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Regulatory focus moderates the influence of age-related stereotypic expectancies on older adults’ test performance and threat-based concerns

Le focus régulationnel modère l’influence des stéréotypes du vieillissement sur la performance d’adultes âgés et leur sentiment de menace

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ABSTRACT

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RÉSUMÉ

Cette étude examine le rôle modérateur du focus régulationnel par rapport à l’influence des stéréotypes du vieillissement sur la performance d’adultes âgés à un test cognitif et sur leur sentiment de menace. Soixante et un adultes âgés ont répondu à des questions issues de l’examen théorique du permis de conduire belge. Ils avaient préalablement été répartis dans une des quatre conditions expérimentales selon qu’un focus régulationnel de type promotion ou de type prévention était activé et selon qu’ils étaient exposés à des informations stéréotypiques positives ou négatives. La performance des participants exposés à des stéréotypes négatifs s’est révélée plus faible et leur sentiment de menace plus élevé que pour les participants exposés à des stéréotypes positifs lorsqu’un focus régulationnel de type prévention était activé mais pas lorsqu’un focus régulationnel de type promotion était activé. Ces résultats suggèrent que l’activation d’un focus régulationnel de type prévention rend les adultes âgés plus sensibles aux effets néfastes de la menace du stéréotype.

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1. Introduction

In Western societies, stereotypes about older adults are evaluatively ambivalent. Whereas older people are perceived as warmer and as more experienced than younger people, other stereotypes question their intellectual competence (Cuddy et al., 2005; Hummert, 1999). Research on cognitive aging has supported the stereotypic belief according to which cognitive functioning declines with age (Salthouse, 1996). However, recent research documented that age-related intellectual decrements observed in adulthood may be partially due to social contextual factors that are associated with age-related stereotypes (Hess, 2005). A great deal of empirical evidence supporting the notion that contextual cues related to stereotypic expectancies can impair the test performance of target persons has been obtained within the stereotype threat approach (Steele et al., 2002). Indeed, numerous stereotype threat studies have shown that the activation of negative age-related stereotypes undermine older adults’ memory performance (for a review, Hess, 2005), although others have shown mixed or no supporting results (Andreoletti and Lachman, 2004; Chasteen et al., 2005). The present...
study addresses the “when” question focusing on boundary conditions that may determine the strength and direction of age-related stereotypic expectancy effects on older adults’ test performance by relating age-related stereotypic expectancies to self-regulatory mechanisms as outlined in Regulatory Focus Theory (Higgins, 1997, 1998).

We examined this issue in relation to older people’s driving abilities. Indeed, older people, who have become a growing drivers category, are overimplied in accidents occurring in situations where high-level cognitive resources are taxed such as crossing roads intersection (Fontaine, 2003). Therefore, understanding factors that can impair—or conversely improve—driving-related abilities is of prime importance for keeping older people mobile in a safe way.

2. Stereotype threat and aging

Stereotype Threat Theory (Steele and Aronson, 1995) holds that, in testing situations, negative stereotypes may have a detrimental impact on the performance of individuals targeted by these stereotypes. This performance decrement is explained by the test taker’s awareness and concern that his or her behavior may potentially confirm the negative self-relevant stereotype in case of a poor performance on the respective test. That is, stereotype threat refers to the predicament felt by individuals in situations where they could be judged in terms of a negative stereotype associated with their own group. Stereotype threat effects have been demonstrated among a variety of groups and performance domains, such as African Americans (Steele and Aronson, 1995) or individuals of low socioeconomic status (Croizet and Claire, 1998) in the intellectual domain, women in mathematics (Spencer et al., 1999), unemployed people in the work domain (Bourguignon et al., 2007) and men working on affective tasks (Leyens et al., 2000).

Because negative stereotypes about older adults question their intellectual functioning, stereotype threat effects have been found when their cognitive abilities were tested (Abrams et al., 2006, 2008; Desrichard and Köpetz, 2005; Hess et al., 2004; Rahhal et al., 2001). This body of research has mainly investigated memory as age-related ability to provide evidence for the operation of stereotype threat. However, older adults may be the targets of negative stereotypes in several other domains such as the ability to keep up with new technological developments (McCann and Giles, 2002) and the ability to drive a car (Hakamies-Blomqvist et al., 2002). To the best of our knowledge, little if any research has investigated the effects of stereotype threat on older people’s performance in these domains.

