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Glasses and Facial Recognition

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This study investigates whether glasses on a face reduce the accuracy with which people recognize that face. Forty-eight Lindenwood University undergraduates with a mean age of 20.25 years participated in this study. Two series of pictures were shown to the participants. The first contained pictures of models with and without glasses, and the second contained only pictures of models without glasses. The participants were asked to identify pictures of models in the second series who had also been in the first. A t-test revealed that participants recognized more pictures of models whom they initially viewed without glasses and fewer pictures of models whom they initially viewed with glasses. It was concluded that glasses are a distraction that interferes with recognition.

The inaccuracy of eyewitness testimony is a topic that has accumulated much study. Memory is impressionable (Loftus, 2003). Much research has been done revealing that the principle factor influencing the opinion of a juror who is considering eyewitness reliability is the level of confidence the witness expresses, whether the witness is actually accurate or not; however, most of the time, self-confidence of witnesses is a weak marker of their accuracy (Krug & Weaver, 2005). Growing evidence tells us that eyewitness misidentifications from photo spreads and lineups cause more wrongful convictions of innocent people than do all other causes combined (Wells & Bradfield, 1999).

Studies have been conducted to ascertain the effects of things such as duration of exposure (Memon, Hope, & Bull, 2003), age, weapon presence, and violence on eyewitness accuracy (Wagstaff, MacVeigh, Boston, Scott, Brunas-Wagstaff, & Cole, 2003).

Memon et al. (2003) conducted a study on the effect of exposure duration on eyewitness accuracy. Their study was done with two groups, one group exposed to the target for 45 seconds, and another group exposed to the target for 12 seconds. It was found that participants in the longer exposure situation were more accurate than the participants in the shorter exposure situation (Memon et al., 2003).

In a study done by Wagstaff et al. (2003) which examined the effects of age, weapon presence, and violence on eyewitness accuracy, the only significance found was that the accuracy of recalling hair color was predicted by level of violence. The more violent the crime, the more likely the witness was to accurately recall hair color (Wagstaff et al., 2003).

This study was conducted in order to provide information on the effects of glasses, a potentially distracting facial accessory, on eyewitness accuracy. This research was done because of its relevance to the inaccuracy of eyewitness testimony and the importance of eyewitness testimony in the judicial system. I proposed that glasses on a face would inhibit the accuracy with which people would recognize that face. Participants in this study were shown two series of pictures and asked to identify any pictures in the second set which contained the same models they saw in the first set. In this study, it was anticipated that if participants viewed pictures of some models with

glasses and some models without glasses, then, in a second series of pictures in which all models had no glasses, the participants would recognize more models they had initially seen without glasses than models they had initially seen with glasses.

Method

Participants

There were 48 participants in this study. There were 20 male participants and 28 female participants. The minimum and maximum ages of the male participants were 18 and 62 years of age (M age = 21.40 years). The minimum and maximum ages of the female participants were 18 and 25 years of age (M age = 19.43 years). The mean age of all of the participants was 20.25 years. All of the participants were undergraduate college students attending Lindenwood University. Forty-six of the 48 participants were recruited through Lindenwood University's Human Subject Pool; Human Subject Pool participants are enrolled in a social science general education course at Lindenwood University and earn one bonus point toward their grade in that general education course for their participation. There were two female participants who were not in Lindenwood University's Human Subject Pool; these participants were undergraduate students at Lindenwood University who were acquaintances of the researcher and volunteered to participate in the study.

Materials

The study was conducted in a room with a desk, a table, and four chairs. The pictures were shown to the participants via the researcher flipping the pictures in a binder, one after another. There was a clock in the room with a second hand which the

researcher used in order to show each of the initial eight pictures for two seconds at a time.

The initial set of eight pictures consisted of four filler pictures of male models, two with glasses and two without, and four target pictures of female models, two with glasses and two without. The four female target models were each photographed with and without glasses, but each participant only viewed one version of each model in the initial set of eight pictures. The study was counterbalanced with the use of eight different groups (there were six participants in each group), and half of the participants (four of the groups) viewed models A and C without glasses and models B and D with glasses, while the other half viewed the reverse. A Latin Square design was used to come up with the order the target pictures were to be presented in; this led to the use of eight different groups (four different orders of presentation and two different glasses conditions [the condition of models A and C without glasses and models B and D with glasses and the reverse condition]).

The pictures were all the same type of headshot taken in front of the same background with each model facing forward. All of the models in the study were Caucasian. In the initial set of eight pictures there were three middle-aged female target models, one teenaged female target model, three middle-aged male filler models, and one teenaged male filler model. Two of the middle-aged male filler models did not wear glasses, one middle-aged male filler model did wear glasses, and the teenaged male filler model also wore glasses. The 16 non-target female models (those that, along with the four target models, would be in the pictures that would comprise the set of 20 viewed

after the initial eight) consisted of three young adults and 13 middle-aged adults. None of the models, target or not, wore glasses in the second set of pictures (the set of 20). All of the models were friends and acquaintances of the researcher who volunteered to model for the study.

The four female target models each had three different pictures taken of them: one picture with glasses wearing one outfit, one picture without glasses wearing another outfit, and another picture without glasses wearing yet another outfit. Of each of the four target models, the third picture, the one without glasses that would be seen in the second round of pictures (the round of 20 pictures), was taken with a different facial expression than were the other two target pictures, the two that would be viewed (only one per participant) in the initial eight.

Procedure

Each participant was asked to fill out a questionnaire with questions regarding his or her age, his or her sex, and how accurate the participant thought he or she was at recognizing faces. (See Appendix A for a copy of this initial questionnaire).

