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Counterfactual Thinking and Racial Bias when Judging Crime Scenarios

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COUNTERFACTUAL THINKING AND RACIAL BIAS WHEN JUDGING CRIME SCENARIOS

by

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ABSTRACT

Counterfactual thinking has been described by researchers as imagining alternative outcomes to a previous event (i.e., how that event could have turned out differently). Research has shown susceptibility towards systemic biases in this thought pattern. Specifically, these biases can include racial prejudices, such as decision-making favoring one race over another, and attribution errors, such as blaming a victim for an unfortunate circumstance. Research suggests that factors that increase the use of heuristics lead to increased victim blaming, racially biased decisions, and counterfactual thinking. The current studies suggest that counterfactual thinking has a positive relationship with blame assignment and that both of these factors can be influenced by race.

INDEX WORDS: Counterfactual thinking, Racial bias, Blame, Cognitive load, Face processing

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DEDICATION

This research is dedicated to the minors who are disproportionately affected by violent crime and their loved ones.

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1 INTRODUCTION

The news is filled with discussions of "what if" scenarios across a variety of contexts, including criminal activity and law enforcement interaction with the community. Of specific relevance to the present study are crimes with relatively vague detail: *what if* he wasn't wearing a hoodie, what if he would not have looked so suspicious and avoided the altercation? Previous research studies have examined this "what if" thinking in decision-making processes through the study of counterfactual thinking (e.g., imagining alternatives for negative events). Counterfactual thinking can have serious implications for subsequent judgments.

Counterfactual thinking involves using mental shortcuts in processing information, or heuristics. Tversky and Kahneman (1974) suggest that these heuristics help people make decisions in uncertain circumstances by reducing the required cognitive processes in order to be more efficient. These heuristics fall into two categories: representativeness and availability heuristics. Representativeness heuristics (e.g., the organization of objects in reference to others) are based on previous experience while availability heuristics (e.g., mental shortcuts based on immediate examples) are based on cognitive availability of information. The availability heuristic was adapted to include the simulation heuristic as an explanation of phenomenon like counterfactual thinking. Though heuristics can be helpful in making quick judgments, reliance on heuristics, such as when using a stereotype, can lead to negative outcomes or judgement error.

One such negative heuristic discussed here is the Black male criminal stereotype, or the association between Black men and crime. Previous research shows systemic biases in judgment tasks when counterfactual thinking is used. Specifically, these biases can include racial prejudices, such as decision-making favoring one race over another (Effron, Miller, & Monin, 2012), attribution error, such as blaming a victim for an unfortunate circumstance (Goldinger,

Kleider, Azuma, & Beike, 2003; Marques, Quelhas, Juhos, Couto, & Rasga, 2014), as well as a host of other negative outcomes (Petrocelli & Crysel, 2009; Petrocelli, Seta, Seta, & Prince, 2012). Niemi and Young (2016) argued that this tendency to blame the victim is based on one's own moral values that control one's attitudes towards victims. Specifically, moral values can influence judgments of a victim's responsibility, which in turn influences how much blame is ascribed to a victim (Niemi & Young, 2016). Goldinger et al. (2003) suggested that this victim blaming could be caused by factors such as cognitive load (e.g., limiting cognitive capacity) and counterfactual thinking. Kleider, Knucky, and Cavrack (2012) found that when cognitive resources were limited due to a cognitive load, people made more racially biased jury decisions compared to when processing resources were not restricted. Limiting cognitive processing increased reliance on heuristic processing and thus racial biases.

The current study was designed to investigate 1) the extent to which the Black male criminal stereotype (BMC) facilitates counterfactual thinking in an ambiguous scenario leading to biased decision-making, 2) whether reduced cognitive resources facilitate or exacerbates this effect, and 3) whether facial expression can modulate those relationships. Previous research on face biases and the Black male criminal stereotype suggests the perception of stereotypically African American facial features (e.g., skin tone, wide nose, etc.) are more readily associated with crime than are their perceived non-stereotypical counterparts (Blair, Judd, & Chapleau, 2004). However, other research by Kubota and Ito (2014) found that Black male faces with positive expressions lead to less reliance on the Black male criminal stereotype in a decision-making task. Therefore, I also investigated the modulating effect of facial expressions on the use of these negative stereotypes.

The research objective for this project was to examine whether counterfactual thinking is facilitated by reliance on activation of the BMC stereotype. If the BMC stereotype aids in the shortcut to decision-making, is the resultant decision more likely to be counterfactual (e.g.,if only he had been in school he would not have been hit by the car) than if the stereotype were not activated (e.g., the driver was not paying attention)? In addition, are factors that deemphasize the use of BMC, such as reduced cognitive load or positive facial expression, likely to reduce reliance on counterfactual thinking? Factors that may influence the likelihood of using a heuristic, limited cognitive capacity (cognitive load) and facial expression will be tested as modulating factors of blame.

1.1 Counterfactual Thinking

The beginnings of the study of counterfactual thinking are often attributed to Kahneman and Tversky (1982) and their idea of the simulation heuristic. According to the simulation heuristic, how people determine the likelihood of an event is directly related to how easy that event is to imagine happening. The classic example of this heuristic from Kahneman and Tversky (1982) is their proposed scenario in which two men, while riding together to an airport, become stuck in traffic and subsequently miss their flights. Although both men miss their flights in the scenario, the reader is told that the first man missed his by 30 minutes and the second by only 5. The reader is then asked who would be more upset, the first or second man? Most readers say the second man, who only missed his flight by 5 minutes. Readers rationalize this because it is easier to picture the second man making his flight on time, as he only missed it by 5 minutes.

The structure of a counterfactual thought according to a review by Roese and Olson (1995) can include imagined outcomes that are better (upward counterfactuals) or worse

(downward counterfactuals) than the current situation or scenario as well as add, subtract, or substitute information. These imagined outcomes can include the person (self-referent), another (other-referent) or can be attributed to a situation instead of a person (nonreferent). A possible relevant body of literature to this attribution of imagined outcomes in the fundamental attribution error, or the tendency attribute the behavior of others to personal rather than situational factors (Ross, 1977). With this theory in mind, it is possible that people engaging in counterfactual thought may be more likely to attribute others behavior to a personal cause, though there is no research specific to this relationship at present. Counterfactual thinking is often self-referent and salient personal scenarios are more likely to encourage this self-referent counterfactual thought (Roese and Olson, 1993). These counterfactual thoughts have been measured in previous research using multiple methods including both qualitative and quantitative approaches. The qualitative methods often involve asking participants to list counterfactual thoughts (Roese & Olson, 1993) or asking participants to "think out loud" (Markman, Gavanski, Sherman, & McMullen, 1993). Quantitative methods are more commonly used, often presenting a participant with vignettes or direction to recall a memory, then having the participant respond on a Likert scale to assess endorsement of counterfactual thinking responses (Boninger, Gleicher, & Strathman, 1994; Macrae & Milne, 1992; Rye, Cahoon, Ali, and Daftary, 2008; Turley, Sanna, & Reiter, 1995).

Counterfactual thinking can lead to decision-making strategies that are not likely to lead to better situational outcomes. Petrocelli, Seta, Seta, and Prince (2012) examined the positives and negatives of counterfactual thinking in academic performance. An example of an upward counterfactual thought presented would be "if only I had studied more, I would have gotten a better grade" which was hypothesized to lead to more studying in the future. However, the

authors found participants were more likely to use counterfactual thinking to explain away academic failures, attributing them to contextual factors like test difficulty, thus inhibiting effective study patterns (Petrocelli et al. 2012). Negative outcomes of counterfactual thinking are demonstrated in different contexts that include racial prejudices, such as decision making favoring one race over another (Effron, Miller, & Monin, 2012), poor academic performance (Petrocelli, Seta, Seta, & Prince, 2012), memory distortion (Petrocelli & Crysel, 2009), and attribution error, such as blaming a victim for an unfortunate circumstance (Goldinger, Kleider, Azuma, & Beike, 2003; Marques, Quelhas, Juhos, Couto, & Rasga, 2014). Goldinger et al. (2003) found that when cognitive capacity was limited by a cognitive load, participants with low working memory capacity relied more heavily on racially biased counterfactual thinking. This reduction of cognitive capacity further facilitates the use of heuristics in decision-making. These mental short cuts provide a way to process information quickly when cognitive capacity is limited, therefore reducing the cognitive capacity needed (Tversky and Kahneman, 1974).

1.1.1 Counterfactual Thinking as an Automatic vs Controlled Process

Research by Roese and Olson (1997), suggested that counterfactual thinking is typically an automatic process that is associated with a negative event. When a target outcome is not met, the response to this negative event is to automatically mentally picture the desired target outcome and how it could have come about (Roese & Olson, 1997). However, a later work from Roese, Sanna, and Galinsky (2005) argued that counterfactual thinking can be both automatic or controlled based on the necessity of the task at hand. Specifically, they argued that counterfactual thinking can be automatic in that it is activated unconsciously by certain situations, but it can also be deliberately recruited or suppressed in other situations (Roese et al., 2005). When counterfactual thoughts are automatic, it is often in response to a spontaneous negative event

(e.g., a car accident) while controlled counterfactual thoughts are usually the result of monitoring ongoing goals (e.g., improving bad grades) (Petrocelli et al. 2012; Roese et al., 2005).

1.1.2 Counterfactual Thinking and Blame

Previous research has examined how counterfactual thinking influences blame assignment in a host of contexts such as outcome variability (Alicke, Buckingham, Zell, & Davis, 2016), social norms (Catellani, Alberici, & Milesi, 2016), in-group versus out-group membership (McCrea, 2007), and unfortunate events (Goldinger, et al., 2003). Niemi & Young (2016) argued that this tendency to assign blame to a victim is based on one's own moral values on behaviors that harm others that control their attitudes towards victims. Specifically, moral values about appropriate behavior influence judgments of a victim's responsibility, which in turn influences how much blame is ascribed to a victim (Niemi & Young, 2016). Goldinger et al. (2003) suggested that this tendency to victim blame could be caused by a series of factors such as memory load and counterfactual thinking.

