IMPLICIT BIAS AND THE CORRESPONDING EFFECTS ON FALSE MEMORIES

By

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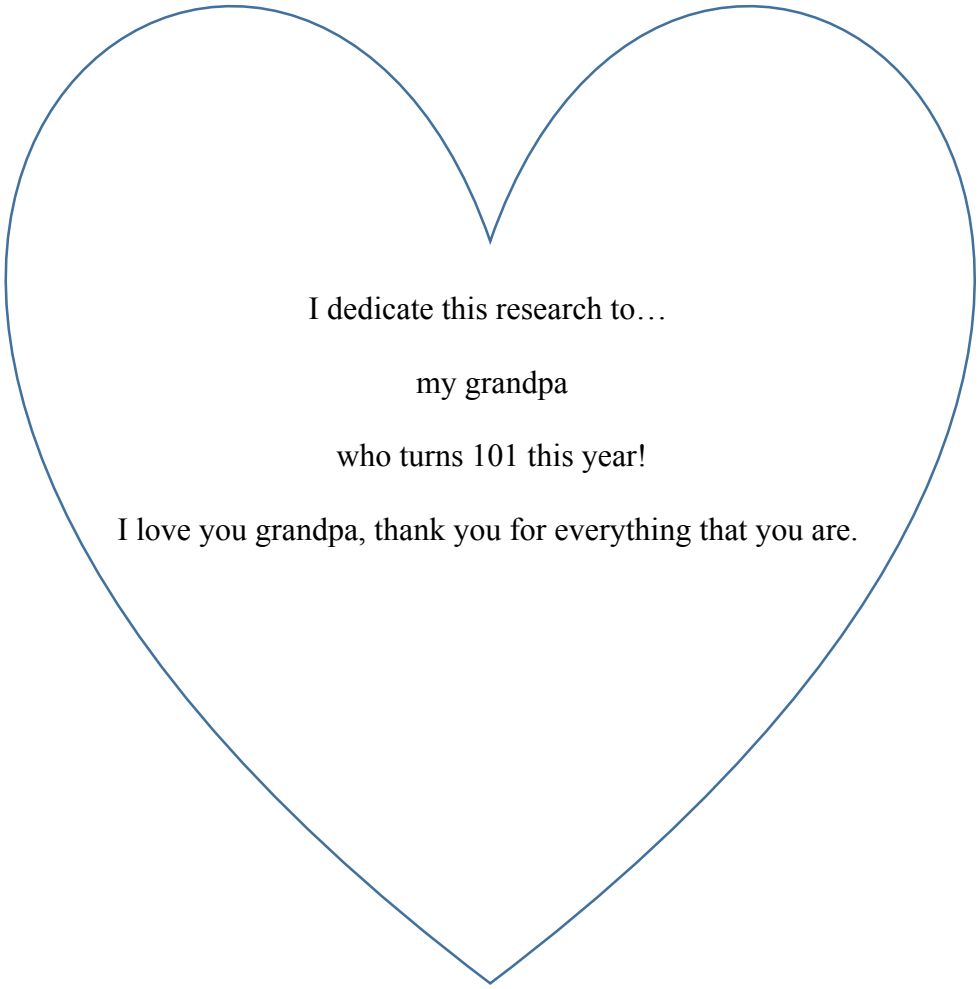
I dedicate this research to…
my grandpa
who turns 101 this year!
I love you grandpa, thank you for everything that you are.

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ABSTRACT

This study explored relationships among implicit bias in memory. Using the Correll, Park, Judd, & Wittenbring, (2002) videogame, participants decided to either shoot or not shoot avatars at random, based on if the avatar was armed or unarmed in order to capture the effect of ethnicity and perceived danger. In past literature participants demonstrate implicit bias by "shooting" an armed African American avatar more quickly in comparison to European American avatars, and "not shooting" unarmed avatars more quickly if he was European American. This study did not replicate those findings, and instead found that participants' accuracy varied on what the avatar was holding independent of race. To demonstrate racial implicit associations may result in identification errors, participants read a narrative adapted from Helm, Ceci, and Burd (2016). The findings within this study did not find a significant variation in group means, based on the analysis of memory in the narrative.

