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Abstract

Prior research suggests that imagining a positive interaction with an out-group member improves implicit bias toward that group. However, phenomena like the mere exposure effect (MEE), which occurs when more frequently repeated stimuli are rated more positively, have shown similar changes in bias. In fact, mental imagery has been found to moderate the MEE. The current study hypothesized that a MEE of elderly faces would improve implicit bias toward the elderly population. To test, participants were administered an Age-IAT pre and post mere exposure. A MEE was not evident, but there was a significant reduction in implicit bias after the mere exposure. Limitations and implications of this study were discussed.

Reducing Prejudice: Imagery, Mere Exposure, or Something Else?

Previous research suggests that imagining positive intergroup contact can improve implicit attitudes towards out-groups (Brambilla, Ravenna, & Hewstone, 2012; Turner & Crisp, 2010). In other words, imagining a positive interaction with a member of a group to which one does not belong can reduce prejudice towards that group. Intergroup contact imagery derives from a prior construct called the contact hypothesis (Turner, Crisp, & Lambert, 2007), which states that in the context of favorable conditions, intergroup contact reduces prejudice towards out-groups (Amir, 1969). However, other psychological phenomena like the mere exposure effect, which occurs when attitudes improve towards stimuli after repeated exposure to those stimuli, have had comparable improvements in attitude change to that of intergroup contact imagery (Zebrowitz, White, & Wieneke, 2008). In fact, mental imagery has been found to moderate the mere exposure effect (MEE) (Bornstein, Craver-Lemley & Alexander, 2013). The current study used the elderly as the target group to potentially promote stereotype change because this population is associated with numerous negative stereotypes (Musaiger, D'Souza, & Al-Roomi, 2013). It aimed to determine whether (1) an MEE could be achieved with elderly faces and (2) whether the MEE of elderly faces could improve implicit bias toward the general population of elderly people.

In several studies, the contact hypothesis has been examined in an indirect fashion through the use of contact imagery. Positive intergroup contact imagery, which is imagining a positive interaction, has been successful in improving explicit attitudes of Italian people, promoting stereotype change of negatively stereotyped immigrant populations in Italy (Brambilla et al., 2012). Similarly, those who engaged in imagined contact had more positive explicit

attitudes and less biased implicit attitudes toward the elderly and Muslim population (Turner &

Crisp, 2010).

In comparison to the work of Brambilla and colleagues (2012), the study by Turner and

Crisp (2010) put an emphasis on the examining implicit bias, rather than a singular explicit

measure. Explicit measures, like surveys and rating scales, are subject to social desirability

biases, which occur when people provide answers that align with socially accepted norms, rather

than their actual beliefs (Krumpal, 2013). Implicit measures, like the IAT, have better success in

measuring attitudes because it is difficult for participants to be influenced by social desirability

biases (Greenwald, McGhee, & Schwartz, 1998). Therefore, the current study will focus on

outcomes of implicit bias.

These examples demonstrate how visualizing intergroup contact can improve biases in

different types of intergroup interactions, demonstrating how positive intergroup contact imagery

is a successful intervention. However, most studies praise the intervention without questioning

the mechanisms facilitating the resulting reduction in implicit prejudice. The mere exposure

effect (MEE), a more comprehensively studied phenomenon, has had similar results to that of

intergroup contact imagery in improving bias (Brambilla et al., 2012, Turner & Crisp, 2010,

Zebrowitz et al., 2008).

The MEE refers to improved positive attitudes towards stimuli after repeated exposure to

those stimuli (Zajonc, 1968). Stimuli like photos, polygons, words, consumer products (Hekkert,

Thurgood, & Whitefield, 2013), and faces have induced the MEE (Bornstein et al., 2013). In

regards to people, MEE research has found that mere exposure to out-group faces had a similar

effect to that of intergroup contact imagery. When White participants were exposed to an initial

set of Black faces, their liking of a second set of novel Black faces increased (Zebrowitz et al.,

2008). The influence of mere exposure can be inverted, as well. When White participants view

White faces it worsens prejudicial attitudes towards Black people (Smith, Dijksterhuis, &

Chaiken, 2007). Research on the MEE and intergroup contact imagery has yielded comparable

findings, even though the methodologies differ.

