Age Differences in Remembering Stereotypical Information by Targeting Implicit Stereotypes

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Abstract

An experiment was conducted to investigate how false memories are created as a function of the stereotypical information in a text. Participants were 230 male and female US-residents recruited via Amazon Mechanical Turk and assessed using Qualtrics. In this web-based study, participants were given a news story about a homicide which either contained stereotypical or no stereotypical descriptions of the suspect. In each story, the ethnicity of the suspect was never explicitly stated. The participants had three minutes to read the story and then were taken to questionnaire pages that contained factual questions from the story along with the key question that asked for the suspect's ethnicity. Participants also provided confidence ratings for their responses. Results indicated that participants who read the story that included stereotypical descriptions believed the suspect was African-American, Asian, or Hispanic more often than the participants who read the non-stereotyped version. Additionally, age-group comparison analysis indicated that older participants falsely remembered ethnicity more often than younger participants in the story with stereotypical descriptions but not within the story without stereotypical descriptions.

Keywords: stereotypes, implicit memory, turk

Age Differences in Remembering Stereotypical Information

Research indicates that racial bias has shifted from overt to subtle (Bristor, Lee & Hunt, 1995; Entman & Rojecki, 2000; Kern-Foxworth, 1994; Sweeney, 2005). The subtleness of racial bias can be measured by examining implicit stereotypes.

Undetected biases are considered to be indirect influences of today's stereotypical thoughts. Research has demonstrated that indirect influences alone can produce false remembering of information (Lenton, Blair & Hastie, 2001; Roediger, 1996). Additionally, our level of engagement with the media significantly contributes to shaping our stereotypical thoughts (Laney & Loftus, 2008).

Implicit cognition involves traces of a past experience that affect performance and decision making. Greenwald and Banaji (1995) define implicit stereotypes as introspectively unidentified traces of past experiences that mediate attributions of qualities to members of a social category. These experiences are not explicitly remembered as they are unavailable via self-report (Graf & Schacter, 1985). This idea of implicit memory is a well-established phenomenon with multiple methods of investigation. These investigation techniques include implicit association tests, go/no-go association tasks, and lexical decision tasks (among others). We examined an alternate approach by using stereotypical descriptors within an everyday context: a criminal news story.

Priming is an implicit memory effect in which exposure to a stimulus influences a response to a later stimulus. The effects of priming are very salient and long lasting (Tulving, Schacter & Start, 1982). Older individuals will typically show decrements on explicit tests (due to the biological nature of the aging process and the brain) relative to healthy young adults despite comparative priming levels (Fleischman, 2007). Furthermore, Ward, Berry, and Shanks

(2013) outlined research findings that show explicit memory systems are affected by age, whereas implicit memory systems are not. However, priming in comparative age group research is mixed. Theoretically, older individuals should be more susceptible to priming effects since topics will be more meaningful compared to younger individuals (Valsiner & Connolly, 2003). When priming is observed to have a similar effect across all age-groups in a particular study, it is considered to be age-invariant priming. This has been observed with different age-groups in word-stem completion tasks and word-identification tasks (Light & Singh, 1987; Park and Shaw, 1992). However, priming deficits were achieved during similar tasks in other studies (Chiarello & Hoyer, 1998; Hultsch, Masson, & Small, 1991). Fleischman (2007) suggests that these discrepancies between findings are due to methodological differences.

The present research experimented with priming via stereotypical descriptions in an attempt to elicit individuals to falsely remember the ethnicity of a suspect. Also, we sought to find age differences to determine if a certain age-group is more susceptible to false remembering ethnicity compared to another. In accordance with the aforementioned research, we believe older individuals will have proportionally more incidents of false remembering ethnicity compared to younger generations in the stereotypical story but not within the non-stereotypical story. Additionally, we believe the stereotypical descriptors within our experiment will elicit more false remembering of African-American criminals compared to the story without stereotypical descriptors. The story that includes priming will attempt to indirectly coerce the participant to take implicit stereotypes into consideration when later asked about the suspect.

Methods

Participants

Two hundred thirty individuals (128 males and 102 females) above the age of 18 participated in the experiment. Participants were enlisted from Amazon Mechanical Turk and were paid fifty cents upon completion of the experiment. The experiment was advertised for domestic participants only (within the United States). Participants were divided into two groups, the experiment condition and the control group. The experiment condition included one hundred fifteen individuals (65 males and 50 females). The control condition included the remaining one hundred fifteen (63 males and 52 females). Each person was randomly assigned to their treatment level.

