared to the stereotype threat group, $F(1, 66) = 6.04$, $MSE = .02$, $p = .017$, $\eta_p^2 = .084$. Our final ANCOVA compared performance between the stereotype alleviation and intervention + stereotype threat groups. Results showed that although the Chinese participants in the intervention + stereotype threat group recalled numerically fewer words than the Chinese participants in the stereotype alleviation group, this difference was not significant, $F(1, 65) = 0.05$, $MSE = .02$, $p = .831$, $\eta_p^2 = .001$. Together, these results suggest that although Chinese older adults are susceptible to

stereotype threat, our cultural intervention was effective in eliminating this deficit.

The above effects could not readily be explained as arising due to group differences in performance expectations. As shown in Table 1, performance expectations were almost identical across the stereotype groups. Results were also not driven by differences in perceptions of stereotype threat. The results of a single-factor ANCOVA showed perceived threat did not significantly differ between the three groups, $F(1, 94) = 0.05$, $MSE = .76$, $p = .955$, $\eta_p^2 = .001$. This is similar to other studies in which manipulations of stereotype threat affect older adults' memory but not their subjective perceptions of threat (e.g., Hess, Emery, & Queen, 2009; Kang & Chasteen, 2009).

Discussion

This study examined age-based stereotype threat in older adults from the East Asia region that includes China, Hong Kong and Taiwan. Two key findings emerged. First, although age-based stereotype threat is known to impair older adults' memory in Western cultures (see Lamont et al., 2015), this study is the first to demonstrate this effect in older adults from an Eastern culture. This is noteworthy because behavioral research studies overwhelmingly use participants that are WEIRD—they are Western, educated, and from industrialized, rich, and democratic countries. This can be problematic since people, as a whole, are not WEIRD and research findings from WEIRD participants do not always generalize to other groups (Henrich, Heine, & Norenzayan, 2010a, 2010b). However, in contrast to this, our results show that age-based stereotype threat also impairs memory for culturally-Chinese older adults. Furthermore, the magnitude of this effect was nearly identical to that observed in a group of culturally-American older adults. This is an important first step in documenting the universality of age-based stereotype threat effects. Furthermore, understanding the psychosocial factors that influence aging in Eastern cultures is a particularly important topic given that rates of aging are more rapid in East Asian countries than in the rest of the industrialized world. In East Asia, the number of older adults (aged 65+) is predicted to increase from 250,000,000 in 2011 to about 1 billion by 2050 (see National Research Council, 2012). Given that age-based stereotype threat is associated with higher loneliness and lower subjective health (Coudin & Alexopoulos, 2010) and also increases the number of older adults who fall below diagnostic thresholds on brief cognitive tests used to screen for cognitive decline (e.g., Haslam et al., 2012; Mazerolle et al., 2016), it follows that age-based stereotype threat will be a larger public health problem in Eastern cultures due simply to their unprecedented rate of population aging.

Our second key finding is that a culturally-based intervention buffered Chinese older adults from the negative effects of age-based stereotype threat. When Chinese older adults were reminded of the importance of the Confucian principles and were assured that this value had been successfully transmitted to the younger generation, they did not exhibit memory declines in response to the age-based evaluation. Thus, confirming that younger adults have an obligation to respect older adults reduces stereotype threat's evaluative pressure. This has some similarities to research showing that positive intergenerational interactions—either real (Abrams, Eller, & Bryant, 2006) or imagined (Abrams et al., 2008)—can protect older adults in Western cultures from experiencing age-based stereotype threat. It also has some similarities to research showing that Western older adults' memory is improved after seeing older adults portrayed as an asset to society with generative value (Hagood & Gruenewald, 2018).