       In order to conduct intergroup contact imagery, participants are required to imagine

having a positive interaction with an out-group member, without any direct contact with an out-

group member (Brambilla et al., 2012). On the contrary, the MEE involves visual contact via

actual images, rather than imagery, by repeatedly presenting merely exposed stimuli to the

participant (Bornstein, 1989). Neither require the direct contact referred to in the contact

hypothesis (Amir 1969), but they do require a type of visual contact in which an individual is

exposed to members of an out-group. Regardless, research has shown that contact plays a

significant role in the reduction of prejudice and improvement of intergroup relations (Christ et

al., 2014). It might be possible that, like the MEE, intergroup contact imagery is an avenue to the

exposure of out-group members.

       Bornstein and colleagues (2013) conducted two experiments that paired mere exposure

with mental imagery (MI), examining subsequent like-ratings of the presented stimuli. In the first

experiment, when participants were merely exposed to photos of women and asked to imagine

them as happy, angry, or to only view the photo, the women were rated better when imagined

happy and worse when imagined angry in comparison to viewing the photo. The intentional

emotion of the imagery influenced attitudes toward the merely exposed stimuli. The second

experiment examined MI without emotional manipulations. Participants were merely exposed to

half faces and asked to mentally complete the half faces by imagining them as a whole face.

When presented with the merely exposed half faces and new complete faces at test, they liked

the half faces significantly more than the complete faces. This study suggests a relationship between MI and the MEE, indicating that MI moderates the MEE.

If MI moderates the MEE, is it possible that intergroup contact imagery also moderates the MEE of out-groups? Is the improvement in implicit attitudes towards out-groups completely dependent on intergroup contact imagery, or is the MEE also at play? Ultimately, this study is the first step in examining the mechanisms underpinning intergroup contact imagery, seeking to distinguish whether there is another phenomenon involved in improving implicit biases, like the MEE. The current study investigated this idea using the elderly as the stigmatized population. Elderly were chosen because aging is associated with negative stereotypes that have led to ageism (Musaiger et al., 2013). Negative attitudes toward old age and aging itself have been deeply rooted into human history, as old age is associated with disease, degeneration, and death (Achenbaum, 2015). In fact, seventy percent of older adults report being insulted or mistreated due to their age (Robbins, 2015).

This study is an exploratory investigation in that two main questions require attention before further research can attempt to answer the broader questions posed previously. Firstly, is it possible to get a MEE with elderly faces? MEE research has used a myriad of objects and features (Bornstein et al., 2013); however, literature about whether the MEE can be achieved with elder adult faces is lacking. Secondly, is the MEE of elderly faces a potential agent of change in implicit bias toward elderly? Or if there is a change without an MEE, is there another mechanism? It was hypothesized that merely exposing elderly faces would reduce implicit bias towards the elderly in general.

Methods

Participants

Sixty-six Elizabethtown College undergraduate students with normal or corrected to normal vision participated in this study for course credit. Data from six participants had to be excluded from analysis because they did not follow correct directions when completing the IAT or there was a program error when saving IAT reaction time data. Therefore, sixty participants (Age: *M*=19.3 years, *SD*=1.58, Male: *N*=14) were included in data analysis.

Measures

Implicit Association Test (IAT). An Age-IAT was created using the program *Direct RT*, which measured individual reaction time to presented stimuli. Participants reacted to and categorized a presented word by pressing a key on either the right or left of the screen that corresponded with the correct category. There were four categories in this test: good (Ex: happiness) versus bad (Ex: evil) (Greenwald, McGhee, & Schwartz, 1998), and old names (Ex: Mildred) versus young names (Ex: Skylar) (Turner & Crisp, 2010). Implicit bias was determined by how quickly individuals reacted to two categories on the same side of the screen that were congruent and incongruent to the stereotype. For instance, someone with a strong preference for young people would show faster reactions to categorizing "bad" and "old" when presented on the same side of the screen, compared to reactions categorizing to "good" and "old" on the same side of the screen.

Like Rating Scale. This scale was used to measure the MEE. It is a 9-point Likert-type scale in which participants rated how much they liked a stimulus (1=*Extremely Like*; 9=*Extremely Dislike*) (Bornstein et al., 2013). The software *E-Prime Standard 2.0*, commonly used as a stimulus presentation tool in behavioral research (Research, 2016), was used to merely

expose elderly faces. With this program, out of a selection of six photos, four photos were randomly selected for presentation. Out of those four photos, two were randomly selected to be shown five times and two to be shown once. Each individual photo exposure lasted one second (Bornstein et al., 2013).