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CHAPTER I: INTRODUCTION

Overview

Thoughts and attitudes are deemed implicit if we are oblivious of them or misguided about their nature. A person has a bias when, opposed to being neutral, said person develops a liking for (or dislike to) groups of people or a person (Staats, Capatosto, Wright, Contractor, 2015). Therefore, the term implicit bias is used when a given person displays attitudes towards people and/or associate stereotypes with or without conscious knowledge. Some of the research about this topic relate specifically to how a person's racially driven implicit bias may alter their reaction time to respond to specific racial stimuli.

A false memory is a distorted and/or fictitious recollection of an event. The subject matter of false memories is not arbitrary, but rather is formed by expectancies surfacing from stereotypes about social groups (Sherman, Groom, Ehrenberg, & Klauer, 2003). Our memory of preceding events can affect our future opinions and decisions but also more significant outcomes, such as court verdicts, when influenced by stereotyped errors of memory. The research about memory within this topic of false memories relates specifically to a person's recollection of a crime that took place.

Understanding the set of social circumstances and cultural influences that coexists with a person's biasness is necessary, prior to analyzing the product of such. That is, research results related to implicit bias should be considered in a social context—not in isolation to the actual experiment that takes place. Both measurement tools within this study highlight the attitudes or stereotypes that may result from activities (in the views of some including myself) that represent social injustice. If viewed in this way, the content

of this study seems relevant to the Black Lives Matter social movement where the goal is for a world where people of color are "no longer systematically targeted for demise" (Black Lives Matter Global Network, 2018). Once we categorize and understand implicit bias and its corresponding effects, we may "desire to influence systems-level change" (National Association of School Psychologists, 2018, p. 1). Further, understanding these results within a cultural contexts points to the importance of conducting research specifically focused on linking racially driven implicit bias, with false memories related to crime "because of adverse outcomes such as special education disproportionality and the school-to-prison pipeline, which is a byproduct of ineffective discipline practices for non-majority students" (National Association of School Psychologists, 2017, p. 2). The aim of the present research is to at best replicate findings similar to previous studies about implicit bias and false memories, by extending Helm, Ceci, and Burd (2016) with Correll, Park, Judd, and Wittenbring's (2002) procedures into a correlational design.

Attitudes or Stereotypes

"The underlying attitudes and stereotypes that lead to implicit bias are beliefs or simple associations a person makes between an object, including other individuals, and their subsequent evaluation of that object" (National Association of School Psychologists, 2017, p. 2). Implicit bias is prompted by personal experiences, and the framework is established by learned associations amid perceived qualities within social categories, including gender and/or race. Racially driven implicit bias can manifest as a result of casting down particular pigmentations/ethnicities, which in turn coincides with uplifting other pigmentations/ethnicities superiorly (Clark & Clark, 1940; Greenwald & Kreiger, 2006). The racialization of biased ideologies, although predominately perceived

as a subconscious behavior is indirectly correlated to the cultural undertone of the given society (Lawrence, 1987; Lynch, 2013). Thus, biases should be considered within context of the particular society in which the biases are perpetuated—not in isolation to its sociological function.

A stereotype is an unvarying conception of inferred characteristics universally applied to a given collection of ascribed entities (Banaji & Bhaskar, 2000; Bandura, Barbaranelli, Caprara, & Pastorelli, 2001; Banaji & Greenwald, 1995; Hamilton & Ture, 2011; Lawrence, 1987; Lynch, 2013; Mendez & Crawford, 2002; Osborne & Davies, 2012, 2014; Payne, Jacoby, & Lambert, 2004; Schmader & Johns, 2003; Sherman et al., 2003; Slusher & Anderson, 1987; Steele & Aronson, 1995; Williams & Davidson, 2009). For example, documented in the year of 1883, Frederick Douglass had illustrated the inclination of held perspectives within the south to "impute crime to color" as guilt was habitually ascribed to people of color (Foner, 1955; Obasogie & Newman, 2016). This imposed racial interpretation of crime has not ceased since the 19th century as similar circumstances emerge within modern day in the form of racial profiling (Davis, 2003). Beyond dispute there resides stereotypes categorically targeted within ethnic groups, nationalities, genders, social clubs, political parties, occupations, and even families (Lenton. Blair, & Hastie, 2001).