Participants after Exclusions

After exclusions, one hundred seventy-two individuals were included in the statistical analysis. The experiment condition included eighty-six participants (44 males and 42 females). The control condition also included eighty-six participants (51 males and 35 females). Demographic information indicated a wide-range of residential states, education levels, and income. 77% of the participants were White or Caucasian, 8% were Asian, 7% were Black or African-American, 5% Hispanic or Latino, and 3% indicated other.

The first exclusion occurred if the participant read the story too fast (indicated by how long it took a participant to move to the next portion of the experiment). If a person spent less than 78.7s and 74.2s on the story portion of the control and experiment condition, respectively, or 1 SD below the average, their score was excluded (35 participants were excluded; SD = 44.3s, SD = 50.6s). The second exclusion occurred if the participant took more than 15 minutes to complete the entire experiment (four participants were excluded).

The third criteria addressed the potential for users to copy and paste the story in order to answer the questions in the later part of the experiment. To combat this, mouse clicks were

measured during the story. If a person clicked more than 3 times on this section of the experiment, their data was excluded (10 participants were excluded). Lastly, the experiment required U.S. residents and each IP address was traced (nine participants were excluded). It is important to note that many violators of the exclusion criteria met two or more of the criteria outlined above. This overlap indicated they were indeed not engaged in the experiment properly.

Materials

The experiment was advertised on Mechanical Turk as a reading memory task that would take under 15 minutes to complete. If the task was accepted, the person was forwarded to a survey created using the Qualtrics research survey platform. After completion, each participant was given a unique generated code which they entered back into the task completion screen on Amazon Mechanical Turk. This code was then submitted which indicated successful completion and the person was paid fifty cents after confirmation by the researcher.

The experiment was in the form of a closely controlled survey that was completely automated (hidden timer on each page, number of clicks were measured, IP address was saved). Participants were given a fictitious criminal news story involving the murder of a 29 year old woman from Los Angeles by a 25 year old suspect. Half of the participants (the control group) received a story with no stereotypical descriptors when referring to the suspect (see Appendix B). The remaining half of the participants (the experimental group) read the same criminal news story that included stereotypical descriptors (see Appendix C). After the participants read the story, they were taken to the last section of the experiment – a questionnaire that tested their knowledge about the story (see Appendix D).

Stereotypical Descriptors

A stereotypical descriptor is an adjective or a set of adjectives that motivate implicit stereotypes. The control group received neutral descriptions when referring to the suspect. For example, when discussing what a witness saw after the crime, the control condition story used a neutral descriptor, "witnesses say the man was wearing a sweatshirt and jeans." In contrast, the experimental condition used a stereotypical descriptor, "witnesses say the man was wearing an over-sized hooded sweatshirt and baggy jeans." The other six descriptors used were, "South Central Los Angeles," "gang member's house," "gang violence," "cocaine addiction," and "cocaine," which appeared twice. These stereotypical descriptors were used in the experimental group only (see Appendix C).

Procedure

The first page of the experimental survey was informed consent. Before agreeing to participate, it was clearly indicated that the participant voluntarily agreed to participate, was at least 18 years old, and lived in the United States. Clicking "I agree" allowed the participant to see the demographic questionnaire pre-experiment (see Appendix A). Clicking "I disagree" sent the participant to the end of survey message (without the code they needed to receive payment in Amazon Mechanical Turk).

After answering the demographic questions (forced response on each) and after the participant clicked "next," Qualtrics randomly (evenly) showed either the control, non-stereotypical story (see Appendix B), or the experimental story that included stereotypical descriptions (see Appendix C). The directions located at the top of each story were identical. Within each version of the story, there was a hidden timer that would automatically forward the participant to the questionnaire page. There was also a "next" button that would allow the participant to move on if they read the story before the automatic transfer. Mouse clicks and

timing data were observed for the purposes of exclusions post-data collection. After the story was read, the participant was brought to the questionnaire page.