Moreover, by focusing mainly on the influence of negative stereotypes on performance, research on aging and stereotype threat has neglected that stereotypes about older people consist of both positive and negative aspects (Cuddy et al., 2005) which can have different effects. Hess et al. (2003), providing half of their participants with information about the negative impact of aging on memory whereas the other half read more favorable information about the impact of aging on memory, showed a performance boost on memory test among older people who were targeted by negative stereotypic performance expectations. Moreover, research on stereotype lift (Walton and Cohen, 2003) has suggested that people perform better when the ability of another group is impugned, that is, when the relative superiority of their own group is (indirectly) rendered salient. Nevertheless, some studies failed to find any differences in memory performance between older adults exposed either to negative or to positive information about aging (Andreottoli and Lachman, 2004) as well as others have shown that positive performance expectations can result in decreased performance (Cheryan and Bodenhausen, 2000). This raises the question whether boundary conditions have to be met in order to be able to detect age-related stereotypic expectancy effects on performance outcomes.

Addressing the “when” question on the basis of Regulatory Focus Theory (Higgins, 1997, 1998), Keller and Bless (2008) have recently shown that the influence of positive and negative stereotypic expectancies on performance was moderated by individuals’ motivational orientation. Because motivational processes are expected to be of particular importance in setting older people’s stage for resources availability during task engagement (Carstensen, 1999; Kanfer and Ackerman, 2004), self-regulatory processes appear particularly relevant in analyzing older people’s performance. In what follows, we discuss the logic underlying these theoretical assumptions.

3. Moderation of negative and positive expectancy effects on performance by self-regulatory processes

According to Higgins (1997, 1998), two different modes of self-regulation can be differentiated: self-regulation with a promotion focus and self-regulation with a prevention focus. Individuals who are predominantly promotion-focused are concerned with achieving positive outcomes or reaching maximal goals (i.e., goals that differentiate gains from non-gains) and accomplishing tasks using eager and ambitious strategies (i.e., to ensure against missing any hits). Consistently, promotion-focused individuals’ attention is directed to their growth and aspirations, and gain/non-gain situations. In contrast, prevention-focused individuals are concerned about avoiding negative outcomes or reaching minimal goals (i.e., goals that differentiate losses from non-losses) and accomplishing tasks using vigilant and defensive strategies (i.e., to ensure against committing mistakes). Prevention-focused individuals’ attention is directed to their security needs and responsibilities, and loss/non-loss situations.

Keller and Bless (2008) demonstrated an interaction effect involving the valence of stereotypic expectations and the prevailing mode of self-regulation on test performance. Specifically, when a defensive and vigilant style of self-regulation (i.e., prevention focus) was activated (either situationally or chronically), negative stereotypic expectation effects harmed test performance relative to positive ones. Indeed, negative stereotypic performance expectations are most likely to be perceived as threatening under prevention focus conditions because they render people apprehensive about meeting the minimal goal of not performing poorly in order to confirm the negative stereotype (Keller and Dauenheimer, 2003). The assumed mediating pathway referring to such worries is consistent with recent research reported by Marx and Stapel (2006). Indeed, these authors demonstrated that stereotype threat causes not only performance decrements but also threat-based concerns, defined as “the worry about confirming a negative stereotype associated with one’s group” (p. 244). In parallel, Regulatory Focus Theory (Higgins, 1997, 1998) holds that the activation of a prevention focus engenders agitation emotions which are conceptually related to threat-based affective reactions.

Conversely, when an ambitious and eager style of self-regulation (i.e., promotion focus) was activated, positive stereotypic expectation effects were shown to impair test performance relative to negative ones (Keller and Bless, 2008). Indeed, under promotion focus conditions, individuals are particularly sensitive to positive information and maximal goal standards. Therefore, negative stereotypic performance expectations are not particularly likely to be perceived as threatening when a promotion focus prevails and it seems plausible to assume that the activation of a promotion focus buffers the otherwise detrimental effects of negative stereotypic expectancies. Rather, one may expect to find apprehension about meeting the maximal goal of performing well in order to confirm positive...
expectancies when the promotion focus has been activated in the situation (Keller and Bless, 2008). That is, worries about not confirming the positive stereotypic expectancy are assumed to emerge under promotion focus conditions. As a consequence, it seems plausible to expect a detrimental effect of activating positive stereotypic expectancies under promotion focus conditions.