   Elderly Face Pre-Test. Using a questionnaire, the elderly faces presented on *E-Prime* were initially rated for liking and perceived age by a separate population of forty-eight participants at Elizabethtown College. Out of twenty face options, the top six most neutral (scores closest to 5) who were perceived as older than 65 years old, were chosen as the set of merely exposed elderly faces.

Procedure

   Participants read and signed an informed consent document. As a filler task, participants listened to a list of different types of chairs being read and imagined each item (Ex: Bar stool, folding chair). No chairs related to old age (Ex: rocking chair) were included in the list. They completed an Age-IAT as a baseline measure. Once completed, participants were merely exposed to photos of elderly faces. They filled out demographic measures, indicating their sex, age, eye color, race, marital status, place of birth, and social media use. Next, participants rated their liking of the 5-time exposed photos, the 1-time exposed photos, and two novel photos. Participants retook the Age-IAT. Afterwards, they recalled three words from the initial list of words they were read in the beginning of the study.

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Results

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   A repeated measures ANOVA was conducted to observe whether or not a MEE of elderly faces was achieved by comparing the difference between like ratings of elderly faces seen five times ($M=5.29$, $SD=1.55$), once ($M=5.28$, $SD=1.44$), and never ($M=5.64$, $SD=1.66$) by an

individual participant. If a MEE were to be achieved, there would be an observed significant

difference between frequency of face exposure, in that five exposures would be rated more

positively than one exposure, and one exposure would be rated more positively than faces with

no exposure. Contradicting the hypothesis, there was no significant difference in regard to

frequency of face exposure or, in other words, no MEE $F(2,58)=2.061$, $p=.137$.

In order to calculate individual bias from IAT scores, average reaction times (in

milliseconds) from the congruent categorization of the test (Ex: "old and bad" on the same side

of the screen) were subtracted from the average reaction times from the incongruent

categorization of the test (Ex: "old and good" on same side of the screen). This average

difference between times expressed participant bias toward the elderly. For instance, the greater

the difference between the congruent and incongruent categorization reaction times, the greater

implicit bias an individual had toward the elderly population. A repeated measures ANOVA,

comparing average IAT difference scores from pre-mere exposure and post-mere exposure, was

conducted to observe a change in individual bias before and after the task. On average people

showed a stereotypical negative bias toward the elderly before and after the task. However, there

was a significant difference between initial difference scores ($M= 209.51$, $SD=180.65$) and final

difference scores ($M= 153.21$, $SD=175.53$), $F(1, 59)=4.713$, $p=.034$. In agreement with the

hypothesis, bias toward elderly reduced after the task was administered.

Discussion

It was hypothesized that merely exposing elderly faces would improve implicit bias

towards the elderly in general. The current findings supported a portion of the hypothesis in that

there was no observed MEE of elderly faces, but there was a significant improvement in implicit

bias after viewing a series of elderly faces. To reiterate, the overarching questions behind the

current study aimed to eventually answer if intergroup contact imagery moderated the MEE of

out-groups, or whether or not improvement in implicit attitudes toward out-groups is completely

dependent on intergroup contact imagery, the MEE, or another unidentified mechanism.

Although the MEE has been successfully demonstrated with many different stimuli, like

photos, polygons, words, consumer products (Hekkert, Thurgood, & Whitefield, 2013), and faces

(Bornstein et al., 2013), research on the MEE is lacking in terms of elderly faces. Due to this lack

of research, there was no known face bank of elderly faces that could be drawn from in order to

run this study. In an attempt to be resourceful, elderly photos were drawn from a public online

United States offender registry because each photo was a headshot with the same dimensions and

style. However, it was difficult to control for potential confounds such as hairstyles and differing

type of dress that remained in the images. It might be possible that these potential confounds had

an influence on like ratings; however, the pre-test of the faces ensuring initial neutral face

estimates and perception of old age could have also shown that on the average these confounds

did not have enough of an influence to skew the results if there was indeed a MEE of the faces.

These findings are particularly complex because although there was no MEE, there was a

significant improvement in bias before and after the mere exposure task. Although a MEE was

not achieved in the current study, an explanation for the change in bias might be explained by

prior MEE research. For instance, findings from Zebrowitz and colleagues (2008) showed that

White participants exposed to an initial set of Black faces subsequently increased their liking of a

second set of novel Black faces. It could be possible that simple exposure to out-group faces

could be a contributing factor in promoting stereotype change, rather than the MEE itself.