Stereotype-consistent expectancies, stereotype-based expectancies, and/or expectancy-consistent stereotypes all describe expectancy-driven processes which "are biased in the direction of maintaining the preexisting belief system, that is the very stereotype that initiated these biasing mechanisms. These processes, can produce the cognitive confirmation of one's stereotypic beliefs. Although the actual information

available may not confirm the stereotype, the observer's perceptual experience is consistent with those beliefs. If that information is better retained, and if it is retrieved and used at the time judgments are made, then those judgements would be biased in an expectancy-consistent direction" (Hamilton, Sherman, & Ruvolo, 1990, pp. 39-40).

The study of Correll et al. (2002) sought to measure the manner in which racial stereotypes influences reaction time to either not shoot unarmed stimuli or shoot armed stimuli. Correll et al. (2002) is rooted in the historical context of the pattern in police officers often shooting to kill unarmed African Americans, specifically the 1999 death of Amadou Diallo. Diallo was an unarmed West African immigrant that was shot 41 times by four officers, who inaccurately believed he resembled the suspect they were pursuing. Of particular concern to the inquiry of Diallo's death, and others alike, expressly but not reduced to the deaths in 2018 Antwan Rose of Pittsburg, 2017 Charleena Lyles of Seattle, 2016 Sylville Smith of Milwaukee, 2016 Keith Scott of Charlotte, 2016 Philando Castile of Minnesota, 2015 Sandra Bland of Waller County, 2015 Freddie Gray of Baltimore, 2015 Eric Garner of NYC, and 2014 Michael Brown of Ferguson is the likelihood that the police officers' choice to shoot was swayed by the stereotypic association between violence and African Americans. Previous research and historical events support the tendency to interpret the behavior of an African American as meaner and threatening in comparison to a European American exhibiting the same behavior (Correll et al., 2002, 2006; National Association of School Psychologists, 2017, 2018; Okonofua & Eberhardt, 2015; Payne et al., 2004). This has been represented by reaction times on the Police Officer's Dilemma videogame (Correll et al., 2002), negative stereotypes, racism, and racial attitudes involving African Americans' productivity in society, perceiving that as a

person of color you are either an, "athlete, gang member, or police officer" (LoConto & Francis, 2005, p. 220).

Most indications of race bias mirror a mixture of cognitive and affective processes (Clark & Clark 1939, 1940, 1950), such as the thought that African American men are dangerous, thus when in close proximity the feelings of angst might arise (Stevens, 2015). The utmost frequently conveyed African American stereotypes are habitually negative in nature (Clark & Clark, 1939, 1940, 1950; Dade, Tartakov, Hargrave, & Leigh, 2015; Project Implicit, 2011). Often, preconceived judgements are founded on philosophies concerning a person's social group as a whole, as opposed to on the specific action of the person being judged (Banaji & Bhaskar, 2000). A person's stereotypical belief is categorized as entities that are available to conscious awareness and responsive conscious control (Banaji & Bhaskar, 2000; Banaji & Greenwald, 1994,1995).

Literature review on racial attitudes or stereotypes. Clark and Clark (1939, 1940, 1950), were the first to scientifically recognize the direct linkage between racial identification and the problematic origin of racial attitudes. Their study has been informally recognized as "The Doll Test" (NAACP Legal Defense and Educational Fund, 2017). In the study there were a total of four dolls. Two of the dolls had brown skin and black plastic painted hair, and the other two dolls had peach skin and plastic painted yellow hair. To control for any bias related to the clothing of the baby dolls, each doll had on an identical white diaper only. In addition, all placement of body parts was presented exactly the same for each doll.