1.1.2.1 Moral versus Legal Blame

The philosophical argument around the relationship between law and morality goes back to Aristotle c. 350 B.C.E. The disconnect between these two constructs can be seen in the classic conundrum of a man who steals a loaf of bread to feed his starving family. Most people agree that the man is legally wrong for stealing, however the act is seen as morally permissible. Though in the previous scenario the two constructs diverge, Wikström and Treiber (2007) suggest that, in general, a behavior that is considered illegal is often considered immoral. If that is the case, does the law and morality diverge in our current legal system? More recent research has focused on the disconnect between individual actions and behaviors through Belief Behavior Incongruence (Vogel & Fradella, 2012). Vogel and Fradella (2012) found their participants

would deem behaviors such as speeding immoral and illegal; however, they would readily admit to engaging in this behavior. One theory presented by the authors was that the punishment for engaging in the behavior and the likelihood of being caught was not enough to deter it. This finding suggests that while a behavior might be viewed as severely morally wrong, it might be considered less so legally, as people are still willing to engage in the behavior (Vogel & Fradella, 2012).

1.2 The Black Male Criminal Stereotype

Stereotypes are a kind of availability heuristic based on societal beliefs. Secord and Backman (1964) define stereotyping as a process involving categorization of individuals or groups according to some set of attributes, consensus as to what those attributes are, and discrepancies between the attributed and actual traits of the person or group involved. Stereotypes have been further described in previous research as beliefs held about a social group's attributes or behavior that are often negative and can be false (Fiske, 1998). A prevalent stereotype is the Black male criminal stereotype. A myriad of research has shown this association between Black males and perceived criminality (see Correll, Park, Judd, & Wittenbrink, 2002; Blair, Judd, & Chapleau, 2004; Kleider, Knuycky, & Cavrak, 2012). Research by Dixon and Linz (2000a, 2000b) suggested that this representation of Black males as perpetrators of crime may be perpetuated by the media. This association between Black males and crime is also evident in jury decision-making scenarios wherein Black men, compared to White men, are given harsher sentences for violent crime when crime type was consistent with the participants expectations (Jones & Kaplan, 2003). This stereotype is also evident in sentencing, specifically death penalty sentencing in which the perpetrator looks to be a

steretypical example of a Black male (Eberhardt, Davies, Purdie-Vaughns, & Johnson, 2006; Blair, Judd, & Chapleau, 2004).

This bias is not restricted to adults. Todd, Thiem, and Neel (2016) found similar biases about Black males as young as five years old. Specifically, their study tested the idea of associations between race and threat and found that faces of African American males as young as age five primed the detection of threat-related objects. Similarly, Goff, Jackson, Di Leone, Culotta, and DiTomasso (2014) found that assumptions of childhood innocence were less likely to be applied to Black children than White children.

1.2.1 The Black Male Criminal Stereotype and Face Bias

The heuristic nature of the Black male criminal stereotype is especially evident in face perception. Feature-based judgments about character are rooted in stereotypes (Lippman, 1922). Research suggests there are stereotypical facial features associated with Black men (e.g., skin tone, wide nose, etc.), upon which they can then be categorized onto a spectrum from "atypical" to "prototypical" representation (Blair et al., 2004; Eberhardt, Goff, Purdie, & Davies, 2004; Knuycky, Kleider, Cavrak, 2014), and this stereotypical face-type is associated with negative outcomes (Blair et al., 2004). Blair et al. (2004) found that Black men with more stereotypically African American facial features received harsher sentences for similar crimes than those who had less stereotypical facial features. This association of stereotypical face-type and negative outcomes extends to memory error, as Kleider et al. (2012) found that stereotypically Black faces were more often misremembered as criminals than were atypically Black faces. It follows that stereotypes are activated by face-type and then used to judge and make decisions about people. Based on these negative stereotypes regarding the association between Black males and crime, as

well as their negative representation in media (Dixon and Linz, 2000a,b), prototypical Black male faces may activate this simulation heuristic (and further counterfactual thinking) in which they are easily pictured as criminals relative to those with less prototypical features.

However, other research has examined ways in which this association may be modulated by other factors. Blair (2002) suggested that these automatic stereotypes and associated prejudices might be malleable. Livingston and Pearce (2009) found that certain facial features, specifically more baby-faced features, might reduce the perception of threat of a Black male face. Related to implicit bias, Kubota and Ito (2014) found that Black male faces with positive expressions lead to less stereotyping in a masked priming weapon identification task. Though there are few studies regarding facial expression and implicit biases, previous research shows that generally happy faces suggest more positive outcomes such as affiliation and approachability (see Hess, Blairy, & Kleck, 2000; Miles, 2009; Willis, Palermo, & Burke, 2011). Studies such as these suggest that activation of the Black male criminal stereotype may be exacerbated by some manipulations; others may also attenuate it.

1.2.2 The Black Male Criminal Stereotype and Cognitive Capacity

Additionally, when cognitive resources are reduced, people more often use short cuts in decision-making as fewer cognitive resources are required. Unfortunately, this can lead to reliance on stereotypes that may negatively impact Black men. For example, Kleider et al. (2012) found that participants assigned more guilt to a Black defendant than to a White defendant under memory load suggesting that participant's ability to monitor responses required unavailable cognitive capacity. Research also suggests that counterfactual thinking can be influenced by cognitive load manipulations that may constrain a participant's ability to monitor their responses (Goldinger et al., 2003). Specifically, Goldinger et al. (2003) found that participants under

cognitive load were more likely to engage in counterfactual thinking and blame the victim for an unfortunate circumstance. Previous research also suggests individual differences in response to cognitive load manipulations based on working memory capacity (WMC), such that low WMC individuals are less successful at tasks inducing cognitive load (Goldinger et al., 2003). Based on these findings, cognitive load and other manipulations related to cognitive capacity can limit the effectiveness of cognitive processing of information. When this limiting of cognitive capacity occurs, individuals may be more inclined to rely on heuristic processing and thus racial biases.

1.3 Purpose for the Study

The current overall study was designed to investigate the influence of counterfactual thinking and the Black male criminal stereotype in decision-making in crime scenarios (created for the purpose of this study). Study 1 sought to examine the influence of counterfactual thinking and BMC stereotype in scenarios where participant cognitive capacity was limited. Study 2 included images of faces in an attempt to modulate reliance on the BMC stereotype in the same scenarios.

1.3.1 Pilot Study

A pilot study was conducted with the purpose of assessing stimuli created for this study (scenarios for all studies and pictures for Study 2), questions created for this study, and assess the necessity for multiple outcomes and predictor variables. Scenarios were chosen based on participant ratings of the outcome variables when no race was included. Faces were chosen for Study 2 based on participant ratings for the desired traits (e.g., perceived race, valence of face, and age of face). Reporting of questions created for the study (individual vs aggregated scores) was determined.

1.3.2 Study 1: Cognitive Load

The purpose of Study 1 was to examine whether counterfactual thinking is a default decision making strategy, and whether it occurs more often when race is a salient factor in an ambiguous scenario. During Study 1, all created crime scenarios were randomly assigned to a cognitive load manipulation to increase the difficulty of using controlled processes used for decision monitoring. Moreover, individual differences in working memory capacity were also assessed to examine whether some individuals are more vulnerable to biased decision making under constrained cognitive resources based on the work of Goldinger et al., 2003. The hypothesis of this study was that victim race, propensity for counterfactual thinking, and cognitive capacity (and subsequent load manipulations) would impact the blame assigned to the victim in the scenario. Specifically, that participants under cognitive load would be more likely to endorse questions ascribing counterfactual thought as well as more likely to assign blame based on the race of the person in the scenario.

1.3.3 Study 2: Facial Cues

Study 2 included the presentation of face photos in an effort to modulate heuristics related to criminality. The prediction for Study 1 was that propensity for counterfactual thinking and cognitive load would lead to the use of this Black male criminal stereotype, which would in turn result in more blame being assigned based on the race of the victim. However, Study 2 was designed to examine the effect of facial expression in this paradigm. Previous research suggests that positive facial expressions may modulate some negative stereotypes. Kubota and Ito (2014) found that Black male faces with positive expressions lead to less stereotyping in a weapon identification task. Study 2 was designed to replicate this association between positive facial expressions and the reduction of reliance on stereotypes. It was hypothesized that prime race,

prime valence, and propensity for counterfactual thinking (both generally and task specific) would impact the blame assigned to the victim in the scenario. Specifically, that happy faces would receive less blame regardless of race and that happy Black faces would receive the same amount of blame as White or Racially ambiguous faces.

2 PILOT STUDY

2.1 Methods

Participants

The participants included Georgia State University undergraduate students, with a subset of 20 rating the scenarios, 20 rating the faces, and 71 rating the scenarios with the victim race manipulation included. All the students participated for course credit and self-reported their age [range = 18-60 years with majority (85%) between 18-24], gender (69% female, 30% male, 2% non-binary), and race (30% African-American, 35% Caucasian, 15% Asian, 10% Bi/Multi Racial, 10% Latino/a/x, & 5% Other races).

Materials

Crime Scenarios. 16 written scenarios were created for the purpose of this study. In all of these scenarios, a racially identified (Black, White, unknown) youth (e.g., teenager committing the act) committed a minor criminal infraction (e.g., loitering) and a security guard responded by shooting and seriously injuring the youth. The scenarios were created to be intentionally ambiguous, providing no information following the altercation involving the teen and security guard. Each scenario was a similar word length (between 115-130 words) and was created to include four pieces of ambiguous information. Though these scenarios were not real cases, all of

the crimes listed were included in the top 25 most common crimes, offenses and violations for the teen age group according to the Global Youth Justice statistics (2020).

Outcome Questions. Participants were asked if the youth in the scenario was morally or legally responsible for the outcome of the scenario (above) using agreement to the statements on a 1 (strongly disagree) to 7 (strongly agree) Likert scale. The questions were assessed to determine if there was a statistically significant difference in the two questions.