Interestingly enough, previously discussed research on intergroup contact imagery has

had results that contradict the notion that simply being primed of an out-group changes implicit

REDUCING PREJUDICEbias. In the second experiment conducted by Turner and Crisp (2010), they asked their control to

simply think about Muslims, rather than to imagine a positive interaction with a Muslim

individual. Their results showed that participants in the imagined contact condition were

significantly less biased than the control condition, concluding that the imagined interaction

reduces implicit prejudice. This is a risky generalization because in both experiments they

conducted with elderly and Muslim populations, they used a between subject design, rather than

including a within-subject design. This makes it difficult to conclude that imagining contact

reduces bias compared to thinking about an out-group because there is no baseline measure to

compare to before a manipulation.

       Other research in regard to the malleability of automatic attitudes has made similar

conclusions while also using a between subject design. When individuals were exposed to

admired old and disliked young exemplars, or vice versa, pro-youth implicit attitudes were

weakened in the admired old/disliked young condition (Dasgupta & Greenwald, 2001).

However, there were still no baseline measures taken to observe whether there were meaningful

differences within subjects. In the current study, seeing photos of elderly faces might have

played a role in improving implicit bias. Studies in regard to intergroup contact imagery, the

MEE, and even malleability of attitudes aim to champion a specific method that demonstrates a

significant reduction in implicit bias with the intention of less bias manifesting into more

equitable beliefs and behaviors. By championing how one specific condition had less implicit

bias than the control condition, one might be ignoring a significant impact of the control

condition on implicit bias. To refer back to Turner and Crisp (2010), it might be possible that

imagined contact could bring about a greater change in bias if observed within subjects, but a

change in thinking about an out-group could invoke significant change, as well. It could be that

all of the various methods, like intergroup contact imagery, the MEE, or exposure to an out-group all have a common underlying mechanism that facilitates an improvement in bias. What exactly that mechanism may be requires further research into the intricacies of these methods. However, if this mechanism could be identified it could be used as a foundation upon which to promote stereotype change toward stigmatized populations, like the elderly (Musaiger et al., 2013).

Although the current study resulted in an improvement in implicit bias toward the elderly, it is important to discuss its limitations. Perhaps the most important limitation to note is the lack of a control group, as a large number of participants are required in order to actually observe an MEE (Bornstein et al., 2013), which was a prime focus of this study. Therefore, no causation could be concluded in regard to the observed change in implicit bias. Rather, this study shed light onto more speculation for future research. It also might have been more difficult to get a MEE due to any potential confounds presented in the images that were utilized. It is still unknown as to whether a MEE could even be achieved with elderly faces. Lastly, the author had no prior experience using the program *Direct RT*, and therefore could not utilize certain advanced programming techniques. For instance, the author could not use advanced coding that allowed for personal warnings to the IAT test-taker if their time responses were becoming too slow, which is a feature in other IAT tests to ensure better accuracy (Project Implicit, 2016).

The current study limitations and findings create many avenues for future work. One line of research could focus on re-examining the MEE with elderly faces, but with photos of elderly created to be uniform with past photo banks where lighting, dimensions, and presentation of the faces are constant. Another line could re-conduct the current study with a control group in order to confirm causation of subsequent improvement in implicit bias. And, if there were a change, to

conduct a follow up to see if the change in bias lasts over time. There also might be a possibility that taking the Age-IAT was a form of priming that occurred before mere exposure, which might have offset the attempt to achieve a MEE, leaving an avenue to further investigate types of priming. Lastly, a broader examination could identify which interventions in implicit social cognition research produce the greatest amount of changes in implicit bias within subjects. A study such as this could include intergroup contact imagery, the MEE, thinking about out-groups, and physically seeing members of out-groups, which might help clarify a starting point to determine a common underlying mechanism of these methods.

All of these methods share the common goal of helping to reduce implicit bias toward people who "do not belong" in order to create a more equitable and connected world. In the context of the findings of the current study, it might be possible that simply seeing a series of elderly faces helps reduce individual bias toward the entire elderly population. If alleviating prejudice is as easy as seeing photos of members in an out-group, then maybe extensive and costly trainings and interventions that help reduce prejudice in various settings are not necessary. Rather, it might be as simple as viewing photos of one's grandparents before voting to save a community senior center. It could potentially sway just enough minds to enact positive change for a stigmatized community.

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