The final step of the experiment included 11 questions relating to the story presented in the previous portion of the survey (see Appendix D). Each question required a response and they would not be allowed to finish without answering each question and the corresponding confidence value for each. Nine questions were factual questions explicitly stated in the story (6 of which were multiple choice questions and 3 required fill-in answers). The remaining two questions were the questions of interest. The first asked whether or not a deadly weapon was present during the crime. Each version of the story had no mention of a weapon that was used. The second question asked for the ethnicity of the suspect, which was also never explicitly stated in either version of the story.

Results

Preliminary Analysis

The study included only 7 individuals who were over the age of 60. Age differences between this age group were not viable due to the low sample size. Consequently, these participants were not used for statistical analysis in age group comparisons. They were however used in the factual question and false remembering ethnicity analysis. Additionally, the presence of a deadly weapon question was never statistically analyzed due to concerns of how it was mentioned in the story. After exclusions, the average time it took participants to read the non-stereotype story was 133.8s (SD = 35.9s) and 142.3s (SD = 33.5s) to read the story with stereotypical descriptors. Raw-data coding information is available in the appendix section (see Appendix G).

Factual Questions

The nine factual questions included on the questionnaire were analyzed first. This is to verify the integrity of the story and questions and to make sure no significant difference occurred between both story types (manipulation check). An independent-samples t-test was conducted to compare the nine factual questions in the story without stereotypical descriptors and the story that did include stereotypical descriptors. There was no significant difference in the amount of correct answers on the non-stereotype story (M = 1.98, SD = .70) and the stereotype story (M = 2.10, SD = .67); t(170) = 1.12, p = .266. This enables us to assume that the questions adequately tested the knowledge of the participants in both stories equally.

False remembering a non-white suspect.

A chi-square test was performed to examine the differences of story type in false remembering a non-white suspect on the ethnicity question of interest. The relationship between these variables was significant, X^2(1, N = 172) = 17.485, p < .001. This result indicates that a significant difference occurred in false remembering a non-white ethnicity within the story that included stereotypical descriptions compared to the non-stereotype story. Therefore, the use of stereotypical descriptors played a role in eliciting more stereotype responses.

Age-group comparisons in false remembering non-white suspect.

Age group comparisons were subjected to a univariate analysis of variance having two levels of story type (non-stereotypical, stereotypical) and two age groups (18-34, 35-59) (see Figure 1; Appendix E). No main effect was present for age groups, F(1,172) = 2.11, p > .05. A significant main effect was found for story type, F(1,172) = 17.21, p < .001. These data agrees

with the chi-square analysis during the *non-white suspect* analysis. Participants had falsely remembered more non-white suspects in the stereotypical story across both age groups. No interaction was observed with age groups and story type, $F < 1.27$.

Tests of two a priori hypotheses were conducted using Bonferroni adjustments (see Table 1; Appendix F). Results indicated that the number of incidents of falsely remembering a non-white suspect was not statistically significant within the non-stereotype story of the 18-35 age-group ($M = .14$) and 36-59 age group ($M = .06$), $F(1,162) = .046$, $p = .830$. However, results indicate a significant difference in the number of incidents of falsely remembering a non-white suspect within the stereotypical story of the 18-35 age-group ($M = -.66$) and 36-59 age group ($M = -1.34$), $F(1,162) = 4.02$, $p = .047$. These data suggest that participants within the older age group falsely remembered more non-white suspects compared to the younger age group within the stereotypical story.

Discussion

The present findings suggest that stereotypical descriptors are an accurate measure of implicit stereotypes. Additionally, age group comparisons with the data show that older generations have more internal/implicit stereotypical motivations compared to younger generations. Moreover, older generations have higher confidence values when answering "African American" within the study. This could be explained by a number of factors. First, it is possible that the more experiences an individual has, the more matured and reinforced the implicit stereotypes are. Or secondly, our society could be becoming more ethnic neutral, with help from the new "subtle" nature of racial bias which exists within today's media (Bristor, Lee & Hunt, 1995; Entman & Rojecki, 2000; Kern-Foxworth, 1994; Sweeney, 2005). The latter of

the two is good news when it comes to ethnic equality. It appears that younger generations are perhaps more open-minded and don't have internal biases as strong as older generations.