Specific Counterfactual Questions. Questions ascribing counterfactual thought specific to the scenarios were presented after each scenario (i.e., "If only the youth had behaved differently, the outcome would not have happened"; "If only the situation had been different, the outcome would not have happened") to which participants responded on a 1 to 7 Likert scale (1= Strongly Disagree, 7 = Strongly Agree). The questions were assessed to determine if they were statistically significantly different (therefore requiring separate analysis and reporting) or not, in which case the scores would be reported in aggregated form.

Face Stimuli for Study 2. A total of 45 images of faces of young Black, White and racially ambiguous males with positive and neutral facial expressions were sourced via Internet search of yearbooks for the purpose of this study. These faces were then pre-rated using 1 to 7 Likert scales for estimated age, face valence (happy, neutral, or negative), and assumed race. All faces were cropped to head and shoulder were presented in color, forward facing, and on a neutral background. These faces were only presented in Study 2.

Procedure

Participants rating faces or scenarios viewed the stimuli on a computer.

Participants completing the task viewed on a computer, a series of scenarios in which the teen was labeled as Black, White, or racially unidentified (either no race present or the word

"unknown"). Scenarios were presented randomly. Participants made 1 to 7 Likert scale judgments of how much moral and legal responsibility for the altercation that the teen should bear. Lastly, participants were asked for demographic information: gender and ethnicity, indicated via key press. Participants were debriefed and thanked for their participation.

2.2 Results (Pre-Ratings)

Data Cleaning. Three "catch" questions were randomly inserted throughout the task to ensure that participants who could not be monitored while completing the task were paying attention (e.g., "Answer Strongly Agree to this question"). Participants who did not answer all three questions correctly were removed from the analyses.

Crime Scenarios. A mean rating for blame assigned of 3.32 was calculated for all outcome variables on all of the scenarios with a standard deviation of 0.42. Scenarios were included in further studies that fell within one standard deviation of the mean. Any possible remaining differences were controlled for in future liner mixed model analyses. See Figure 1 for a list of scenarios included in the study.

Outcome Questions. A paired samples t-test was conducted to compare the blame assigned to the victim when the question was phrased as "morally" or "legally" responsible for the outcome of the scenario. Overall, there was a significant difference in the scores based on the phrasing of the question: morally ($M = 4.10$, $SD = 1.05$) and legally ($M = 3.93$, $SD = 1.06$) responsible conditions; $t(71) = 3.55$, $p = < .001$. Therefore, further analyses included these two outcome variables separately.

Specific Counterfactual Questions. A one-way repeated measures ANOVA was conducted in order to determine whether the specific counterfactual questions created for the

purposes of this study (i.e., “If only the youth had behaved differently, the outcome would not have happened”; “If only the situation had been different, the outcome would not have happened”; “If only the youth had looked different, the outcome would not have happened”) were statistically significantly different from one another. There was a statistically significant difference between responses on the three questions, $F(2,70) = 11.97$, $p = <.001$. A Tukey post hoc test revealed that the counterfactual question responses regarding appearance were statistically different from the behavior (-0.54, $p = .002$) and situational (-0.73, $p = <.001$) questions. There was no statistically significant difference between the behavioral and situational question responses ($p = .390$). The differences regarding the appearance question could be the result of the pilot test (and subsequently Study 1) not including an image with the scenario. Therefore, the appearance question was only included and analyzed with Study 2. The other two questions were aggregated.

Face Stimuli. The faces were narrowed down to include 14 possible images presented to participants as a result of the pilot. All faces had to be rated high (at least 1 standard deviation above the mean) to be included in a particular category (e.g., Black, White, ambiguous, happy, neutral). The scores for the overall list of faces are available in Table 1 and the selected faces and their respective scores are available in figure 2. Of these photos, two positive and two neutral expression faces for each of the race categories (e.g., Black, White, racially ambiguous) were included in the stimulus set. See Figure 2 for the final images chosen for this study.

3 STUDY 1

As mentioned, previous researchers have found individual differences in response to cognitive load manipulations based on working memory capacity (WMC), such that low WMC individuals are less successful at tasks inducing cognitive load (Goldinger et al., 2003). The purpose of this study was to replicate the findings of Goldinger et al. (2003) by examining whether participants are more likely to assign blame based on victim race when under cognitive load than when not under a load. This study also examined whether participants were more likely to endorse questions ascribing upward counterfactual thought when under cognitive load than when not under cognitive load. Based on the Goldinger et al. (2003) research, the expectation was that participants would have higher endorsement of the questions ascribing counterfactual thought as well as be more likely to assign blame based on the race of the teen in the scenario, with Black teens being assigned more blame than White or no race listed.

3.1 Methods

Participants

The participants included 146 Georgia State University undergraduate students. All the students participated for course credit and self-reported their age (range = 18-50 years, with the majority (92%) between 18-24), gender (72% female, 26% male, 1% non-binary) and race (39% African American, 18% White/Caucasian, 20% Latino/a/x, 19% Asian, 5% Bi-Multi Racial, and 1% Other Races).

Materials

Counterfactual Thinking. Individual propensity for counterfactual thinking was measured using the Counterfactual Thinking for Negative Events Scale (CTNES; Rye, Cahoon, Ali, and

Daftary, 2008) other-referent upward subscale. For this scale, participants are asked to recall a recent negative event then respond to a series of questions [e.g., "If only another person (or other people) had not been so selfish, this whole mess could have been avoided"] on a 1 to 5 Likert scale (1 = Never, 5 = Very Often). Questions ascribing counterfactual thought specific to the scenarios were also presented after each scenario (e.g., "If only the youth had behaved differently, the outcome would not have happened"; "If only the situation had been different, the outcome would not have happened") to which participants responded on a 1 to 7 Likert scale (1= Strongly Disagree, 7 = Strongly Agree).

Cognitive Load. (Goldinger et al., 2003). For 8 of the 16 scenarios presented, participants completed a randomly assigned cognitive load procedure. Following procedures used in Goldinger, et at. (2003) and Kleider, Knuycky and Cavrak (2012), on load trials, participants were presented with six non-words (e.g., lapek, willant, fegole, etc.) simultaneously for 30 seconds and then were required to hold the items in memory while they read the scenarios and answer the questions. Participants thus read and rated the scenarios while keeping these non-words in mind. After participants completed the questions, they were asked to type as many of the non-words as possible. Accuracy of the typed words provided was assessed to ensure participants were attempting to remember the non-words throughout the task. Participants had to get above 80% of the non-words correct to be considered loaded.

Automated Operation Span (OSPAN; Unsworth et al., 2005). The automated operation span task is a measure of working memory capacity in adults. Participants were first presented with a simple math problem (e.g., (1*2) + 1 = ?) after which a numerical answer is presented (e.g., 3). Participants verified the accuracy of the answer by responding "True" or "False". Following the math problem and solution, participants were presented with a letter that needed to

be recalled later. Participants were presented problem/letter sets ranging between three and seven. Letters were presented to participants in a matrix that required participants to choose the letters in the correct sequence shown. Participants received accuracy feedback after every trial. A total score was calculated based on the number of letters correctly recalled on trials in which participants were more than 85% accurate on the math problems. This numeric score was used as a continuous variable in subsequent analyses.

Procedure

Participants were shown the same series of scenarios described above. Scenarios and subsequent questions were not timed for participants. Cognitive load was manipulated within subjects so that half of the scenarios were presented under cognitive load and half were not. Then participants assigned blame and endorsement of counterfactual thinking questions. Finally, participants were required to recall all previously seen non-words for that trial by typing them into a blank text box.

3.2 Results

Participants used the full 1-7 Likert scale when responding to the questions about moral blame, legal blame, and counterfactual thinking. There were a wide range of OSPAN scores (13-74) with an average score of 54 and a right skew to those data (e.g., skewed towards higher scores on the test). There was a strong correlation between moral and legal responsibility. The counterfactual thinking questions were moderately correlated with both moral and legal responsibility. The CTNES and the OSPAN were not correlated with any other variables. Full descriptive statistics for Study 1 can be found in Tables 2 and 3.

To address possible confounding of the counterfactual thinking questions created for the purpose of this study and the outcome variables of moral and legal blame, a confirmatory factor analysis (CFA) was conducted. This CFA measured if the moral blame, legal blame, and counterfactual questions were all measuring one latent factor, which would indicate these variables were all measuring the same construct. Analyses were conducted using Mplus version 8. This model had poor overall model fit indicated by a significant Chi-squared value ($\chi 2(7) = 26514.32$, $p < 0.001$), an RMSCA value over .10 (.98), and a CFI value of less than .90 (.10). The suspected reason for this poor model fit is the weak factor loading of the counterfactual thinking variables, which was .44. These results indicate that the moral blame, legal blame, and counterfactual questions were not measuring the same underlying construct, and therefore not confounded by measuring the same thing. Full table of CFA results can be found in Table 4.

A series of linear mixed effects models (LMM) were used to examine the relationship among blame assigned, victim race, participant reliance on counterfactual thinking (measured both as the general propensity to engage in CF and scenario specific question endorsement), and participant WMC. LMM is a statistical model that describes the relationship between outcome response variable and predictor variables that are a mix of fixed and random factors. LMM was chosen over the classical repeated measures ANOVA and MANOVA for several reasons: the data include multiple continuous predictor variables along with the categorical repeated measured design; LMM allows for configurations of grouping hierarchies (as victim race and load are nested within the scenario presented); the data include both fixed and random factors. These data were analyzed using a series of Likelihood Ratio Tests. This analysis method involves systematically comparing a full model (with all possible variables) to subsequent nested models lacking the variables of interest to determine which of those are factors that contribute

significantly to the model. Data analysis was conducted in R (R Core Team, 2018) using lme4 (Bates, Maechler & Bolker, 2012) to perform a linear mixed effects analysis of the relationship among variables. As fixed effects, the scenario specific counterfactual questions, CFTNES, OSPAN, cognitive load, and victim race were entered into the model. As random effects, intercepts for subjects and scenarios were calculated. Visual inspection of residual plots did not reveal any obvious deviations from homoscedasticity or normality. P-values were obtained by likelihood ratio tests of the full model with the variables of interest against the model without. The final model chosen to interpret had the lowest Akaike information criterion (AIC) value in comparison to the other models.