Participants (253 African American children, age 3-7 years) equated the African American doll with negative characteristics such as the doll "looks bad." Contrariwise,

the participants associated the European American doll with qualities, such as identifying it as the doll that "is the nice doll, has a nice color, and like best" (Clark & Clark, 1939). Clark and Clark (1939, 1940, 1950) affirmed that the relationship between the race awareness and racial attitudes of their sample of African American children, had an adverse impact on their own personal racial preferences and/or perspectives. Children's social expectations that are often times based on race, functions as a contributor to their self-awareness, ego development, and ultimately influences racial identification (Clark & Clark, 1940). Clark and Clark (1939, 1940, 1950) concluded that discrimination, prejudice, and segregation crafted an impression of inferiority amid African-American children and impaired their self-esteem. Historically their research was later incorporated into the 1954 trial of Brown v. Board of Education which concluded that separate schools based entirely on color were unconstitutional (Library of Congress, n.d.). More recently this experiment was replicated in its entirety in an experimentation documented via film, the results yielded the same findings as in the 1940s (as cited in Parham, White, & Ajamu, 2015).

Implicit Bias

The theory of implicit cognition represents attitudes or stereotypes that affect our mental processes; such as the functioning of our understanding, actions, and decisions in an implied rather than expressively stated manner (Staats, et al., 2015). Implicit bias is the encoding process whereby an individual converts and maintains information (such as characteristics about an individual) into a falsified recognition, as a result of personal preconceptions. According to Project Implicit (2011), recall may be skewed because a person is either unwilling to share (act of a conscious behavior) or unable to differentiate

fact from personal bias (act of an unconscious behavior). A variant of this term has been represented in scholarly literature illustrating implicit behavior in forms of: implicit learning, implicit stereotypes, implicit memory, and implicit evaluation. (e.g., Greenwald & Kreiger, 2006).

Implicit bias has been measured by quantifying a person's reaction time to associate two concepts and two evaluations or stereotypes (e.g., Amodio & Devine, 2006; Banaji & Bhaskar, 2000; Banaji & Greenwald, 1995; Greenwald, Nosek, and Banaji, 2003; Lenton et al., 2001; Macrae, Schloerscheidt, Bodenhausen, & Milne, 2002; Osborne & Davies, 2012; Payne et al., 2004; Project Implicit, 2011; Schmidt & Nosek, 2010; Sherman et al., 2003; Slusher & Anderson, 1987; Williams & Davidson, 2009). Implicit bias is often measured using the standard Implicit Association Test (IAT). The IAT aims to quantify implicit attitudes by assessing their fundamental automatic evaluation (Greenwald, McGhee, & Schwartz, 1998). This is done by measuring the reaction time it takes for participants to associate a target-concept discrimination, with an attribute dimension (Greenwald et al., 1998). For example, an IAT might look at the concept association of gender (e.g., Male, Female) and occupations that are stereotypically dominated by a specific gender (e.g., hairdresser, engineer). IAT scores are based on the reaction time it takes a participant, on average, to sort both concepts and evaluations in comparison to when the categories and evaluations are opposite to what they were previously (Correll et al., 2002, 2006; Project Implicit, 2011). The IAT is typically administered on a computer for accurate calculations of reaction time (Greenwald et al., 1998). The implicit association method is sensitive enough to reveal

other automatic associations and attitudes even for participants who wish to conceal such attitudes (Greenwald et al., 1998).