One must be wary of the impact that internet based studies have on the external validity of raw data, especially when the study offers cash incentives for participants. Consequently, the possibility of frivolous participants becomes a reality. Our study did not account for the possibility of copy/pasting the story using keyboard shortcuts (for reference during the questionnaire). To combat this, using a jpeg/gif instead of plain-text for the content of the story would make this concern trivial. Mechanical Turk was chosen due to the increasing validity tests performed in recent studies. Shapiro, Chandler, and Mueller (2013) found that Mechanical Turk offers several advantages to research given their findings that participants are mostly genuine and adequately represent the population - as long as careful consideration and controls are implemented to prevent less than honest participants.

Other limitations of the present study include the use of specific stereotypical descriptors and the different internal perceptions of the confidence value verbiage. The stereotypical descriptors used in the present study were based off the opinion of the experimenter and the primary investigator's discussion with colleagues. Because stereotypes are not ubiquitous, and are different from person to person, this is a clear limitation. Lastly, the definition of "not confident," "somewhat confident," and "very confident" could vary across participants. Carefully constructing this verbiage and clearly defining each in the directions of the questionnaire may have limited any differences that may exist.

The specific age groups the present study used were determined by historical events that may have explained age differences in internal biases. Specifically, the 36-59 group were late baby boomers and/or children raised during the after-effects of segregation - they may have seen

and/or heard more stereotypical rhetoric compared to the younger age-group of 18-35. This may explain the difference in incorrectly identifying African-American as the criminal in the present study (which was intended and which agrees with our initial hypothesis). Further studies may use different parameters but we believe the motif found in this study will be intact - older individuals will have more implicit racial-stereotypes than younger generations.

Conclusion

Future research would need to replicate these results. Many other factors could be looked at, including: educational differences, geographic differences within the United States, implicit stereotype differences across races, and the use of different stereotypical descriptors. Upon discovering that certain geographic locations and/or age groups are behind others, in terms of minimizing stereotypical thoughts, they could then be targeted by educators, media, and other relevant organizations.

Descriptors could easily target other ethnic stereotypes in an attempt to measure the strength of them. It would seem that measuring the implicit stereotypes within a person is an accurate measure of reviewing trends in the possible continued improvement of hidden biases. Although our data show an improving trend of open-mindedness, or perhaps an awareness of internal biases within individuals, continuing to monitor the implicit stereotypes within ourselves is an important step our society must undergo in order to make light of any unwanted or disadvantageous opinions.

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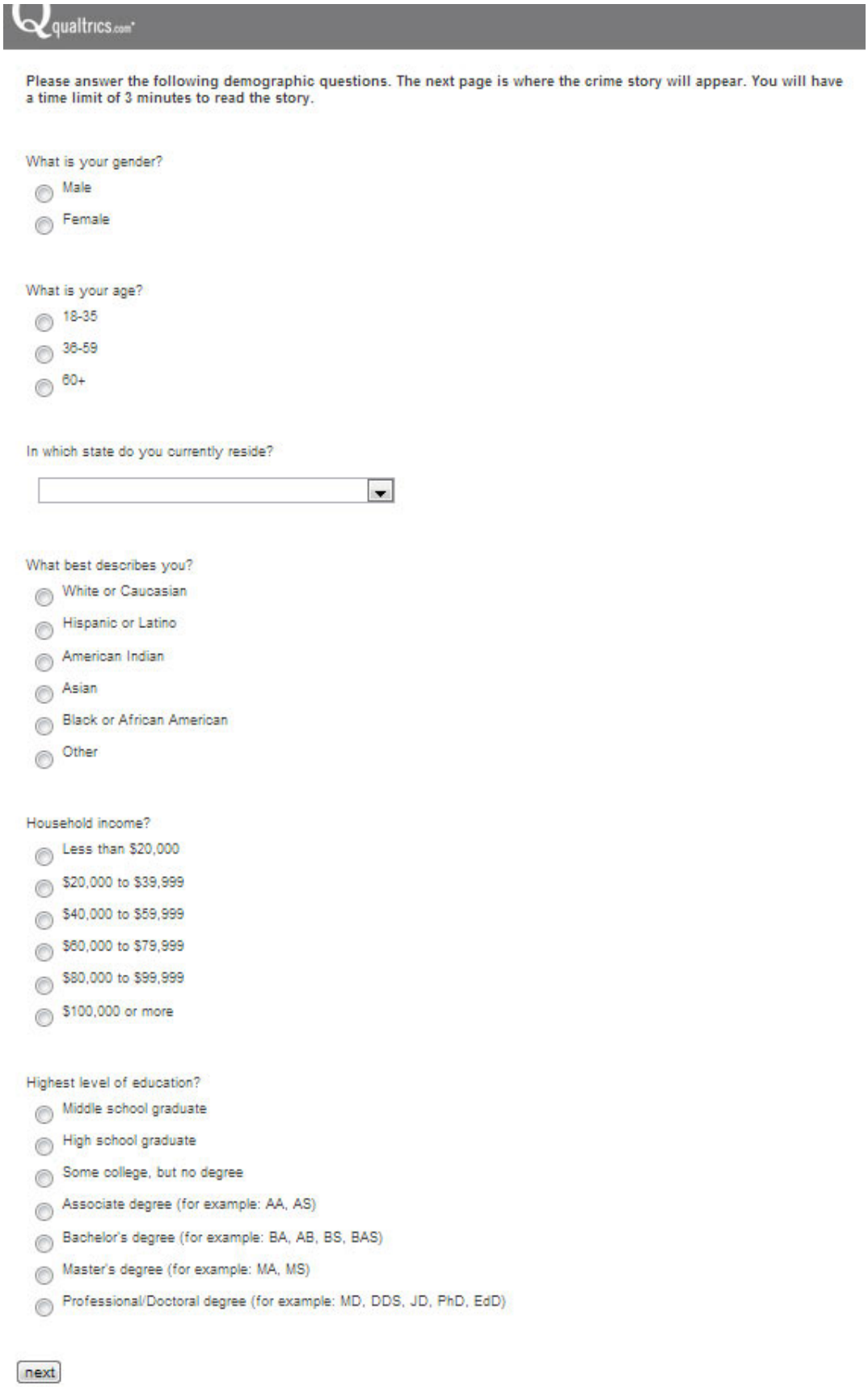
Appendix A