At the time of analysis, there was no available options for a priori power analysis on Linear Mixed Models. Post hoc Monte Carlo simulations were conducted to ensure that adequate power had been achieved to detect a medium effect using the Simr R (R Core Team, 2018) package (Green & MacLeod, 2016). The Simr package uses data already collected to simulate how many participants are needed to detect an effect and outputs how many participants are needed to reach each power level. The current full model reached power to detect a medium effect at 125 participants.

Full Model

The full model tested included assigned moral and legal responsibility as outcome variables, general propensity for counterfactual thinking (CFTNES), Counterfactual Questions, OSPAN scores, victim race, and cognitive load as fixed factors, and the participant number and scenario as random factors in order to specify a repeated measures design. This model was systematically compared to all subsequent models to assess whether individual variables account for variance in the outcome. The model was constructed as follows:

Blame ~ OSPAN + Load + Race + Counterfactual Questions + CTNES + (1|Subject)

Interaction Models

A model that included the interaction between cognitive load and the Race was conducted. The model was constructed as follows:

*Blame ~ OSPAN + Load *Race + Counterfactual Questions + CTNES + (1|Subject)*

The interaction between load and race did not affect blame in the moral ($\chi_2(1) = 0.61$, $p = 0.43$) or legal ($\chi_2(1) = 1.95$, $p = 0.16$) models.

A model that included the interaction between cognitive load and the counterfactual questions was conducted. The model was constructed as follows:

*Blame ~ OSPAN + Race + Load*Counterfactual Questions + CTNES + (1|Subject)*

The interaction between Load and the Counterfactual Questions did not affect blame in the moral ($\chi_2(3) = 0.58$, $p = 0.90$) or legal ($\chi_2(3) = 1.32$, $p = 0.72$) models.

Cognitive Load Models

Three models with differing combinations of included cognitive load variables were compared to the full model above. The first model included the OSPAN but not the load manipulation. The models were constructed as follows:

Blame ~ OSPAN + Race + Counterfactual Questions + CTNES + (1|Subject)

The cognitive load manipulation did not affect blame in the moral ($\chi_2(1) = 0.003$, $p = 0.99$) or legal ($\chi_2(1) = 0.004$, $p = 0.95$) models.

The second model included the load manipulation but excluded OSPAN. This model was constructed as follows:

Blame ~ Load + Race + Counterfactual Questions + CTNES + (1|Subject)

The inclusion of participant WMC did not affect blame in the moral ($\chi_2(1) = 3.83$, $p = 0.05$) or legal ($\chi_2(1) = 2.92$, $p = 0.09$) models.

The third cognitive load model included neither the OSPAN scores nor the cognitive load manipulation. This model was constructed as follows:

Blame ~ Race + Counterfactual Questions + CTNES + (1|Subject)

The inclusion of participant WMC and the cognitive load manipulation did not affect blame in the moral ($\chi_2(2) = 3.83$, $p = 0.15$) or legal ($\chi_2(3) = 2.93$, $p = 0.23$) models.

Counterfactual Thinking Models

Three models including counterfactual thinking variables were compared to the full model above. The first model included the CTNES but not the scenario specific questions. The model was constructed as follows:

Blame ~ OSPAN + Load + Race + CTNES + (1|Subject)

The inclusion of questions ascribing counterfactual thought affected blame in the moral model ($\chi_2(1) = 343.38$, $p < 0.001$), increasing blame ratings by about 0.46 ± 0.002 (standard errors) and legal model ($\chi_2(1) = 251.29$, $p < 0.001$), increasing blame ratings by about 0.40 ± 0.002 (standard errors).

The second model included the scenario specific questions but not the CTNES. The model was constructed as follows:

Blame ~ OSPAN + Load + Race + Counterfactual Questions + (1|Subject)

The inclusion of the CTNES did not affect blame in the moral ($\chi_2(1) = 2.11$, $p = 0.15$) or legal ($\chi_2(1) = 1.21$, $p = 0.27$) models.

The third model of CF included neither the CTNES nor the scenario specific questions. The model was constructed as follows:

Blame ~ OSPAN + Load + Race + (1|Subject)

The inclusion of questions ascribing counterfactual thought and the CTNES affected blame in the moral model, $\chi_2(1) = 344.89$, $p < 0.001$, lowering blame ratings by about 0.28 ± 0.06 (standard errors) and legal model, $\chi_2(1) = 249.71$, $p < 0.001$, lowering blame ratings by about 0.28 ± 0.06 (standard errors).

Final Model

The final model chosen based on the model comparisons using the likelihood ratio test, AIC, and parsimony was the model that removed cognitive load and WMC. Participant race was controlled for by including as a predictor in this final model and had no effect on the outcome, interactions, or predictor variables. For full comparison of all models see Table 2.

Blame ~ Race + Counterfactual Questions + CTNES + (1|Subject)

Endorsement of the counterfactual questions significantly predicted moral, $b = 0.46$, $t(145) = 19.32$, $p < .001$, and legal, $b = 0.40$, $t(145) = 16.36$, $p < .001$, blame assigned. Inclusion of race also significantly predicted blame when compared to the no race condition, but only when the target race was "Black" in both moral, $b = -0.44$, $t(145) = -5.42$, $p < .001$, and legal, $b = -0.51$, $t(145) = 6.08$, $p < .001$, blame assigned. Overall, the more a participant endorsed the counterfactual statements, the more blame they in turn assigned to the victim in the scenario. The Black victim in the scenario also received less blame than the other races, which is opposite the hypothesized relationship between race and blame.

Follow-up Model

In order to better understand how race and cognitive load influence counterfactual thinking, a follow-up model using counterfactual thinking as the outcome variable was conducted. The result of that model was that counterfactual questions were endorsed less when the victim in the scenario was White, $b = -0.19$, $t(130) = -2.63$, $p < .01$.

4 STUDY 2

As previously mentioned, Kubota and Ito (2014) find that the positive facial expression may modulate the association between Black male faces and negative outcomes. The purpose of this study was to examine counterfactual thinking and blame based on race when the context of facial expression is considered. Based on previous research by Kubota and Ito (2014), it was expected that participants would be less likely to assign blame or endorse questions ascribing counterfactual thought when a positive rather than neutral face was presented.

4.1 Methods

Participants

The participants included 138 Georgia State University undergraduate students. All the students participated for course credit and self-reported their age (range = 18-50 years, with the majority (85%) between 18-24), gender (73% female, 24% male, 3% non-binary) and race (43% African American, 18% White/Caucasian, 14% Latino/a/x, 8% Asian, 12% Bi-Multi Racial, and 5% Other Races).

Materials

Face Stimuli. 14 pre-rated images of faces of young Black, White and racially ambiguous males with positive and neutral facial expressions as determined from the Pilot Study.

Procedure

Participants were shown the same series of scenarios described in Study 1. The only change was that these scenarios do not specify the race of the teen in text. This study instead included the addition of a face priming manipulation. Faces of African American, White, and racially ambiguous teen males were shown to participants for 200ms before they read the

scenarios. Faces were randomly assigned scenarios and included blank screens. No link between the face and the scenario was explicitly described to the participants, participants were just told that they may see a face before reding a scenario. Of these faces half were positive (smiling) and half were neutral (no expression).

4.2 Results

Participants used the full 1-7 Likert scale when responding to the questions about moral blame, legal blame, and counterfactual thinking. There was a strong correlation between moral and legal responsibility. The counterfactual thinking questions were moderately correlated with both moral and legal responsibility. The CTNES was not correlated with any other variables. Full descriptive statistics for Study 2 can be found in Tables 7 and 8.

Similar to Study 1, to address possible confounding of the counterfactual thinking questions created for the purpose of this study and the outcome variables of moral and legal blame, a confirmatory factor analysis (CFA) was conducted. This CFA measured if the moral blame, legal blame, and counterfactual questions were all measuring one latent factor, which would indicate these variables were all measuring the same construct. Analyses were conducted using Mplus version 8. This model had poor overall model fit indicated by a significant Chi-squared value ($\chi_2(12) = 19290.84$, $p < 0.001$), an RMSCA value over .10 (.98), and a CFI value of less than .90 (.07). The suspected reason for this poor model fit is the weak factor loading of the counterfactual thinking variables, which was .44. These results indicate that the moral blame, legal blame, and counterfactual questions were not measuring the same underlying construct, and therefore not confounded by measuring the same thing. Full table of CFA results can be found in Table 9.

Similar to Study 1, data analysis was conducted in R (R Core Team, 2018) using lme4 (Bates, Maechler & Bolker, 2012) to perform a linear mixed effects analysis of the relationship among variables. As fixed effects, the scenario specific counterfactual questions, CTNES, face valence, and face race were entered into the model. As random effects, intercepts for subjects and scenarios were calculated. Visual inspection of residual plots did not reveal any obvious deviations from homoscedasticity or normality. P-values were obtained by likelihood ratio tests of the full model with the variables of interest against the model without. Again, the final model chosen to interpret had the lowest Akaike information criterion (AIC) value in comparison to the other models.

Post hoc Monte Carlo simulations were conducted to ensure that adequate power had been achieved to detect a medium effect using the Simr r package Green & MacLeod (2016). Adequate power was achieved with the current sample size. The Simr package uses data already collected to simulate how many participants are needed to detect an effect and outputs how many participants are needed to reach each power level. The current full model reached power to detect a medium effect at 121 participants.

Full Model

The full model tested included assigned moral and legal responsibility as outcome variables, general propensity for counterfactual thinking (CFTNES), scenario specific counterfactual questions, face valence, and face race as fixed factors, and the participant number and scenario as random factors in order to specify a repeated measures design. The interaction between cognitive load and victim race was included in this model. The model was constructed as follows:

Blame ~ Face Valence + Face Race + Counterfactual Questions + CTNES + (1|Subject)

Interaction Models

A model that included the interaction between face valence and face race was conducted. The model was constructed as follows:

*Blame ~ Face Valence*Face Race + Counterfactual Questions + CTNES + (1|Subject)*

The interaction between face valence and face race did affect blame in the moral model such that neutral Black faces were assigned less blame ($\chi_2(2) = 8.02$, $p < .05$) but not in the legal model ($\chi_2(2) = 3.05$, $p = 0.22$).