The purpose of the earliest IAT was to measure the association between categories of flowers and insects with the evaluation of pleasant and unpleasant words (Greenwald et al., 1998). Since the Greenwald et al. (1998) study various adaptions of the IAT have been used to evaluate implicit associations of gender, race, age attitudes, math-arts attitudes, candidate preference for the 2000 presidential election, and self-esteem to contrast equally with attributes characterized as being good and bad. (Greenwald et al., 2003). In previous research, participants have been presented with a target-concept pair to measure implicit race attitude (Greenwald et al., 2003). The strength associations between African Americans and European Americans with evaluation of adverse stimuli, typically determines the level of bias (Project Implicit, 2011). These basic target-concept pair tasks that are used in the IAT for race attitudes, are similarly adopted by the Police Officer's Dilemma videogame (Correll, et al., 2002, 2006). While playing the IAT based video game, participants were instructed to quickly sort the stimuli into categories represented by the pressing of a separate key (Correll et al., 2002, 2006; Project Implicit, 2011). In this videogame the participants' task was to shoot any avatar who is holding a gun (the bad guys) by pressing Q on the keyboard. If an avatar is holding something other than a gun he is a good guy, and the participant should not shoot him by pressing the P on the keyboard. So, if the category "Threatening Individuals" appeared, and a picture of a person holding a gun appeared on the screen, participants would press the corresponding shoot key (Correll et al., 2002, 2006; Project Implicit, 2011). When categorizing target-concept pairs, a faster reaction time often was observed when categorizing Caucasians

with positive characteristics, as compared to negative characteristics suggesting an interpretable implicit act of preference for Whites (Schmidt & Nosek, 2010).

Amid the IAT, such categories are combined and participants are asked to sort both concepts and evaluation stimuli (Correll et al., 2002, 2006; Project Implicit, 2011). Thus, the categories of "Threatening Individuals" holding a gun would be European Americans/Shoot and the categories of "Nonthreatening Individuals" would be African Americans/Don't Shoot. Lastly, the fourth part of IAT switches the placement of these categories (Project Implicit, 2011). Such that, if the category of "Threatening Individuals" was previously European Americans holding a gun, now it would be European Americans not holding a gun. Similar to the IAT, the categories within the Police Officer's Dilemma also are combined in a way that is opposite of what they were before, thus if the category of "Threatening Individuals" was previously European Americans/Shoot, the concept pair would now be African Americans/Shoot.

Literature review on the projections of implicit and explicit bias. Within three connected studies, Amodio and Devine (2006), examined the variance of implicit stereotyping and implicit evaluation in race bias. By doing such, Amodio and Devine (2006) illustrated that the process of implicit stereotyping involves cognitive processing "and should predict instrumental behaviors such as judgements and impression formation" (p. 652). Amodio and Devine (2006), hypothesized that both implicit stereotyping and implicit evaluation are two independent constructs that individually impact behavior. However, both implicit evaluation and implicit stereotyping are two constructs under the umbrella of implicit bias (Amodio & Devine, 2006). Using the Implicit Association Test (IATs), 151 European American college participants were

instructed to classify words as either unpleasant or pleasant, then identify 20 faces as either being racially Black or White (Amodio & Devine, 2006). To do this the participants simply pressed one of two keys on a keyboard for their responses in five blocks of trials. The participants also characterized seemingly positive attributes of intelligence and athleticism/rhythmicity as either being mental or physical.

In order to evaluate the level of implicit bias amongst participants Amodio and Devine (2006) measured word type (pleasant or unpleasant) and ethnicity of faces (Black or White) via a 2 x 2 repeated measures ANOVA. IAT scores are typically represented by effect sizes. Conventional small, medium, and large values of *D* are .2, .5, and .8, respectively. (Greenwald et al., 1998). Amodio and Devine (2006) found that Black faces were often associated with negative implicit evaluations compared to White faces based on the *D* statistic. All tests were two-tailed. Evaluative IAT scores were significantly greater than zero ($M = .51$, $SD = .42$), $t(147) = 14.60$, $p < .001$, $r = .77$" (Amodio & Devine, 2006, p. 655). The *D* statistic was defined as the difference between mean reaction times categorizing the compatible trials (Black faces and Unpleasant words/ White faces and Pleasant words) and incompatible trials (White faces and Unpleasant words/Black faces and Pleasant words), divided by the pooled standard deviation of reaction times for all trials. In short, participants were more likely to categorize a face of an African American with an unpleasant word more frequently than if it were paired with a pleasant word.