4. The present study

We designed the present study to examine how the valence of age-related stereotypic expectancies and self-regulation processes interact to affect older people’s performance on a test of an ability that can be framed with reference to both negative and positive age-related expectancies. Specifically, both older and younger people are subjected to ambivalent stereotyped assumptions about their ability to drive a car. Indeed, whereas older drivers are perceived as having more accidents than younger drivers (Hakamies-Blomqvist et al., 2002), they are also perceived as less likely than younger drivers to be aggressive or to break speed limits when driving (Davies and Patel, 2005).

Therefore, we experimentally activated either positive or negative stereotypic expectations and induced either prevention-focused or promotion-focused concerns to examine how they would affect older people’s performance on a test composed of items taken from the testing materials used in the driver’s license computer-based examination in Belgium. We predicted an interaction effect involving the valence of stereotypic performance expectations and the mode of self-regulation. More precisely, we expected that older adults confronted with negative stereotypic expectations would underperform compared to those exposed to positive stereotypic expectations when a prevention focus was induced. We hypothesized that this impact would be reversed when a promotion focus was induced.

In addition to older adults’ test performance, we also sought to explore their threat-based concerns. Based on previous work by Keller and Bless (2008), we predicted an interaction involving the valence of stereotypic performance expectations and the mode of self-regulation. More precisely, we expected that older adults confronted with negative stereotypic expectations would underperform compared to those exposed to positive stereotypic expectations when a prevention focus was induced. We hypothesized that this impact would be reversed when a promotion focus was induced.

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In addition to older adults’ test performance, we also sought to explore their threat-based concerns. Based on previous work by Keller and Bless (2008), we predicted an interaction involving the valence of stereotypic performance expectations and the mode of self-regulation. More specifically, under promotion focus conditions, we expected that older adults exposed to negative stereotypic expectations would be more worried about confirming these expectancies than those exposed to positive stereotypic expectations parallel to the findings observed by Marx and Stapel (2006). Conversely, because worries about confirming a negative stereotype are less relevant under promotion focus conditions, we did not expect that threat-based concerns would be affected by the valence of stereotypic performance expectations when a promotion focus was induced.

5. Method

5.1. Participants and design

Participants were 61 (28 women, 33 men) native French-speaking Belgian adults between the ages of 55 and 70 (mean age = 59.46 years) who volunteered to take part in this study. Participants were all in a good physical and psychological health and in possession of a driving license. All participants were randomly assigned to the conditions of a 2 (stereotypic expectancy: positive vs. negative) × 2 (regulatory focus: prevention vs. promotion) factorial design.

5.2. Procedure and measures

When participants arrived at the laboratory, they were informed that the study comprised a variety of tasks assessing different aspects of car drivers’ behavior. They were first asked to complete a short questionnaire about some control variables and their identification with the driving domain. Next, they read a newspaper-type article on an ostensible study of older drivers’ ability. Following that, they took a computer-based test assessing driving ability. Before taking this test, participants were told that this was the same test that had been mentioned in the newspaper article they had just read (see below) and that their test performance would be used to complement the findings of the study. Afterwards, they completed another questionnaire about their threat-based concerns.

The ostensible newspaper article served as the stereotypic expectancy manipulation, whereas the regulatory focus manipulation was included in the instructions of the driving test (which were presented on the screen of the computer before the driving test). To ensure that the experimenter was blind to experimental conditions, questionnaires were shuffled before distribution and the experimenter could not see the screen of the computer during the experiment.

5.2.1. Control variables

Participants were asked to indicate their age, gender, and the distance (in kilometers) they cover per week by driving a car. The latter variable was assessed as an indicator of participants’ driving experience. We included this measure of driving experience because it stands to reason that knowledge of traffic rules is more easily accessible in individuals who drive more frequently and/or greater distances and who are therefore more often confronted with situations where driving rules are relevant. In essence, we assume that driving experience is a proximal measure of the availability and accessibility of knowledge of traffic rules.

