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Effects of Stereotype Threat and Prior Task Success on Older Adults' Eyewitness Memory

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We examined whether stereotype threat affects older adults' eyewitness memory and whether prior task success can improve older adults' eyewitness memory. In Experiment 1, older adults were placed under stereotype threat or not; then they viewed a video of a crime and later attempted to recall it. Participants in the threat condition remembered fewer person, object, action, and location details from the video and were less accurate answering questions on a cued-recall task than those who were not under threat. In Experiment 2, older adults were either given prior task success (on a word fragment test) or not, before viewing the video of the crime and participating in the memory tests. Prior task success enhanced eyewitness memory by increasing the number of object, action, and locations details correctly recalled. Results suggest that stereotype threat reduces older adults' eyewitness memory, and that prior task success may remediate this negative effect.

General Audience Summary

A common stereotype about older adults is that their memory should be worse than that of young adults. This idea is so deeply rooted in our minds that its reactivation shortly before a memory test leads older adults to perform poorly compared to a control condition in which they are told nothing. On the other hand, recent studies have shown that the age-related decline in memory can be countered by giving participants an easy task to complete prior to participating in a standard experiment. Surprisingly, while these opposite effects have been consistently replicated in free-recall and recognition tasks, data concerning eyewitness memory are scarce and inconclusive. The present study was aimed at filling this gap by presenting participants with a video of a bank robbery. In Experiment 1, older adults (60–75 years) were assigned either to a stereotype-threat condition or to a control condition. They then viewed the video, recalled as many details as possible, and answered questions about it. As expected, older adults in the stereotype-threat condition recalled fewer details and were less accurate in their responses as compared to older adults in the control condition. In Experiment 2, before viewing the video, participants were either requested to solve easy word fragments (the task success condition) or to read aloud a list of words (the control condition). Older adults placed in the task success condition recalled more details than same-age adults in the control condition. Taken together, these data suggest that the effects of stereotype threat and prior task success are not limited to laboratory tasks but can extend to eyewitness memory.

Keywords: Memory, Stereotype threat, Eyewitness, Task success, False memory

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Stereotypes of older adults tend to be negative, particularly with regard to cognitive functioning (Cuddy, Norton, & Fiske, 2005; Hummert, Garstka, Shaner, & Strahm, 1994; Lineweaver, Berger, & Hertzog, 2009). Knowledge of these stereotypes influences older adults' behavior, a finding called the *stereotype threat effect* (Barber, 2017; Barber & Mather, 2014; Lamont, Swift, & Abrams, 2015).

Stereotype Threat and Memory Performance

Activating negative age-related stereotypes can lead older adults to perform more poorly on subsequent memory tests compared to when positive or no stereotypes are activated (Chasteen, Bhattacharyya, Horhota, Tam, & Hasher, 2005; Hess, Auman, Colcombe, & Rahhal, 2003; Hess, Hinson, & Statham, 2004; Levy, 1996). In most studies, aging stereotypes were consciously activated by telling participants that memory has been shown to decline with age, and that they were therefore expected to perform more poorly than younger adults (e.g., Barber & Mather, 2013; Eich, Murayama, Castel, & Knowlton, 2014; Hess, Hinson, & Hodges, 2009). In other studies, older adults were asked to solve a puzzle containing negative age-related words (e.g., "demented") before a memory test, or were primed with negative (e.g., "forgetfulness") or positive (e.g., "wisdom") age-relevant words and then asked to study a list of words for an upcoming test (Hess et al., 2004; Levy, 1996). In the latter conditions, the stereotype manipulation can operate outside awareness and is not necessarily expected to be self-relevant. Despite these substantial differences, the outcome is generally similar to that obtained in studies in which the stereotype threat is made explicit (e.g., Hess et al., 2004).