In Study 2, Amodio and Devine (2006) sought to identify if implicit stereotyping and implicit evaluation have a separate impact on behavior with the use of stereotyping and evaluative IATs, which goes beyond the scope of this paper. In Study 3, Amodio and

Devine (2006) started the experiment completing IATs identical to the previous two studies with 21 former European American participants. The researchers then followed up by informing the participants that they would interact with another African American participant. Together the participant and the hypothetical African American partner would work together to complete academic tests (verbal and mathematical) and non-academic tasks (pop culture and sports). After receiving this information, the participants were asked to rate how well they felt the African American partner and themselves would perform on the given tasks. The researchers later informed the participants that they would join their partner in another setting. Meanwhile, the participants needed to wait in the hallway where the imaginary partner's belongings already were. In the hallway there were 8 chairs equal distances apart. The researchers measured how far apart the participants' selection of chair was to the chair where the hypothetical African American would sit. On average, the participants sat 1.7 (SD = .78) chairs away from the African American partner's belongings. The researchers concluded that high implicit stereotyping IAT values significantly predicted stereotype-consistent expectancies for the African American partner's performance. The expectancies were based on the preconceptions the participants had of the fictitious African American partner's inadequate performance on academic tasks. But perceived comparative achievement on tasks that were nonacademic, were rated relative to the participants' own personal estimated performance. Also, that participants with high levels of implicit evaluation corresponding to the evaluative IAT values selected to sit further away from the African American partner's belongings β = .44, $t(18) = 2.10$, p = .05, sr = .44.

It has been theorized that a public figure can alter the perceptions of the people within that society (Lynch, 2009; Stimson, 1991). Resultantly, Schmidt and Nosek (2010) sought to monitor the overall implicit and explicit bias projected amongst a large sample of American participants. This tracking period lasted throughout the 2008 Obama campaign and first-term election. Participants were defined as any person who visited the Project Implicit database and completed the randomized race IAT between the announcement of Obama's campaign (September 28, 2006) and a few months after his inauguration (May 11, 2009). Participants were presented with questions to assess explicit attitudes of racial preferences in the format of a 7-point Likert scale (e.g., ''I strongly prefer African Americans to European Americans," ''I strongly prefer European Americans to African Americans"). Implicit Bias was measured via the reaction time participants categorized Black and White faces in combination with either pleasant or unpleasant words. The researchers found minor deviations of implicit racial preference in the first month of the data gathering and the last month of data collection (Schmidt & Nosek, 2010). Participants implicitly showed preferences for White Americans over Black Americans (*IAT D* = .34, *STD* = .45, t[479403] = 524.41, $p < .0001$, $d = .76$) and Also, it appeared throughout the duration of the study that explicit Pro-White racial attitudes increased $F(1, 479403) = 51.66$, $p < .0001$, $\beta = 1 \times 10$. These findings become particularly relevant to this paper as Schmidt and Nosek (2010) reminds the reader that the stereotypes of yesteryear have not forsaken society's (un)consciousness, and unfortunately increasing in magnitude (e.g., "by month, the smallest *IAT D* was .326 and the largest was .361 (*STD* = .008)", p. 310).

Correll et al. (2002) in 4 separate studies sought to measure the manner in which racial stereotypes influences reaction time to either not shoot unarmed stimuli or shoot armed stimuli. The videogame consisted of about 80 images in total of African American and European American males equally holding either non-gun objects or a gun. To play this videogame, participants needed to quickly press the Q key to shoot or P to not shoot, based on the object the avatar was holding. "The game awarded and deducted points on the basis of performance. A hit (correctly shooting a target holding a gun) earned 10 points, and a correct rejection (not shooting a target holding some non-gun object) earned 5 points. A false alarm (shooting a target holding a non-gun) was punished by taking away 20 points, and a miss (not shooting a target holding a gun) resulted in our harshest penalty: a loss of 40 points" (Correll et al., 2002, p. 1317). Participants' reaction times were recorded for each trial along with their keyed responses to shoot or not shoot. Some of the studies followed up with questionnaires or a recognition test in regards to examining the degree to which participants endorsed or were aware of African American stereotypes.