5.2.2. Stereotypic expectancy manipulation

Stereotypic performance expectancy was manipulated using a procedure commonly used in stereotype threat research (Hess and Hinson, 2006; Keller and Bless, 2008). Two brief newspaper-type articles were constructed. These two articles discussed preliminary findings of an extensive study on drivers’ ability which was still in progress. One of these articles presented a negative expectancy about older drivers’ ability by discussing findings that showed that older adults were worse drivers than younger adults, as illustrated by the following excerpt: “The first findings of the study have demonstrated that drivers between the ages of 55 and 70 process information less efficiently when driving than drivers between the ages of 20 and 35. This is evidenced by the poorer performance of 55–70-year-old adults on a test assessing driving ability”. The other article presented a more positive expectancy about older drivers’ ability by discussing findings that showed that younger adults were worse drivers than older adults, as illustrated by the following excerpt: “The first findings of the study have demonstrated that drivers between the ages of 20 and 35 process information less efficiently when driving than drivers between the ages of 55 and 70. This is evidenced by the poorer performance of 20–35-year-old adults on a test assessing driving ability”. Each of these two articles was 272 words in length. Similarly to the work of Hess et al. (Hess et al., 2003; Hess and Hinson, 2006), each of these two articles was printed in newspaper-width columns and then cut out and pasted on a clean sheet of white paper. In order to suggest that the articles

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1 Domain identification was measured using a 7-point rating scale. The scores on this measure ranged from 5 to 7 (M = 6.63, SD = 0.60). This indicates that all participants were highly identified with the driving domain, which is a boundary condition to demonstrate strong stereotype threat effects (Aronson et al., 1999). The high scores generally reported by our participants resulted in a restricted range of scores on this measure, which made it impossible to conduct any meaningful analyses including this variable.
were actual newspaper articles, this paper was reproduced using a copy machine.

5.2.3. Regulatory focus manipulation

We used the same task framing procedure as Keller and Bless (2008) to induce the different regulatory foci. In the promotion focus condition, participants were informed that they would receive one point for each item solved correctly, and that no point would be deducted for wrong or missing answers. They also read that a reasonable strategy for achieving a good test result was to try and solve as many items as possible. In the prevention focus condition, participants were informed that they would receive one point for each item solved correctly, but that one point would be deducted from their test score for each wrong or missing answer. In addition, they read that a reasonable strategy for avoiding a poor test result was to try and avoid errors.

5.2.4. Driving test

The test was composed of 42 multiple-choice items selected from the testing materials used in the driver’s license computer-based examination in Belgium. Participants were informed that each item was displayed on the screen of the computer for a maximum time of 30 seconds. The overall time taken to complete the test was recorded.

5.2.5. Threat-based concerns

To assess whether our manipulations influenced participants’ threat-based concerns, they were asked to indicate how much they experienced as a baseline in the analyses of test performance reported here. Between stereotypic expectancy and mode of self-regulation was also significant, \( F(1,29) < 1, \text{ ns.} \) The interaction is presented in Table 1.

In the prevention focus condition, residualized performance means (Table 1) indicated that older adults’ test performance decreased when they were exposed to negative stereotypic expectancies whereas it increased when they were exposed to positive ones, \( F(1,28) = 6.72, p = 0.02, \eta^2 = 0.19. \) A different picture emerged under promotion focus conditions. Here, older adults’ test performance was weaker (relative to the level of performance predicted by their driving experience) in the positive expectancy condition than in the negative one (Table 1). However, under promotion focus conditions, the residualized scores did not significantly differ between the two stereotypic expectancy conditions, \( F(1,29) < 1, \text{ ns.} \) The interaction is presented in Fig. 1.

Note that we did not find any effects of the experimental factors on the number of items attempted (all \( F < 2.2, \text{ ns.} \)), therefore, the findings on the performance scores cannot readily be explained based on the effort participants invested to perform the test or by the use of a selective performance strategy such as responding only to a few or selectively to easy items (Keller & Bless, 2008).