After each participant filled out the questionnaire, the participant was told that he or she would be shown eight pictures for two seconds each, and then he or she would be shown a series of twenty pictures, which may or may not include pictures of the models in the initial eight pictures, and be asked to tell the researcher, when looking at each picture, if it was of one of the people in the initial series of pictures. Each participant was told that if the second set of pictures did include pictures of any of the models in the initial set, the models in the second set of pictures might have different clothing and/or

different facial expressions. (See Appendix B for an example of a picture used). After the participant was informed of this portion of the procedure, he or she was then shown the initial set of eight pictures (four target pictures and four fillers); each picture was shown for two seconds at a time, one right after the other.

Then, the participant was reminded of the next part of the procedure and asked to tell the researcher if each of the following 20 pictures were of any of the same people shown in the initial series of eight. The participant was then shown the series of 20 pictures, which included pictures of the four female target models and 16 other female filler models; all of these pictures were of models without glasses.

Each time the participant identified a model (correctly or falsely) as being one from the initial set, it was recorded by the researcher. After this was finished, the participant was asked if he or she knew any of the people in any of the pictures; no one did. Then, the participant was given another questionnaire with two questions, one asking if the participant wears glasses and another asking if the participant had ever worn glasses in the past. (See Appendix C for a copy of the closing questionnaire). Then the participant was debriefed.

Results

The hypothesis that glasses on a face would inhibit the accuracy with which people would recognize that face was supported. Of the four target models in the study, each participant initially viewed two target models with glasses and two target models without glasses. A dependent *t*-test revealed that the participants significantly recognized

more models they initially viewed without glasses ($M = 1.58$) than models they initially viewed with glasses ($M = .98$), $t(47) = 4.567$, $p < .001$.

An independent t -test was conducted to determine whether participants who had experience wearing glasses recognized the models they had seen with glasses more often than participants who had never worn glasses. The t -test revealed no significant difference between the two groups of people. It showed that participants who had never worn glasses themselves recognized a mean of .96 models out of a possible two, and participants who wear or had previously worn glasses recognized a mean of 1.00 out of a possible two, $t(46) = -.182$, $p > .05$.

A dependent t -test showed that there was a significantly larger percentage of correct recognitions ($M = .656$) than false identifications ($M = .220$), $t(47) = 10.520$, $p < .001$. Prior to computation, these data were converted into percentages due to unequal numbers of target and filler models; there were four female target models and 16 female filler models in the second series of pictures (the series in which the participants were to identify the target models). Approximately 66% of the target models were recognized and approximately 22% of the filler models were falsely identified.

A correlation between the data (converted to percentages) on how many models were correctly recognized ($M = .65$) and the data (converted to percentages) on how accurate participants assumed they were at recognizing faces ($M = .68$) showed a Pearson r of $-.225$. Since the actual accuracy of the participants was lower than their assumed accuracy, the negative relationship reveals that the participants were less accurate than they thought they would be.

Discussion

The fact that the participants in this study correctly identified more pictures of models that were without glasses in the initial series and fewer pictures of models that had glasses in the initial series leads me to believe that glasses are a facial accessory that draws people's attention away from the face and therefore, makes a face with glasses more difficult to recognize than a face without glasses.

No difference was found between the number of models correctly recognized by participants who had never worn glasses and by participants who did wear glasses or had worn them in the past. This supports my conclusion that glasses are a distraction, and it shows that people who have had experience wearing glasses themselves are just as distracted by glasses as people who have never worn glasses. I examined these variables because I thought there might be a chance that people who wear or have worn glasses would think (due to comments heard by many, such as, "gee, you look so different without your glasses on") that glasses draw attention away from the face and so would consciously pay more attention to faces of people with glasses. The *t*-test revealed that I was incorrect, and people who have had experience wearing glasses seem to be just as distracted as people who have not.

The ecological validity of the study is questionable, because, in the real world, people are viewed in many environments that are very different. People are observed from different angles, from different distances, within different contexts, and for different lengths of time, etc.

The major contribution of this research is to provide information on glasses affecting facial recognition. It is a topic that needs to be researched further in order to find out if it is likely that these results do, indeed, describe the entire population. The legal system in the United States often utilizes eyewitness testimony in its cases. Protecting the wrongly accused is as important as convicting the guilty, and the more that is known about eyewitness testimony, the better the wrongly accused can be protected.

A similar study conducted with the pictures viewed on a computer (with the initial eight pictures set to automatically change at a set interval), with no possible distraction of pages flipping, would probably provide more accurate results. (I attempted to run the experiment with a computer, however, due to a software limitation that prevented the computer from showing the pictures, the experiment was run by the experimenter flipping the pictures in a binder.) It would also be beneficial to conduct such a study with a wider age range of participants and with both male and female target models, models of a wider age range, and models of different races. Such a study would require many more participants but could provide very interesting and potentially useful information.

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Appendix A

Initial Questionnaire

SUBJECT ID NUMBER: _____ (Assigned by Researcher)

1) Are you male or female? Please circle one: MALE FEMALE

2) How old are you? Please write your age here: _____

3) On a scale from one to ten, one being not at all accurate and ten being very accurate, how accurate do you think you are at recognizing faces? Please circle one:

0	1	2	3	4	5	6	7	8	9	10
NOT AT ALL ACCURATE		QUITE INACCURATE			MODERATELY ACCURATE			QUITE ACCURATE		COMPLETELY ACCURATE

Appendix B

Sample Picture



Appendix C

Closing Questionnaire

SUBJECT ID NUMBER: _____ (Assigned by Researcher)

4) Do you wear glasses? Please circle one: YES NO

5) Have you worn glasses in the past? Please circle one: YES NO