qualtrics.com

Please answer the following demographic questions. The next page is where the crime story will appear. You will have a time limit of 3 minutes to read the story.

What is your gender?

- Male
- Female

What is your age?

- 18-35
- 36-59
- 60+

In which state do you currently reside?

What best describes you?

- White or Caucasian
- Hispanic or Latino
- American Indian
- Asian
- Black or African American
- Other

Household income?

- Less than $20,000
- $20,000 to $39,999
- $40,000 to $59,999
- $60,000 to $79,999
- $80,000 to $99,999
- $100,000 or more

Highest level of education?

- Middle school graduate
- High school graduate
- Some college, but no degree
- Associate degree (for example: AA, AS)
- Bachelor's degree (for example: BA, AB, BS, BAS)
- Master's degree (for example: MA, MS)
- Professional/Doctoral degree (for example: MD, DDS, JD, PhD, EdD)

next

Appendix B

qualtrics.com

Please read the story below and then continue to the next section. You will automatically be transferred to the next part of the survey after 3 minutes.

A suspect was found and charged Wednesday with the murder of a 29-year-old woman in the Los Angeles area late last Saturday night. A 25-year-old male is accused of murdering the woman whose name has not been released. Police investigators believe the woman had gotten home from work Saturday evening and the perpetrator was waiting for her. The victim left work at 7 PM and the crime wasn't reported until later in the night. The perpetrator said he saw the woman with another man and wanted to confront her about it. The discussion escalated out of control. Prosecutors said he attempted to clean the crime scene and fled by car to a friend's house. He managed to hit a few parked cars at the end of the block. He was under the influence of drugs at the time of the arrest which may have contributed to his behavior. Neighbors said the victim and perpetrator knew each other for a while and dated in the past. They were unsure if they were dating at the time of the attack but they had seen the perpetrator around more often than usual. According to Los Angeles County district attorney's office, the suspect claimed the victim was his girlfriend and he had only been living with her for a few weeks prior to the murder.

News personnel were on scene to ask witnesses what they saw. Witnesses say the man was wearing a sweatshirt and jeans, and had his hands around his waist in a suspicious manner. One young, male witness said, "I saw a guy run through the park there and get into a car and speed off. He hit a whole bunch of cars down at the end of the block and that's when everyone came outside to see what was going on." One woman commented that, "This is all a tragedy. I don't know why stuff like this has to happen and it's a shame it happens so often."