6. Results

We first considered our control variables and found that none of the independent variables (i.e., experimental factors) were significantly related to participants’ age, gender, or driving experience. We also found that gender was not significantly associated with the dependent measures (test performance, as measured by the number of correct items, or threat-based concerns). However, we observed that driving experience was significantly correlated with test performance (i.e., the number of correct items), \( r = 0.29, p < 0.03 \) (whereas driving experience was not significantly associated with threat-based concerns). Therefore, we made use of driving experience as a baseline in the analyses of test performance reported below. Moreover, whereas age was not significantly associated with test performance, it was marginally positively correlated with threat-based concerns, \( r = 0.23, p = 0.07. \) Therefore, we included age as a covariate in the analyses of threat-based concerns.

6.1. Test performance and time to complete the test

The mean number of correct items was 25.97 (SD = 3.74). The significant positive correlation between driving distance and test performance (i.e., the number of correct items) was consistent with our assumption that individuals who drive more frequently and/or greater distances and who are therefore more often confronted with situations where driving rules are relevant have a better knowledge of traffic rules. According to Brown and Josephs (1999), a control variable which reflects a baseline level of the ability that is tested (such as the driving experience for the performance on a driving test) should be used in computing residual scores rather than as a covariate in order to examine the difference between how participants actually performed on the test and how they should have performed given their scores on the control variables as a function of the experimental factors.

In the present study, considering the mean residualized scores allows us to learn more specifically how exactly older adults’ test performance was affected by the experimental factors, that is, whether their test performance in each of the four experimental conditions increased or decreased relative to the level of performance that one would have expected given their driving experience.

Therefore, following Brown and Josephs (1999), first, we regressed participants’ test performance on their driving experience scores (i.e., the control variable) and then analyzed the resulting residuals in a 2 (stereotypic expectancy: positive vs. negative) × 2 (regulatory focus: prevention vs. promotion) between-subjects ANCOVA using participants’ driving experience as covariate. This analysis revealed a pattern of results similar to what we found using the residualized ANOVA, and the interaction between stereotypic expectancy and mode of self-regulation was significant, \( F(1,57) = 5.58, p < 0.03, \eta^2 = 0.09. \)

We also performed a 2 (stereotypic expectancy: positive vs. negative) × 2 (regulatory focus: prevention vs. promotion) between-subjects ANCOVA using participants’ driving experience as covariate. This analysis revealed a pattern of results similar to what we found using the residualized ANOVA, and the interaction between stereotypic expectancy and mode of self-regulation was also significant, \( F(1,56) = 5.52, p < 0.03. \)

In addition, as suggested by previous research on stereotype threat (Steel & Aronson, 1995), we computed an accuracy score (dividing the number of correct items by the number of attempted items). The analyses showed similar results to performance measure and they were not reported in the paper.

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Table 1

<table>
<thead>
<tr>
<th>Mode of self-regulation</th>
<th>Expectancy</th>
<th>Negative</th>
<th>Positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevention</td>
<td>Number of correct items</td>
<td>-1.17 (3.49)</td>
<td>2.23 (3.69)</td>
</tr>
<tr>
<td></td>
<td>Threat-based concerns</td>
<td>3.51 (1.38)</td>
<td>2.25 (1.32)</td>
</tr>
<tr>
<td></td>
<td>n</td>
<td>16</td>
<td>14</td>
</tr>
<tr>
<td>Promotion</td>
<td>Number of correct items</td>
<td>-0.03 (2.62)</td>
<td>-0.79 (3.85)</td>
</tr>
<tr>
<td></td>
<td>Threat-based concerns</td>
<td>3.40 (1.15)</td>
<td>3.13 (1.23)</td>
</tr>
<tr>
<td></td>
<td>n</td>
<td>16</td>
<td>15</td>
</tr>
</tbody>
</table>

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to a 2 (stereotypic expectancy: positive vs. negative) × 2 (regulatory focus: prevention vs. promotion) between-subjects ANCOVA using participants’ driving experience as covariate. We did not find any effects on the time taken to complete the test (all Fs < 1, ns). This null effect again suggests that the effort participants invested in the test did not differ as a function of the experimental factors and accordingly the findings observed on performance scores can not be accounted for with reference to mere effort put into the task.