It is also possible that our intervention was effective because it reinforced a positive aging stereotype (i.e., that older adults are wise teachers). This is similar to prior findings with younger adults, in which activating a positive self-relevant stereotype eliminated the adverse effects of stereotype threat (Rydell & Boucher, 2010; Rydell, McConnell, & Beilock, 2009). Unfortunately, a recent study in our lab failed to observe a similar benefit for older adults. In this study, culturally-American older adults completed memory tests either under stereotype threat or not. Prior to this, some participants were also reminded of the positive aging stereotype that older adults are wise and a valuable source of knowledge and advice for the younger generations. Results showed that this intervention was ineffective. The memory impairments associated with stereotype threat occurred both when older adults received this wisdom intervention and when they did not (Barber, Seliger, Yeh, & Tan, in press, Experiment 2). Together, these findings are of particular note since few prior studies have tested stereotype threat interventions in older adults (see Barber, 2017). Identifying interventions that eliminate age-based stereotype threat—for individuals of all cultural backgrounds—is a key question that deserves further investigation.

One limitation to the current study that should be noted is that our Chinese participants were all residing in the United States and had therefore been exposed to Western norms and values. To minimize acculturation effects, we only recruited older adults for whom Chinese cultural activities were an important component of daily life and whose primary languages of communication were Mandarin or Cantonese. Future research should aim to replicate these findings in Eastern older adults who have never resided in a Western country.

In the current study we recruited a comparison sample of culturally-American older adults. However, we did not assign any of these individuals to our intervention condition as it focused on the intergenerational transmission of Confucian values in Chinese society and was not directly relevant to these participants. However, future research is needed to determine the generalizability of our cultural intervention. One important question is whether our intervention could also benefit older adults in other cultural

groups – including other Eastern cultural groups whose traditional values are less based upon Confucian traditions, such as Thailand or India. A second important question is whether the intervention's benefits depend upon the identity of the experimenter. In our intervention, we reassured participants that the younger generation of Chinese individuals respect and honor their elders. This may reduce evaluative concerns when the experimenter was perceived to be an ingroup member (as was the case in this study). However, this intervention is likely to be less effective when the experimenter is perceived to be an outgroup member. Conversely, this intervention may actually be more effective in reducing age-based stereotype threat amongst family members. Although filial obligations are often generalized to apply to relationships outside of the family (e.g., Yeh & Bedford, 2004), at its essence, filial piety defines the duties and obligations between parents and their children as a means of maintaining the family hierarchy (e.g., Sung, 1998).

Another key question for future research is to determine whether specific actions that denote filial piety and elder respect will also reduce age-based stereotype threat for Chinese older adults. In our intervention, we reminded participants about the abstract concept of filial piety and stated that the value had been successfully passed on to the younger generation. However, in everyday life, the virtue of filial piety is manifested in discrete and specific actions by younger adults. As outlined by Sung (1998), these include actions designed to show respect, fulfill responsibilities, make repayments, harmonize family relationships, make sacrifices, and show love and affection. Furthermore, as outlined by Sung (2001b), even the category of elder respect itself can be further subdivided. Elder respect can be manifested as care respect (providing services and/or care to elders), victual respect (serving the elder's choice of food and drinks), linguistic respect (speaking in a courteous and respectful manner to elders), salutary respect (greeting elders), and gift respect (giving gifts to elders), as well as other activities. In the current study, our intervention explicitly assured older Chinese adults that the younger generation valued filial piety. The fact that this was effective in reducing age-based stereotype threat is especially noteworthy because the researcher also practiced some acts of filial piety with all our participants (e.g., linguistic and salutary respect), regardless of whether or not they were assigned to our intervention condition. This suggests that simply being exposed to certain filial behaviors may not be enough to reduce the evaluative pressure of age-based stereotype threat.

In summary, this study adds to our understanding of the interdisciplinary intersection between culture, aging, social stereotypes, and cognitive performance. Previous research has shown that people in Eastern societies can have both negative personal attitudes about aging while simultaneously accepting public norms to honor elders' wisdom (e.g., Na et al., 2010; Sharps, Price-Sharps, & Hanson, 1998; Zhang et al., 2016). Building on this, we show that Chinese older adults can be personally susceptible to the adverse effects of age-based stereotype threat about cognitive decline while also benefiting from a cultural intervention that reduced this social evaluative pressure.

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Conflict of Interest

None reported.

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