Correll et al. (2002) used a 2 X 2 within-subject design with Object Type and Target Ethnicity as repeated factors to calculate results in the videogame. Object Type was defined as gun or no gun, and Target Ethnicities was defined as European American or African American images. The results of Study 1-4 showed that when participants were presented with an avatar holding a gun they responded significantly quicker to make the correct decision to shoot, in comparison to making the correct decision not to shoot when the avatar held a non-gun object. Further analysis indicated that participants pressed the shoot key more quickly if the avatar was an armed African American in

comparison to an armed European American $F(1, 39) = 10.89$, $p < .005$. Additionally, participants pressed the not shoot key more quickly if the avatar was an unarmed European American in comparison to an unarmed African American $F(1, 39) = 9.77$, $p < .005$. There appeared to be an interaction effect between Object and Ethnicity $F(1, 39) = 21.86$, $p < .0001$. Participants illustrated a tendency to make more false alarms (deciding to shoot an unarmed avatar) than misses (failing to shoot an armed avatar) toward African American stimuli, comparative to European American stimuli. The cultural stereotype questionnaire was also used to assess the participant's awareness that African Americans are often stereotypically categorized as violent. Responses on this measure continued to predict biased responses in the videogame. Several studies including Correll et al. (2002) have indicated that cultural stereotypes can be instinctively activated even when a person does not endorse said cultural stereotypes (Banaji & Greenwald, 1995; Gilbert & Hixon, 1991). "A police officer's split-second decision of whether or not to pull the trigger in response to a Black man's holding an ambiguous object (e.g., Correll et al., 2002; Payne et al., 2004) may be influenced by an implicit association between Black men and guns" (Conrey et al., 2005, p. 480).

In summary these studies combined demonstrate the stereotypes, assumptions, and/or unintentional actions (rather negative or positive) participants make towards others based on various identity labels like ethnicity. The trend of the findings indicate that African Americans are often implicitly associated with some form of negative connotation. The manifestation of how the level of implicit bias is expressed varies, and could be in the form of a belief that an African American partner would be less effective,

simply associating an unpleasant word with African Americans, or deciding to shoot an African American more quickly.

False Memories

There are two fundamental errors attributed to recall: forgetting experiences that happened formerly and recalling events that did not happen (Brainerd & Reyna, 2002; Kleider, Pezdek, Goldinger, & Kirk, 2008; Roediger & McDermott, 2000). A false memory is a person's invalid illusory recall of an occurrence that never took place. The function of a false memory can occur as either manufacturing "filters" that reduce input from memory, or by "adding" false information which could further exaggerate expectancy-consistent cognitive tendencies (Banaji & Greenwald, 1995; Lenton et al., 2001). The matter of false memories is frequently not contingent solely upon one's discretion, but moderately formed by personal experience arising from stereotypes concerning social groups (Sherman et al., 2003). Yet and still, memory distortions may arise because of a variety of factors that are unique to the particular event being recalled (Loftus & Pickrell, 1995).

Literature review on the relation of expectancy-consistent false alarms.

Lenton et al., (2001) tested the hypothesis that social stereotypes have a direct impact on the formation of false memories. The study was based on social stereotypes of gender and its impact on false memories. In two studies, Lenton et al. (2001) sought to see if participants would be able to indirectly associate stereotypical gender occupations with other roles and traits. If participants demonstrated this behavior, they hypothesized it would be due to the mediating variable that these occupations are considered either stereotypical feminine roles or stereotypical masculine roles.