6.2. Threat-based concerns

Participants’ threat-based concerns were submitted to a 2 (stereotypic expectancy: positive vs. negative) × 2 (regulatory focus: prevention vs. promotion) between-subjects ANCOVA using participants’ age as a covariate. Means and standard deviations are presented in Table 1. The analysis revealed a main effect for age, \( F(1,56) = 5.62, p < 0.03, \eta^2 = 0.09 \), and a main effect for stereotypic expectancy, \( F(1,56) = 5.80, p < 0.02, \eta^2 = 0.09 \), whereas the predicted interaction between stereotypic expectancy and mode of self-regulation only approached marginal significance, \( F(1,56) = 2.46, p = 0.12, \eta^2 = 0.04 \). Nevertheless, when the influence of stereotypic expectancy on threat-based concerns was examined within each of the two regulatory focus conditions, negative stereotypic expectancies were associated with higher concerns than positive stereotypic expectancies in the prevention focus condition, \( F(1,27) = 8.90, p < 0.01, \eta^2 = 0.25 \), whereas in the promotion focus condition there was no significant differences in participants’ threat-based concerns between the negative stereotypic expectancies condition and the positive stereotypic expectancies condition, \( F(1,28) < 1, \text{ns} \) (Fig. 2).

7. Discussion

This study examined whether the influence of negative (versus positive) age-related stereotypic expectations on older adults’ test performance was moderated by the mode of self-regulation activated in the situation. Consistent with previous work by Keller and Bless (2008), the interaction involving age-related stereotypic expectations and mode of self-regulation significantly affected older adults’ performance on a drivers’ license test. Specifically, analyses revealed that under prevention focus conditions older adults’ test performance decreased when they were exposed to negative stereotypic expectancies whereas it increased when they were exposed to more positive stereotypic expectancies. Under promotion focus conditions, older adults’ performance scores did not differ significantly as a function of the valence of the stereotypic expectancy, although the pattern of results suggests that the positive expectancy resulted in a tendency to underperform whereas the negative expectancy had no detrimental effect under promotion focus conditions.

Therefore, addressing the “when” question on the basis of Regulatory Focus Theory (Higgins, 1997, 1998), the present study provides empirical evidence supporting the hypothesis that the strength and direction of stereotypic expectancy effects on test performance are moderated by regulatory focus. Spencer et al. (2005) have recently called for “moderation of process designs” (experimental designs such as the one used in the present study). According to these authors, this sort of design is a valuable methodological tool to provide evidence for a psychological process (particularly when the process is not easy to measure). In line with this reasoning, the present moderation finding, which corroborates previous empirical evidence (Keller and Bless, 2008) and extends studies on stereotype threat (Schmader et al., 2008) and age-related stereotype threat (Hess et al., 2003; Hess and Hinson, 2006), suggests that self-regulatory mechanisms as outlined in Regulatory Focus Theory should turn into a core issue for research about the psychological process involved in stereotypic expectancy effects on performance. This is of particular relevance for studies on aging because research on developmental changes in self-regulatory orientations across the life span has demonstrated that individuals become more strongly oriented toward the prevention of losses the older they become (Ebner et al., 2006; Lockwood et al., 2005). In other words, older people could be more sensitive to age-related stereotype threat than their younger counterparts because of their chronic prevention-oriented self-regulatory focus.

In the same order of idea, the failure to find a significant effect under promotion focus conditions may be explained by the general predominance of the prevention focus in older adults which can make it difficult to elicit a situational promotion-focused orientation in them. Stated differently, the present study involved a restriction of the range on the regulatory focus dimension in that we probably had no truly promotion-focused individuals in the sample. Moreover, there is reason to assume that our operationalization of the positive expectancy manipulation was considerably weaker than the negative expectancy manipulation. Indeed, in the negative expectancy condition older adults were provided with negative information about their driving ability (relative to that of younger people) whereas in the positive stereotypic expectancy condition participants were basically provided with negative information about younger people’s driving ability (i.e., the positive expectancy was only indirectly activated—compared to the more direct activation of the negative expectancy). Given this difference in the expectancy operationalization it stands to reason that the positive expectancy was somewhat less powerfully induced than the negative expectancy in the present context. In combination with the probable predominance of a prevention-focused in our peculiar sample, this aspect seems to counteract a strong posi-
tive expectancy threat effect under promotion focus conditions as observed in Keller and Bless's (2008) studies.