Being placed under stereotype threat also impairs older adults' memory performance on neuropsychological tests used to screen for Alzheimer's disease (Barber, Mather, & Gatz, 2015; Mazerolle et al., 2017). In a study by Haslam et al. (2012), older adults (mean age 65) who believed they were in the older range of people participating in the study exhibited reduced performance in the Addenbrooke's Cognitive Examination-Revised (ACE-R; Mioshi, Dawson, Mitchell, Arnold, & Hodges, 2006): in fact, 70% of them met diagnostic criteria for Alzheimer's disease. This percentage is higher than that of older adults meeting diagnostic criteria in the general population (around 14%), suggesting that the activation of age-related cognitive stereotypes can lead to over-diagnosis.

The aim of the current study was to examine the effects of stereotype threat in an eyewitness paradigm. The issue is relevant because older adults are often targeted by criminals and, with the persistent aging of general population, they will be increasingly requested to serve as witnesses (Love, 2015; Toglia, Ross, Pozzulo, & Pica, 2014). In addition, there is evidence that stereotypes and negative assumptions about age-related decline in memory functions can be implicitly activated in both the interviewers and the elderly witnesses (Brimacombe, Quinnton, Nance, & Garrioch, 1997). Over the past 35 years, several studies have investigated the impact of aging on eyewitness accuracy and identification (Moulin, Thompson, Wright, & Conway, 2007). Overall, it appears that older adults' memory reports

are less complete and accurate than those of younger adults (Gawrylowicz, Memon, Scoboria, Hope, & Gabbert, 2014; West & Stone, 2014); moreover, older eyewitnesses tend to be more susceptible to misleading questions and misinformation effects (Mitchell, Johnson, & Mather, 2003; Mueller-Johnson & Ceci, 2004; Roediger & Geraci, 2007).

To the best of our knowledge, only one study examined the effect of stereotype threat on older adults' eyewitness memory. Using the Gudjonsson Suggestibility Scales (GSS; Gudjonsson, 2003), Henkel (2013) asked her participants to answer questions about a crime video twice. Between the two questioning phases, they were given negative feedback about the accuracy of their responses, were told that people of their same age performed poorly on the test (stereotype threat), or were simply requested to answer questions again (control condition). Both younger (18–22 years) and older (64–91 years) adults changed their responses more often after misleading than nonleading questions, and more often in the negative feedback than in the control and stereotype-threat conditions; surprisingly, no differences were observed between the stereotype-threat and control conditions. One potential reason why older adults did not show an effect of threat in the Henkel (2013) experiment was that the threat manipulation occurred after the study and initial test session. In the current study, we examined the effect of stereotype threat on eyewitness memory recall when it is instantiated before older adults viewed the to-be-remembered event, as in previous research showing the typical negative effects of stereotype threat on memory performance (e.g., Barber & Mather, 2013; Eich et al., 2014; Hess et al., 2003, 2004; Hess, Emery, & Queen, 2009; Hess, Hinson, et al., 2009; Levy, 1996).

Positive Effects of Prior Task Success

In addition to examining whether age-based stereotype threat affected older adults' eyewitness memory (Experiment 1), we also examined whether the latter could be boosted. To this purpose, older adults in Experiment 2 were administered an easy task before viewing the crime video. Recent work shows that providing older adults with experience of successfully completing a cognitive task prior to taking a memory test improves their performance (Geraci, Hughes, Miller, & De Forrest, 2016; Geraci & Miller, 2012). Older adults who were previously administered a cognitive task they could successfully complete later showed better free recall performance than those who were given an unrealistic time limit to complete the prior task (failure condition), or those with no prior task experience (control condition). The interpretation of the "task success effect" was that giving older adults direct experience of being successful countered their stereotypical negative performance expectations. The goal of Experiment 2 was to determine if prior task success could likewise improve older adults' eyewitness memory.

Experiment 1: Effects of Stereotype Threat on Eyewitness Memory in Older Adults

The primary aim of Experiment 1 was to determine whether age-related stereotype threat reduced eyewitness memory in a sample of older adults. We used a paradigm introduced by

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