A model that included the interaction between face valence and counterfactual thinking was conducted. The model was constructed as follows:

*Blame ~ Face Valence*Counterfactual Questions + Face Race + CTNES + (1|Subject)*

The interaction between face valence and counterfactual questions did not affect blame in the moral model ($\chi_2(2) = 3.11$, $p = 0.21$) however, this interaction did affect blame in the legal model such that when a face was Black, CF was endorsed less and blame was also assigned less ($\chi_2(2) = 8.034$, $p < .05$).

A model that included the interaction between counterfactual thinking and face race was conducted. The model was constructed as follows:

*Blame ~ Face Valence + Face Race*Counterfactual Questions + CTNES + (1|Subject)*

The interaction between counterfactual questions and face race did not affect blame in the moral ($\chi_2(1) = 1.14$, $p = 0.28$) or legal ($\chi_2(2) = 2.01$, $p = 0.17$) models.

Face Models

Three models with differing combinations of included cognitive load variables were compared to the full model above. The first face model included the race manipulation but excluded valence. This model was constructed as follows:

Blame ~ Race + Counterfactual Questions + CTNES + (1|Subject)

The inclusion of the face valence did not affect blame in the moral ($\chi_2(1) = 0.06$, $p = 0.81$) or legal ($\chi_2(1) = 0.13$, $p = 0.72$) models.

The second included the valence manipulation but not the race manipulation. The models were constructed as follows:

Blame ~ Valence + Counterfactual Questions + CTNES + (1|Subject)

The inclusion of face race affected blame in the moral model ($\chi_2(2) = 56.85$, $p < 0.001$), lowering blame ratings by about 0.47 ± 0.09 (standard errors) and legal model ($\chi_2(2) = 44.30$, $p < 0.001$), with white faces increasing blame ratings by about 0.49 ± 0.08 (standard errors).

The third included neither the valance nor the race manipulation. This model was constructed as follows:

Blame ~ Counterfactual Questions + CTNES + (1|Subject)

The inclusion of face valence and face race affected blame in the moral model ($\chi_2(3) = 57.01$, $p < 0.001$) and legal model ($\chi_2(3) = 44.31$, $p < 0.001$).

Counterfactual Thinking Models

Three models with differing combinations of included counterfactual thinking propensity variables were compared to the full model above. The first model included the CTNES but not the scenario specific questions. The model was constructed as follows:

Blame ~ Valence + Race + Counterfactual Questions + (1|Subject)

The inclusion of the CTNES did not affect blame in the moral ($\chi_2(1) = 0.07$, $p = 0.79$) or legal ($\chi_2(1) = 0.72$, $p = 0.40$) models.

The second model included the scenario specific questions but not the CTNES. The model was constructed as follows:

Blame ~ Valence + Race + CTNES + (1|Subject)

The inclusion of the counterfactual questions affected blame in the moral model ($\chi_2(1) = 184.64$, $p < 0.001$), increasing blame ratings by about 0.50 ± 0.04 (standard errors) and legal model ($\chi_2(1) = 198.33$, $p < 0.001$), lowering blame ratings by about 0.05 ± 0.03 (standard errors).

The third model of CF included neither the CTNES nor the scenario specific questions. The model was constructed as follows:

Blame ~ Valence + Race + (1|Subject)

The inclusion of questions ascribing counterfactual thought and the CTNES affected blame in the moral model ($\chi_2(3) = 57.01$, $p < 0.001$) and legal model ($\chi_2(3) = 44.31$, $p < 0.001$).

Final Model

The final model chosen based on the model comparisons using the likelihood ratio test, AIC, and parsimony for the moral model was that which included interaction between race and valence without the CTNES. Participant race was controlled for in this final model as well and had no effect on the outcome, interactions, or predictor variables. For full comparison see Table 4.

*Moral Blame ~ Valence*Race + Counterfactual Questions + (1|Subject)*

Endorsement of the counterfactual questions significantly predicted moral ($b = 0.50$, $t(130) = 6.22$, $p < .001$) blame assigned. Inclusion of race also significantly predicted blame when compared to the ambiguous condition, but only when the target race was “white” in the moral blame assigned ($b = 0.54$, $t(130) = 4.47$, $p < .001$). There was a significant interaction between valence and race such that Black neutral faces received less blame ($b = -0.51$, $t(130) = -2.82$, $p < .01$). Overall, the more a participant endorsed the counterfactual statements, the more blame they in turn assigned to the victim in the scenario. The Black neutral faces also received

less blame than the happy or other race faces. This finding was opposite of the hypothesized relationship.

The final model for the legal blame was that which included the interaction between race and the counterfactual thinking questions without the CTNES. Participant race was controlled for in this final model as well and had no effect on the outcome, interactions, or predictor variables.

*Legal Blame ~ Valence + Race*Counterfactual Questions + (1|Subject)*

Endorsement of the counterfactual questions significantly predicted moral (b = 0.50, $t(130) = 6.22$, $p < .001$) blame assigned. There was a significant interaction between valence and race such that counterfactual questions were endorsed less for Black faces, which in turn received less blame (b = -0.51, $t(130) = -2.82$, $p < .01$). Overall, the more a participant endorsed the counterfactual statements, the more blame they in turn assigned to the victim in the scenario. This was not the case for Black faces, which received less endorsement of counterfactual questions and less legal blame. This relationship between race, counterfactual thinking, and blame was opposite of the hypothesized relationship among these variables.

Follow-up Model

In order to better understand how face valence influence counterfactual thinking, a follow-up model using counterfactual thinking as the outcome variable was conducted. The result of that model was that counterfactual questions were endorsed less when the victim in the scenario was White (b = -0.13, $t(130) = -2.36$, $p < .05$).

5 DISCUSSION

According to the CDC, the leading cause of death for African American males between ages 1 – 19 is homicide, which accounted for 35.3% of deaths at the current listing (CDC, 2018). For comparison, for White males of the same age range homicide only accounts for 5.2% of deaths (CDC, 2018). Additionally, Edwards, Lee, and Esposito (2019) found that African American males are 2.5 times more likely than their white counterparts to be killed by police officers. These findings highlight the stark racial disparities in youth mortality that continue to exist in the United States. We know from previous research that people can rely on heuristic processing in situations where race is a salient factor and thus leading to decision-making tainted by racial biases (Correll et al., 2002; Blair et al., 2004; Kleider et al., 2012; Goldinger et al., 2003; Jones & Kaplan, 2003).

In the current studies, factors that influence blame assignment based on race were investigated in crime scenarios. Specifically, how does the propensity for counterfactual thought, cognitive capacity, and face valence play into decision-making when race is a salient factor? Do people who engage in counterfactual thinking rely more heavily on stereotypes? What about those with limited cognitive capacity? Can these negative decision-making strategies be modulated by the emotional valence projected from the perceived victim? The overarching goal of the studies was to test the relationship between the reliance on counterfactual thinking and the reliance on racial stereotypes as well as what factors exacerbate and modulate these responses.

Study 1

In Study 1 it was hypothesized that victim race, propensity for counterfactual thinking, and cognitive capacity (and subsequent load manipulations) would predict the blame assigned to the victim in the scenario. A person's propensity to engage in upward counterfactual thinking

would be related to their propensity to make judgments based on the race of the victim. These factors were also thought to be influenced by the participant's available cognitive resources and working memory capacity. Consistent with previous research on counterfactual thinking and cognitive capacity, this hypothesis was that these variables would have a positive predictive relationship with the blame assigned to the victim in the scenario. The statistically significant differences among the counterfactual measures indicate that those variables are explaining a significant amount of variance in responsibility assigned. Specifically, as propensity to endorse counterfactual thinking increased blame assigned also increased. This finding is consistent with previous literature that indicates a positive relationship between counterfactual thinking and blame assigned to the victim (Goldinger et al., 2003). This finding along with the previous literature suggests that the more likely a person is to engage in "what-if" thinking to picture alternatives to a current negative situation, the more likely they are to blame the victim in the situation (e.g., if only the person had behaved differently, the outcome would have been better). However, the current study diverges from that of Goldinger et al. (2003) in terms of cognitive load and working memory capacity. The differences between the full model and the cognitive load models can be interpreted as the cognitive load and WMC variables do not explain a significant amount of variance in the responsibility assigned. One possible reason for this difference could be the generally high OSPAN scores in the current sample. It is possible that the current participants were able to successfully hold the cognitive load manipulation in mind while continuing to monitor their responses to the questions. Therefore, in this sample, this load manipulation may not have been a difficult enough task to successfully load the participants WMC.

Including race in the model also significantly predicted the blame assigned to the individual in the scenario. However, this effect was in the opposite of the predicted direction. Assigning the race of "Black" to the person in the scenario decreased the amount of blame assigned. A further follow up analysis found that participants were less likely to endorse questions ascribing counterfactual thought when the assigned race in the scenario was "White." Though this finding is opposed to the current literature on the BMC, other research has found that, when race is a salient factor, juror decision making bias is lessened (Sommers & Ellsworth, 2000, 2001). Race of the teen in the scenario was manipulated in the current study, however there was no deception in an attempt to make it a less salient factor. It is possible that the race of the youth in the scenario was salient to the participants in this study, therefore modulating their racial biases. This theory of race salience could also explain why counterfactual thought was ascribed differently based on race. Roese et al. (2005) suggest that when counterfactual thinking is deliberate, it is often related to ongoing goal. If, in this case, race was salient and the participants had an ongoing goal to monitor the race of the person in the scenario, this could explain the endorsement of counterfactual thinking.