Those who knew the perpetrator said his life had been plagued by violence since he was young. He had dropped out of school at 16 and had been in and out of jail his whole childhood. His mother had abandoned him when he was a baby after she succumbed to addiction and his father was never in his life.

The victim was desperately trying to make a better life for herself. She tirelessly worked two jobs to afford the monthly bills. She worked as a waitress during the day and by night she worked for a shipping company in the distribution center. Her co-workers said she always had a smile on her face, was always working hard and often had to be told her shift was over and needed to leave. Friends of the victim said she "had the warmest heart and put others before herself."

Los Angeles County prosecutors say the suspect has two prior convictions for assault with a deadly weapon. The suspect has been previously arrested for possession of drugs and drug paraphernalia, and possession of two unregistered handguns. With his current charge of murder he faces a minimum sentence of life in prison without the possibility of parole. The brutality of the case also makes him eligible for the death penalty.

next

Appendix C

qualtrics.com

You will automatically be transferred to the next part of the survey after 3 minutes. Please read the following:

A suspect was found and charged Wednesday with the murder of a 29-year-old woman in the South Central Los Angeles housing projects late last Saturday night. A 25-year-old male is accused of murdering the woman whose name has not been released. Police investigators believe the woman had gotten home from work Saturday evening and the perpetrator was waiting for her. The victim left work at 7 PM and the crime wasn't reported until later in the night. The perpetrator said he saw the woman with another man and wanted to confront her about it. The discussion escalated out of control. Prosecutors said he attempted to clean the crime scene and fled by car to a gang member's house. He managed to hit a few parked cars at the end of the block. He was under the influence of cocaine at the time of the arrest which may have contributed to his behavior. Neighbors said the victim and perpetrator knew each other for a while and dated in the past. They were unsure if they were dating at the time of the attack but they had seen the perpetrator around more often than usual. According to the Los Angeles County district attorney's office, the suspect claimed the victim was his girlfriend and he had only been living with her for a few weeks prior to the murder.

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next

Appendix D

Answer the following questions to the best of your ability. Every question has two parts - the actual question and a confidence scale. Please indicate your level of confidence of each answer you provide. There is a five minute time limit on this page.

1. The suspect under the influence of drugs during the crime.

- True
- False

How confident are you in your above answer?

Not confident	Somewhat confident	Very confident
○	○	○

2. The suspect came from a violent background.

- True
- False

How confident are you in your above answer?

Not confident	Somewhat confident	Very confident
○	○	○

3. An eyewitness reported seeing a gun.

- True
- False

How confident are you in your above answer?

Not confident	Somewhat confident	Very confident
○	○	○

4. Who was older?

- Suspect
- Victim

How confident are you in your above answer?

Not confident	Somewhat confident	Very confident
○	○	○

5. How well did the victim know the suspect?

- Not at all
- Acquaintance
- Well known

How confident are you in your above answer?

Not confident	Somewhat confident	Very confident
○	○	○

6. When did the crime occur?

- Morning
- Afternoon
- Evening

How confident are you in your above answer?

Not confident	Somewhat confident	Very confident
○	○	○

7. In what city did the crime take place?

- New York, NY
- Miami, FL
- Los Angeles, CA
- Chicago, IL

How confident are you in your above answer?

Not confident	Somewhat confident	Very confident
○	○	○

8. What ethnicity was the suspect?

- Hispanic or Latino
- White or Caucasian
- Black or African American
- Asian

How confident are you in your above answer?

Not confident	Somewhat confident	Very confident
○	○	○

9. Where did the victim work?

How confident are you in your above answer?

Not confident Somewhat confident Very confident

10. What day of the week did the crime occur?

How confident are you in your above answer?

Not confident Somewhat confident Very confident

11. What previous charges was the suspect charged with?

How confident are you in your above answer?