Besides giving some answer to the "when" question, this study highlights that "hot" self-regulatory mechanisms can play an important role in the stereotype threat-performance link. Consistent with this idea, older adults' threat-based concerns were significantly affected by age-related stereotypic expectancies under prevention focus conditions in the present study. That is, we found that threat-based concerns were higher following exposure to negative stereotypic expectancies than following exposure to more favorable stereotypic expectancies under prevention but not promotion focus conditions. This finding supports the assumption that the “classic” threat effect as outlined in Stereotype Threat Theory to explain the poor test performance of targets of a negative stereotype (i.e., worries about confirming a negative stereotype; Marx and Stapel (2006)) is most relevant when self-regulation is guided by prevention-focused concerns.

However, the potential mediating role of these prevention-focused threat-based concerns should be treated with caution. Indeed, according to recent suggestions by Schmader et al. (2008) on the role of threat-based affective reactions in the stereotype threat-performance link, underperformance in situations of stereotype threat is not due to individuals’ emotional responses per se but to the efforts they make to regulate their emotional responses, as such efforts tax their cognitive resources. In line with this idea, we found no empirical support for a significant mediating role of threat-based concerns in the present study4. In addition, because neither the number of items attempted nor the time taken to work on the test was influenced by the experimental factors, the findings of the present study can not be attributed to the mere effort that participants invested to perform the test or to the use of a selective performance strategy. Rather, it appears as if the test takers’ ability or competence to work efficiently on the test was affected by the interplay of the experimental factors. Accordingly, in order to further our understanding of the processes involved in stereotype threat effects, it would be relevant to examine, in future research, not only threat-based concerns but also what individuals make to regulate such emotional responses.

Eventually, this study allows some practical recommendations. First, our findings call to be more cautious in setting instructions to diagnostic ability test, especially for older people. Indeed, working on a diagnostic ability test is likely to trigger prevention-focused reactions (Sarason, 1984; Zeidner and Nevo, 1992). Therefore, participants may be more sensitive to negative stereotypes which are relevant to the task they have to perform. In other words, some decrements in performance could be due to the test context rather than to people’s true abilities. This bias could be a fortiori more damaging for older people whose chronic self-regulatory focus tends to be prevention-oriented. In other words, they could experience a “double jeopardy” in cognitive (and probably other) test settings.

Implications of this study for driving practices and policies are even more important. Indeed, since age was shown to alter some fundamental driving abilities such as visual signal detection on the road (Rogêt et al., 2008) and reaction time (Salthouse, 1996), it seems to be of crucial importance to reduce any additional impediment such as stereotype threat effects. The worst situation for driving abilities shown in this study (i.e., negative stereotypes and prevention focus) could be the most likely for older drivers in natural settings because of both age-related stereotypes about driving and age-related prevention-oriented focus. Conversely, the best situation (with a non negligible effect size, $\eta^2 = 19$) combined a prevention focus (i.e., older people’s chronic self-regulatory orientation) to positive stereotypic expectancies. Therefore, fighting negative age-related stereotypes about driving abilities seems to be a promising way to keep older individuals mobile in a safe way. For instance, contrarily to a dominant stereotype, older people have proportionally more driving accidents than younger people (Fontaine, 2003). Emphasizing this information could render older people more confident in their driving abilities and thereby positively impact their driving performance. Indeed, Taubman-Ben-Ari (2008) showed that a high level of driving self-efficacy was positively related to driving alertness. In other words, because of older people’s prevention-oriented focus, age-related positive expectancies about driving abilities might improve their self-efficacy and efficiency on the road and then support both their social mobility and their well-being.

To conclude, in addition to these practical implications, the present work represents a meaningful contribution to the systematic analysis of self-regulatory mechanisms as boundary factors that contribute to the experience of threat in older adults as a consequence of being confronted with negative (or positive) age-related stereotypic expectancies. This analysis has the potential to contribute substantially to our understanding of the mechanisms that are involved in age-related stereotypic expectancy effects on older adults’ test performance and it may build the basis for a next generation of research designed to discover the true nature of these underlying mechanisms.

Conflict of interest statement

None.

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References


Aronson, J., Lustina, M.J., Good, C., Keough, K., 1999. When white men can’t do math: Stereotypes and s...