Study 2

In Study 2 it was hypothesized that face race, valence, and propensity for counterfactual thinking (both generally and task specific) would impact the blame assigned to the victim in the scenario. Again, engagement in counterfactual thinking would be related to the propensity to make judgments based on the race of the victim. These factors were also thought to be modulated by the facial expression presented on the prime. Consistent with previous research on counterfactual thinking, race, and facial emotion, this hypothesis was that these variables would have a positive predictive relationship with the blame assigned to the victim in the scenario with

the exception of valence. The statistically significant differences among the counterfactual measures indicate that as propensity to endorse counterfactual thinking blame assigned also increased. This finding is again consistent with previous literature on counterfactual thinking and blame assigned (Goldinger et al., 2003). In this study, including race in the model also significantly predicted the blame assigned to the individual in the scenario. However, this effect was in the opposite of the predicted direction. As in Study 1, a further follow-up analysis revealed that participants were less likely to endorse questions ascribing counterfactual thought when the assigned race in the scenario was "White." Therefore, results of both are discussed below. The interaction between valence (facial expression) and race in the best fitting moral model indicated that Black neutral faces received less blame. This finding is not consistent with previous literature on BMC stereotype, which would suggest that Black males would receive more blame. Nor was this finding consistent with the literature on face valence, which would suggest that the happy faces would receive less blame than the neutral faces. The inconsistent result of the face valence could be related to another more recent body of literature on remorse. Funk, Walker, and Todorov (2017) found that faces that were perceived to be remorseful were given less harsh sentences for crimes. These authors proposed that when a person shows remorse, they acknowledge and accept responsibility for a wrongdoing. Faces that are perceived to be remorseful often have a facial expression of raised inner eyebrows, downturned corners of the mouth, and raised cheeks (Funk et al., 2017). Funk and collogues (2017) also note that remorse is a part of a group of "unhappiness" emotional expressions which also include things like sadness, shame and guilt. This group of facial features are opposite to the happy face stimuli used in Study 2. The original theory was that seeing a face that is typically associated with negative stereotypes in a positive light may reduce some of the blame assigned. It seems to have

had the opposite effect which could be explained by this tendency to assign less punishment to faces that seem remorseful. It is possible that the comparison faces in Study 2 had more similar facial expressions to that of remorseful faces, therefore those faces were assigned less blame.

A related theory that could describe the unexpected results of the race manipulation in Study 2 is stereotype suppression, or an effort to resist making stereotypical judgment's in order to appear favorable (Plant & Devine, 1998). Galinsky and Moskowitz (2007) found that stereotype suppression is a controlled decision-making process. However, this would not explain the similar findings from Study 1, in which Black teens in the scenario were assigned less blame under memory load. The individuals under memory load would have limited cognitive resources to suppress active stereotypes, however the pattern of blame assignment based on race remained the same. This finding suggests that the pattern of blame assignment may be related to the sample or some sort of cultural shift instead of an attempt by participants to appear more favorable.

Counterfactual Thinking and the Black Criminal Stereotype

Together, these studies suggest a consistency across multiple manipulations for the relationship between counterfactual thinking, BMC, and blame. The lack of an interaction between counterfactual thinking and cognitive load in Study 1 would suggest that, even when burdened with information, participants are still more likely to assign blame when they endorse counterfactual thoughts. This overall relationship among counterfactual thinking and blame remains consistent across Study 1 and Study 2 in regard to both the moral and legal blame. However, race does influence how much CF is endorsed when it is included as the outcome variable in a model. In Study 2 there was an interaction between counterfactual thinking and race in which Black victims were assigned less blame. Follow-up analyses for both Study 1 and Study

2 revealed that participants were less likely to endorse counterfactual thinking when the victim in the scenario was White compared to Black or unidentified/ambiguous.

This finding is interesting with consideration to the Kahneman and Tversky's (1982) idea of the simulation heuristic. If people do in fact determine the likelihood of an event based on how easy the event is to picture in mind, why were our participants less likely to endorse counterfactual thinking when the victim was White? This finding suggests that the current participants may have found it more difficult to picture a White teen committing the act in the scenario. This makes sense when considered as an alternative to the associations between Black men and criminality found in previous literature (Correll et al., 2002; Blair et al., 2004; Kleider et al., 2012). This research would suggest that it would be significantly easier to picture Black males committing the crimes in the scenarios. By including White males in this scenario, the expectation of the BMC stereotype may have been violated, therefore making it more difficult to imagine White rather than Black males in the scenario.

Another possible theory that could explain the unexpected findings regarding victim race could be attributed to the population used in this study. In past research, the current research population has produced results that were not in line with the previous literature in studies regarding manipulations of race. Specifically, Kleider and colleagues (2012) found that, when using this research population, participants more harshly penalized White defendants in jury decision making scenarios. The current research follows this pattern, therefore the results regarding the race of the youth in the scenario could be the result of the response pattern of the current population of racially diverse undergraduate students from a large university in the Southeastern United States.

Moral versus Legal Blame

The results of these two studies together suggest that in the context of decision making for crime scenarios, moral and legal blame may not always be assigned in a similar pattern. The similarities in the best fitting models for moral and legal blame in Study 1 would suggest that the two constructs were viewed similarly by participants. Regardless of cognitive load and manipulation of race, participants assigned moral and legal blame in similar patterns. This finding is consistent with that of Wikström and Treiber (2007) who found that people often equate moral and legal judgments on behaviors. However, the differences in model fit in Study 2 suggests that, in certain contexts, these two constructs diverge. Moral blame was significantly influenced by an interaction between race and valence while legal blame was influenced by the interaction of race and counterfactual thinking. In both interactions, Black victims were assigned less blame. The neutral face valence receiving less moral blame could again be related to the remorse literature referenced previously (Funk et al., 2017). It follows that if a face was perceived to be remorseful, or accepting responsibility for a wrongdoing, that people may then find that person less morally in the wrong.

Counterfactual Thinking for Negative Events Scale (CTNES)

The CTNES was not a significant predictor of blame in any model in either study. This finding could be the result of the incongruence between the scale itself and the current task. The CTNES asks participants to imagine a negative event that happened to them and then asks questions about that event related to endorsement of counterfactual thoughts. Of the four subscales included in this measure, only one is other referent and therefore related to the present studies. A reason for the lack of relationship between the CTNES and the blame outcome is that the CTNES may be too specifically focused on self-referent counterfactual thinking and not related enough to other-referent counterfactual thinking. It is possible that participants had

different counterfactual thought patterns for scenarios related to themselves than for scenarios related to other people.

Limitations and Future Directions

The most notable limitation of this study was the age range of the participants. The current sample was taken from a college freshman sample with the majority being between the ages of 18 and 21 years. Though several of the studies cited here were conducted on a similar population, variations in response based on participant race cannot be ruled out by this research. Another limitation was the cross-sectional design of the study did not allow for mediation analyses. Future directions for this research should include conducting a longitudinal study to determine whether a mediation relationship exists among race, counterfactual thinking and blame. This analysis could inform if counterfactual thinking mediates the relationship between race and blame in crime scenarios. As the current study is cross-sectional, an analysis examining counterfactual thinking as a mediating variable between race and blame assigned could not be conducted. Cross-sectional mediation analyses often misrepresent the mediational relationship, as a mediational relationship is defined as a relationship over time (O'Laughlin, Martin, & Ferrer, 2018). Even though this analysis was not able to be conducted in good faith at the present time, a future longitudinal study could help to clarify the nature of the relationship among race and blame if counterfactual thinking does indeed mediate that relationship.

Another possible limitation was the context in which counterfactual thinking was measures. The current studies only examined upward, other-referent, counterfactual thinking in reference to blame assignment. Upward counterfactual thinking, or imaging how an event could have turned out better, is associated with generally negative thoughts about the current situation presented (Roese & Olson, 1995). It is possible that other kinds of counterfactual thinking (e.g.,

downward or non-referent counterfactual thinking) could have a different relationship with blame assignment. Future research could examine this relationship by measuring different kinds of counterfactual thinking patters when assigning blame in crime scenarios.

Another future direction would be to have the same group of faces used in Study 2 rated for remorsefulness. As the research by Funk and colleagues (2017) suggests, remorseful faces are assigned lesser punishments based on their association with "acceptance of responsibility." The neutral faces presented in Study 2 may be a closer match to these remorseful faces. This study could clear up the ambiguity around the current results suggesting that happy faces received more blame than neutral faces.

6 FIGURES AND TABLES

Figure 1: Scenarios

Scenario 1: On the evening of August 12th, a male teen was seen walking through a neighborhood by a neighborhood watch citizen around 11:45pm. The neighborhood watch patrol became suspicious because the teen looked to be about 16, it was late at night, and the neighborhood was a gated, private property. The patrol approached the teen to question him. The teen told the patrol to leave him alone and mind his own business. The patrol responded by yelling back as the teen, questioning his reasoning for being in the neighborhood. The teen quickly turned and began walking toward the patrol. The patrol drew his weapon and demanded the teen stop walking and raise his hands. The teen did not raise his hands and the patrol officer fired his weapon, injuring the teen.	Scenario 2: On the night of June 8th around 9:45pm, a male teen was seen by a gas station employee loitering behind the station near the dumpsters. The employee notified the security guard that the teen seemed suspicious. When approached, the teen was on the phone arguing with someone. When the security guard attempted to question the teen, he ignored him. When the security guard raised his voice to get the teen's attention, the teen began walking towards the security guard, but continued talking on the phone. The security guard drew his weapon and demanded the teen stop walking and raise his hands. The teen stopped, took his phone away from his ear and moved his hand towards his pocket. The security guard fired his weapon, injuring the teen.
Scenario 3 On the evening of September 28th, a male teen was seen walking through a neighborhood by a neighborhood watch citizen around 10:15pm. The neighborhood watch patrol became suspicious because the teen looked to be about 16, it was late at night, and the neighborhood was a gated, private property. The patrol approached the teen to question him. The teen yelled at the patrol to leave him alone and mind his own business. The patrol responded by yelling back as the teen, questioning his reasoning for being in the neighborhood. The teen quickly turned and began walking toward the patrol. The patrol drew his weapon and demanded the teen stop walking and raise his hands. The teen refused to raise his hands and the patrol officer fired his weapon, injuring the teen.	Scenario 4 On the evening of August 27th, a male teen was reported by a store clerk for potential shoplifting at 8:30pm. The store was located in a busy suburban area. The teen was described as wearing a hoodie and carrying a backpack. A teen matching that description was seen walking towards the door of the store by a security guard. The security guard yelled at the teen to stop, but the teen continued walking. The security guard attempted to take the backpack from the teen but the teen quickly snatched the bag back. The security guard noticed something metallic on the teen's belt and drew his weapon. The teen moved quickly to set his feet, and the guard fired his weapon, injuring the teen.
Scenario 5	Scenario 6