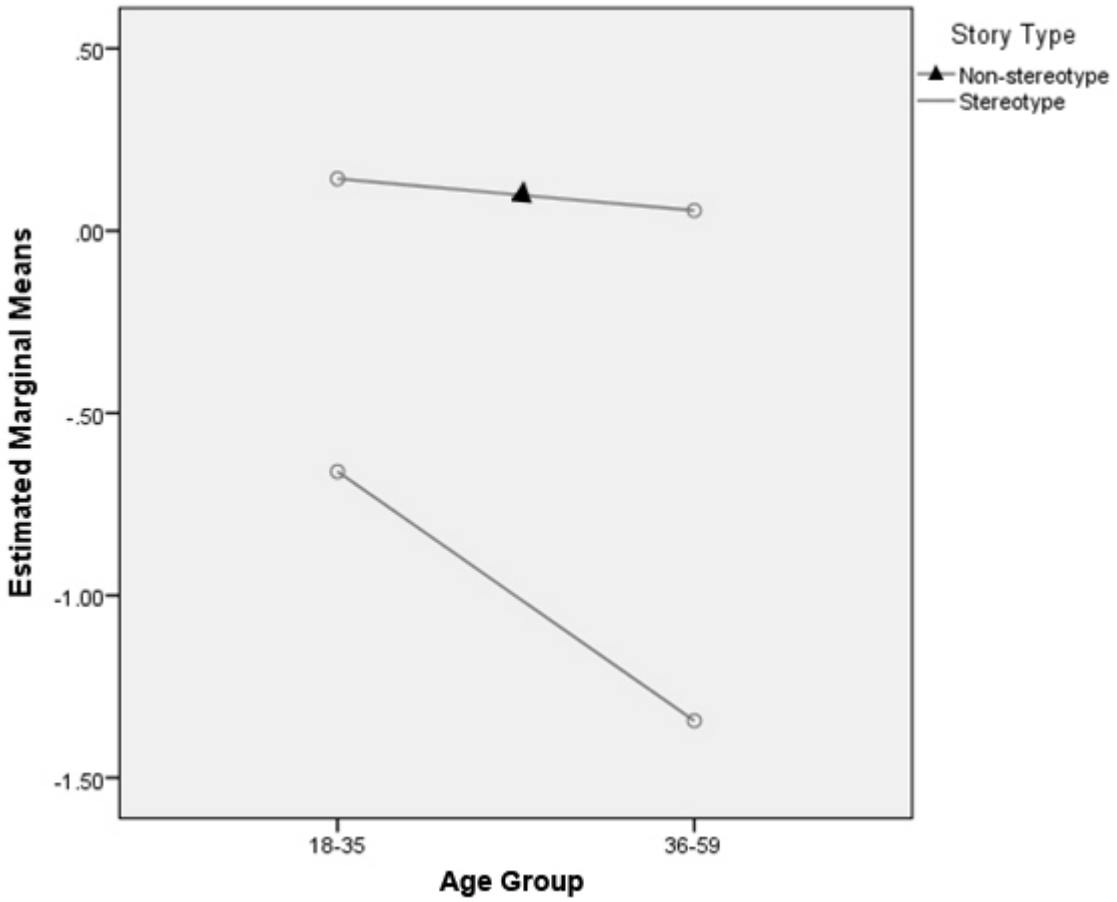
Not confident Somewhat confident Very confident

next

Appendix E

Figure 1.

Estimated marginal means of ethnicity question.



Note. The lower the estimated marginal mean, the more that group confidently remembered "African-American" as the criminal.

Appendix F

Table 1.

Age-group comparisons of ethnicity answers.

What is your age?	Story Type	Mean	Std. Deviation	N
	Non-stereotype	.1429	1.55395	63
18-35	Stereotype	-.6604	1.47991	53
	Total	-.2241	1.56642	116
	Non-stereotype	.0556	1.69679	18
36-59	Stereotype	-1.3438	1.42805	32
	Total	-.8400	1.65813	50
	Non-stereotype	.1235	1.57625	81
Total	Stereotype	-.9176	1.48974	85
	Total	-.4096	1.61460	166

Note. The lower the mean, the more that group confidently remembered “African-American” as the criminal.

Appendix G

Coding

A correct response to the 9 factual questions was coded as "1" within SPSS. An incorrect response was coded as "-1." It was possible to get half of the question correct on two questions on the questionnaire ("Where did the victim work," and "What previous charges was the suspect charged with"). These scores were coded as ".5." The ethnicity question of interest was coded as a "1" if the participant indicated the suspect was "White or Caucasian" and "-1" if they indicated the suspect was otherwise. The 3-point Likert-scale was coded as "1," "2," or "3." Each question response ("-1," ".5," or "1") was then multiplied by their confidence value. This indicates that a higher number indicates a less stereotypical response.