On the evening of July 20th, a male teen was seen loitering behind a grocery store located off of a busy street by a security guard at 10:30pm. The security guard was stationed at the store as there was recent gang activity reported in the area. The security guard approached the teen and noticed that he appeared to be spray-painting the backside of the building, as there was possibly new graffiti. The security guard yelled at the teen to stop what he was doing and lie on the ground, but the teen did not comply. The security guard then drew his weapon and demanded the teen raise his hands. The security guard noticed something metallic in the teen's hand and fired his weapon, injuring the teen.	On the evening of October 21st, a teen was seen walking through a parking lot of a local high school by a neighborhood watch officer. There had been a recent string of cars being broken in to. The teen appeared to be stumbling and slurring his words while talking on the phone loudly. The teen stopped next to a luxury vehicle in the parking lot and leaned on it. A neighborhood watch officer asked the teen if that was his car but the teen ignored him. The neighborhood watch officer noticed something metallic in the teen's pocket and drew his weapon. The neighborhood watch officer told the teen to lie on the ground but the teen did not comply. The teen then stumbled forward towards the neighborhood watch officer. The neighborhood watch officer fired his weapon, injuring the teen.
Scenario 7 On the afternoon of July 21st, a teen was seen walking through a local park by a neighborhood watch officer. The teen approached a bike rack and began to struggle with one of the bike locks. The neighborhood watch officer approached the teen and asked what he was doing. The teen yelled at the officer to leave him alone and that the bike was his. The teen stood up and began to walk toward the officer. The neighborhood watch officer drew a weapon and told the teen to stop walking. The teen did not stop walking and the neighborhood watch officer fired his weapon, injuring the teen.	Scenario 8 On the evening of August 27th, a male teen was reported by a store clerk for potential shoplifting at 8:30pm. The teen was described as wearing a hoodie and carrying a backpack. A teen matching that description was seen walking towards the door of the store by a security guard. The security guard yelled at the teen to stop, but the teen began walking faster. The security guard attempted to take the backpack from the teen but the teen quickly snatched the bag back, saying it was his. The security guard noticed something metallic on the teen's belt and drew his weapon. The teen moved quickly, and the guard fired his weapon, injuring the teen.
Scenario 9 On the afternoon of July 21st, a male teen was seen walking through a local park by a neighborhood watch officer. The teen approached a bike rack and began to struggle with one of the bike locks. The neighborhood watch officer approached the teen and asked what he was doing. The teen yelled at the officer to leave him alone and that the bike was his. The teen stood up and	Scenario 10 On the night of February 4th around 10:30pm, a teenage male was reported loitering around an apartment building where there has been a series of recent break-ins. The building security guard office was notified. The teen was initially agitated when approached by a security guard and questioned. While being questioned the teen had his hands in his pockets. When asked to

began to walk toward the officer. The neighborhood watch officer drew a weapon and told the teen to stop walking. The teen did not stop walking and the neighborhood watch officer fired his weapon, injuring the teen.	remove them, the teen refused and began yelling at the guard. The security guard then drew his weapon and demanded the teen raise his hands. When the teen removed his hands from his pockets the security guard saw something metallic in his hand and fired his weapon, injuring the teen.
Scenario11 On the evening of April 17th, a MARTA security guard reported that a teen had attempted to steal a woman's purse on the blue line. The teen was described as wearing a white t-shirt and an Atlanta braves baseball cap. The security guard saw a teen matching that description in one of the terminals and approached him. The teen refused to speak to the security guard when he questioned his previous whereabouts. The security guard told the teen to remain there while he called the police. The teen quickly got up and began walking towards the security guard. The security guard drew his weapon and told the teen to sit back down. The security guard noticed something metallic in the teen's hand and fired his weapon, injuring the teen.	Scenario 12 On the night of April 23rd around 11:30pm, a teenage male was reported casing cars in a parking lot, which has had break-ins in the past. The parking security guard office was notified. The guard made his way to that area of the parking lot. The security guard approached a teen matching that description in the parking lot. The teen was calm at first but because agitated when asked why he was there. When asked to sit still, the teen refused and began yelling at the guard. The security guard then drew his weapon and demanded the teen raise his hands. When the teen removed his hands from his pockets the security guard saw something metallic in his hand and fired his weapon, injuring the teen.
Scenario 13 On the night of June 8th around 9:45pm, a male teen was seen by a fast food employee loitering behind their store. The employee notified the security guard that they felt something was off. When approached, the teen began walking quickly away form the back of the store. When the security guard attempted to question the teen, he ignored him. When the security guard raised his voice to get the teen's attention, the teen stopped but still did not answer. The security guard drew his weapon, demanded the teen stop raise his hands. The teen began walking toward the guard took his phone away from his ear and moved his hand towards his pocket. The security guard fired his weapon, injuring the teen.	Scenario 14 On the evening of March 31st, a male teen was reported as a runaway by his parents. The teen was reported to be wearing a dark jacket and a baseball cap. A neighborhood watch officer saw a teen that matched that description walking down the side of a road at the front of the neighborhood. The officer approached the teen and asked him his name. The teen responded by telling the neighborhood watch officer to leave him alone. When the officer did not stop following the teen, the teen began yelling at the officer to get back and leave him alone. The officer drew his weapon and told the teen to raise his hands. The teen did not raise his hands and began walking towards the guard. The patrol officer fired his weapon, injuring the teen.
Scenario 15	Scenario 16

On the night of June 12th, a security guard reported a male teen loitering in a park hours after the park had closed. The security guard approached the teen and asked him why he was still in the park after hours. The teen told the security guard that he was leaving and began to walk away in another direction. The security guard stopped the teen and told him to leave the park. The teen put his hands in his pockets and moved towards the guard. The security guard drew his weapon and told the teen to put his hands up. The teen quickly removed his hand from his pocket and the guard saw something metallic in his had. The security guard fired his weapon injuring the teen.	On the night of June 12th, a security guard reported a male teen loitering in a park hours after the park had closed. The security guard approached the teen and asked him why he was still in the park after hours. The teen told the security guard that he was leaving and began to walk away in another direction. The security guard stopped the teen and told him to leave the park. The teen put his hands in his pockets and moved towards the guard. The security guard drew his weapon and told the teen to put his hands up. The teen quickly removed his hand from his pocket and the guard saw something metallic in his had. The security guard fired his weapon injuring the teen.

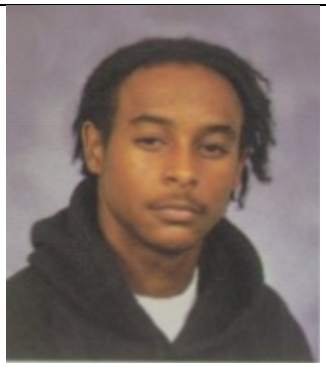
Table 1: Overall Face Ratings for the Original 45 Faces

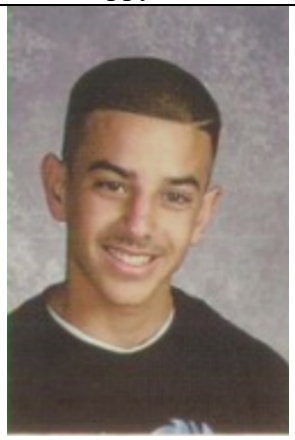
Descriptive Statistics for Overall Faces Rated (n = 20)

	n	*Minimum*	*Maximum*	*Mean*	*SD*
Ambiguous	20	2.70	4.81	3.49	0.59
Black	20	1.55	4.93	3.59	1.22
White	20	1.53	4.97	2.54	1.22
Angry	20	1.22	3.31	1.93	0.53
Happy	20	1.64	6.32	3.99	1.79
Neutral	20	1.73	5.57	3.91	1.27
Teenager	20	4.86	6.19	5.63	0.33

Note: Mean scores reported based on agreement on a 1-7 Likert scale.

Figure 2: Images with Mean Ratings

	Neutral	Happy
Black	 Black: 4.64 Neutral: 5.20	 Black: 4.89 Happy: 6.30
Black	 Black: 4.77 Neutral: 5.26	 Black: 4.72 Happy: 5.96
White	 White: 4.57 Neutral: 5.30	 White: 4.76 Happy: 5.82

White	 White: 4.58 Neutral: 5.55	 White: 4.64 Happy: 6.30
Racially Ambiguous	 Racially Ambiguous: 4.81 Neutral: 5.55	 Racially Ambiguous: 4.32 Happy: 6.26
Racially Ambiguous	 Racially Ambiguous: 4.26 Neutral: 5.55	 Racially Ambiguous: 4.65 Happy: 6.12

Racially Ambiguous	 Racially Ambiguous: 4.55 Neutral: 5.57	 Racially Ambiguous: 4.69 Happy: 5.68

Table 2: Study 1 Descriptive Information

Correlations and Descriptive Statistics for Study 1 Variables (n = 146)

	1	2	3	4	5
1. Moral Responsibility	-				
2. Legal Responsibility	.80	-			
3. Counterfactual Thinking	.42	.37	-		
4. CTNES[a]	.09	.08	.05	-	
5. OSPAN[b]	.12	.11	.07	.12	-
Min	1.00	1.00	1.00	1.00	13.00
Max	7.00	7.00	7.00	5.00	74.00
Mean	3.62	3.46	4.27	3.27	56.62
SD	1.86	1.90	1.56	0.97	11.94

Note: [a]Counterfactual thinking for negative events scale. [b]Operation span

Table 3: Means by Categorical Variables for Study 1

Mean Ratings by Categorical Variables for Study 1 (n = 146)

Scenario Race	Load	Moral Blame	Legal Blame	CF
Black	Load	3.76	3.38	4.48
	No Load	3.31	3.12	4.30
White	Load	3.49	3.27	3.87
	No Load	3.70	3.48	4.16
None	No Load	3.79	3.64	4.32

Note: [a]Counterfactual thinking. Mean scores reported based on agreement on a 1-7 Likert scale.

Table 4: CFA Table Study 1

Parameter Estimates for Study 1 CFA

Relation/Variable	Estimate	SE	Ratio	*p*	Std
Factor Loadings					
Blame by Moral Blame	1.00	—[a]	—	—	0.95
Blame by Legal Blame	0.91	0.03	30.12	<0.01	0.85
Blame by Counterfactual Thinking	0.39	0.02	19.94	<0.01	0.44
Means/Intercepts					
Moral Blame	3.63	0.04	94.38	<0.01	1.95
Legal Blame	3.46	0.04	87.78	<0.01	1.82
Counterfactual Thinking	4.27	0.03	132.17	<0.01	2.74
Observed/Error Variances					
Moral Blame	0.34	0.09	3.57	<0.01	0.10
Legal Blame	1.03	0.08	12.32	<0.01	0.28
Counterfactual Thinking	1.96	0.06	33.15	<0.01	0.80
Factor Variance					
Blame (factor)	3.12	0.14	22.67	<0.01	1.00

Table 5: Study 1 Model Comparison

Study 1 Linear Mixed Effects Model Comparisons (n = 146)

Model	*Equation*	*Moral AIC*	*Moral X^2 Full*	*Legal AIC*	*Legal X^2 Full*
Full	Blame ~ OSPAN + Load + Race + Counterfactual Questions + CTNES + (1|Subject)	8522.4	-	8662.6	-
Interaction Load/Race	Blame ~ OSPAN + Load *Race + Counterfactual Questions + CTNES + (1|Subject)	8524.1	$p = 0.61$	8662.6	$p = 0.16$
Interaction Race/CF	Blame ~ OSPAN + Load + Race*Counterfactual Questions + CTNES + (1|Subject)	8527.8	$p = 0.90$	8667.2	$p = 0.72$
Load	Blame ~ WMC + Race + Counterfactual Questions + CTNES + (1|Subject)	8522.4	$p = 0.74$	8661.6	$p = 0.95$
WMC	Blame ~ Load + Race + Counterfactual Questions + CTNES + (1|Subject)	8522.4	$p = 0.05$	8663.5	$p = 0.09$
WMC/Load	Blame ~ Race + Counterfactual Questions + CTNES + (1|Subject)	8522.5	$p = 0.15$	8661.5	$p = 0.23$
CF	Blame ~ OSPAN + Load + Race + (1|Subject)	8863.9	**$p < 0.001$*****	8911.8	**$p < 0.001$*****
CNTES	Blame ~ OSPAN + Load + Race + Counterfactual Questions + (1|Subject)	8522.6	$p = 0.15$	8661.8	$p = 0.27$
CF/CNTES	Blame ~ OSPAN + Load + Race + CTNES + (1|Subject)	8864.3	**$p < 0.001$*****	8911.4	**$p < 0.001$*****
Race	Blame ~ OSPAN + Load + Counterfactual Questions + CTNES + (1|Subject)	8886.9	**$p < 0.001$*****	8945.5	**$p < 0.001$*****

Table 6: Study 1 Final Model

Summary of Regression Analysis for Variables Predicting Blame (N = 146)

	Moral Blame			Legal Blame		
Variable	*B*	*SE B*	*β*	*B*	*SE B*	*β*
(Intercept)	1.34	0.31	4.42***	1.52	0.33	4.62***
Counterfactual	0.46	0.02	19.32***	0.40	0.02	16.36***
CTNES	0.14	0.08	1.68	0.12	0.09	1.30
Race: Black	-0.44	0.08	-5.42***	-0.51	0.08	6.08***
Race: White	-0.02	0.08	-0.22	-0.10	0.08	-1.24

Note: CTNES = Counterfactual thinking for negative events scale
*$p < .05$, **$p < .01$, ***$p < .001$

Table 7: Study 2 Model Comparison

Correlations and Descriptive Statistics for Study 2 Variables (n = 138)

	1	2	3	4
1. Moral Responsibility	-			
2. Legal Responsibility	.69	-		
3. Counterfactual Thinking	.37	.37	-	
5. CTNES[a]	.05	.02	.17	-
Min	1.00	1.00	1.00	1.00
Max	7.00	7.00	7.00	5.00
Mean	3.42	3.21	4.18	3.12
SD	1.96	1.93	1.40	1.09

Note: [a]Counterfactual thinking for negative events scale.

Table 8: Means by Categorical Variables for Study 2

Mean Ratings by Categorical Variables for Study 2 (n = 138)

Face Race	Face Valence	Moral Blame	Legal Blame	CF[a]
Black	Happy	3.29	3.14	4.26
	Neutral	2.97	2.94	4.16
White	Happy	3.72	3.55	4.06
	Neutral	3.82	3.50	4.13
Ambiguous	Happy	3.24	3.03	4.18
	Neutral	3.54	3.22	4.31

Note: [a]Counterfactual thinking. Mean scores based on agreement on a 1-7 Likert scale.

Table 9: CFA Table Study 2

Parameter Estimates for Study 2 CFA

Relation/Variable	Estimate	SE	Ratio	*p*	Std
Factor Loadings					
Blame by Moral Blame	1.00	—[a]	—	—	0.83
Blame by Legal Blame	0.99	0.05	19.11	<0.01	0.83
Blame by Counterfactual Thinking	0.38	0.02	15.99	<0.01	0.44
Means/Intercepts					
Moral Blame	3.42	0.05	71.64	<0.01	2.15
Legal Blame	3.21	0.05	68.43	<0.01	2.43
Counterfactual Thinking	4.18	0.03	122.94	<0.01	1.59
Observed/Error Variances					
Moral Blame	1.20	0.13	8.99	<0.01	0.31
Legal Blame	1.16	0.13	8.95	<0.01	0.31
Counterfactual Thinking	1.57	0.06	27.5	<0.01	0.80
Factor Variance					
Blame (factor)	2.64	0.18	14.77	<0.01	1.00

Table 10: Study 2 Model Comparison

Study 2 Linear Mixed Effects Model Comparisons (n = 138)

Model	*Equation*	*Moral AIC*	*Moral X^2 Full*	*Legal AIC*	*Legal X^2 Full*
Full	Blame ~ Valence + Race + Counterfactual Questions + CTNES + (1|Subject)	6450.2	-	6330.8	-
Interaction Valence/Race	Blame ~ Valence*Race + Counterfactual Questions + CTNES + (1|Subject)	6446.2	***p* < 0.05***	6331.7	*p* = 0.22
Interaction Valence/Race no CTNES	Blame ~ Valence*Race + Counterfactual Questions + (1|Subject)	6444.2	***p* < 0.01****	6330.5	*p* = 0.13
Interaction CF/Race	Blame ~ Valence + Race*Counterfactual Questions + CTNES + (1|Subject)	6451.1	*p* = 0.21	6326.8	***p* < 0.05***
Interaction CF/Race no CTNES	Blame ~ Valence + Race*Counterfactual Questions + (1|Subject)	6449.1	*p* = 0.08	6325.5	***p* < 0.01****
Interaction Valence/CF	Blame ~ Race + Valence*Counterfactual Questions + CTNES + (1|Subject)	6451.0	*p* = 0.28	6330.8	*p* = 0.16
CF	Blame ~ Valence + Race + (1|Subject)	6632.8	***p* < 0.001*****	6527.1	***p* < 0.001*****
CTNES	Blame ~ Valence + Race + CTNES + (1|Subject)	6448.2	*p* = 0.78	6329.5	*p* = 0.50
CF Questions	Blame ~ Valence + Race + Counterfactual Questions + (1|Subject)	6501.2	***p* < 0.001*****	6369.1	***p* < 0.001*****
Valence	Blame ~ Race + Counterfactual Questions + CTNES + (1|Subject)	6448.2	*p* = 0.81	6328.9	*p* = 0.72
Race	Blame ~ Valence + Counterfactual Questions + CTNES + (1|Subject)	6503.0	***p* < 0.001*****	6371.1	***p* < 0.001*****
Valence/Race	Blame ~ Counterfactual Questions + CTNES + (1|Subject)	6501.2	***p* < 0.001*****	6269.1	***p* < 0.001*****

Table 11: Study 2 Final Moral Model

Summary of Regression Analysis for Variables Predicting Moral Blame (N = 138)

	Moral Blame		
Variable	*B*	*SE B*	*β*
(Intercept)	1.17	0.10	6.22***
Valence: Neutral	0.23	0.12	1.19
Race: Black	0.006	0.10	0.05
Race: White	0.54	0.12	4.47***
Counterfactual	0.50	0.03	13.93***
Neutral: Black	-0.50	0.18	-2.82**
Neutral: White	-0.18	0.18	-1.00

Note: CTNES = Counterfactual thinking for negative events scale
*$p < .05$, **$p < .01$,***$p < .001$

Table 12: Study 2 Final Legal Model

Summary of Regression Analysis for Variables Predicting Legal Blame (N = 138)

	Legal Blame		
Variable	*B*	*SE B*	*β*
(Intercept)	0.91	0.23	4.00***
Valence: Neutral	-0.03	0.07	-0.45
Race: Black	0.43	0.27	1.61
Race: White	0.21	0.28	0.75
Counterfactual	0.52	0.05	11.03***
Black: CF	-0.12	0.06	-1.91*
White: CF	0.07	0.06	0.29

Note: CTNES = Counterfactual thinking for negative events scale
*$p < .05$, **$p < .01$,***$p < .001$

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