The first study of Lenton et al. (2001) contained three phases: presentation of the memory list, the test of recognition, and evaluation of theme awareness. In the presentation of the memory list, (e.g., exposure phase), participants were given five lists of 15 words with one word on each page in a flip-book. Four lists were taken from a previous study of Roediger and McDermott (1995), all words of these lists appeared to be gender neutral. The fifth list contained either a set of 15 stereotypical male or female occupations, for example: secretary, nurse, housekeeper as female occupations and president, detective, coach as male occupations. Participants were then given a distraction task, and subsequent recognition test which consisted of 46 words: 10 studied words and 36 non-studied/stereotypical lures. Studied words were words being directly taken from the exposure phase lists. Non-studied words/ stereotypical lures are words that the participants had not been directly exposed to, yet entices similar categorization. For example, in Lenton et al. (2001) an example stereotypical lure may be warm and caring as a feminine trait lure, along with active and wise as a masculine trait lure. The participants were instructed to identify their level of recognition of each word on a 4-point Likert Scale. Lenton et al. (2001) found participants were exceedingly prone to make a false alarm toward lures that were stereotypically accordant with the occupation-trait exposure list, in comparison to stereotypically inconsistent lures of the same list. Simply put, false memories are shaped via indirect stereotype associations. For example, in Lenton et al. (2001) participants would have false memories for recalling hairdresser within the female occupation word list due to indirect stereotypes associating this occupation with femininity. Another example, Lenton et al. (2001) participants would

have false memories for recalling engineer within the male occupation word list due to indirect stereotypes associating this occupation with masculinity.

In the second experiment of Lenton et al. (2001), the experimenters measured if participants' false memories were the product of implicit associative processes or strategic use of gist information. The researchers had contemplated if participants' memory strategies included gender as an underlining theme, but failed to recognize it as a strategy in the evaluation of theme awareness phase previously. The researchers modified phase three by questioning the participants about discerning any themes, and following up with a 7-point Likert scale to rate if this theme was utilized to make recall decisions. False alarm results yielded similar findings as Experiment 1. In terms of theme awareness, "stereotype memory errors did not result from the strategic use of gist information as 92% of the participants were not aware that the exposure list contained gender-related information" (Lenton et al., 2001 p. 10). The researchers concluded any explicit judgements made within Experiment 1 and 2 did not significantly impact results. Lenton et al. (2001) is particularly relevant to this thesis because it demonstrates how a participant's memory can be altered by their held preconceived notions.

Banaji and Bhaskar (2000) utilized a variation of the gender-fame framework used in previous research. The gender-fame framework often associates males with fame in comparison to females. In this study participants were exposed to 2 stereotypical European American names (Adam McCarthy and Frank Smith) and 2 stereotypical African American names (Darnell Jones and Tyrone Washington). The researchers implemented the fame component by informing the participants they may be familiar with said name, because it belongs to a high-profile criminal. Participants were instructed

to identify each name as criminal or noncriminal. Data revealed that participants categorized black names as criminals 1.7 times more frequently than white names. The researchers hypothesized if participants who significantly display race bias, are aware that their assessment is influenced by the perceived race of the stimulus. To assess for this, some participants were informed of potential biases and while other participants were given no background information. Banaji and Bhaskar (2000) found no significant differences in the frequency of increased labeling of African American names as criminals regardless if provided demographics beforehand. Instead the researchers purposed that the participants' behavior demonstrated the influence preconceptions have on false memories concerning vital attributes of a person's character, more so than providing prior knowledge. This further demonstrates that any preconceived opinions effects recognition (Loftus & Pickrell, 1995; Smeets et al., 2006).

Helm et al. (2016) sought to determine the relation between implicit bias and false memories amongst 350 undergraduate college participants. Helm et al. (2016) incorporated an eyewitness identification methodology in order to measure the formation of participant's false memories, and an IAT to measure implicit bias. The eyewitness identification methodology can be thought of as an identity parade or a police lineup, which is the process of a witness confirming the identification of the suspect. The researchers hypothesized that identification errors may transpire from potential bias concerning any implicit associations the face of the stimuli may evoke. For example, a participant may apply expectancy- consistent attributions of guilt to a particular face or ethnicity, and falsely remember that a given face was a part of the crime scenario.

For the false memory component, participants were shown a descriptive narrative involving a purse snatching crime. Each crime narrative included images of the characters as they were presented in the crime. Every story contained four European American characters (the victim, the purse-snatcher, and the two pursuers). After the distraction task, participants had to select who the purse snatcher was amongst a three-person lineup. In 2/3 of the conditions the purse snatcher presented in the narrative was present in the lineup. For the other 1/3 of the conditions, participants were presented with a target-absent lineup in which the actual purse snatcher was not an answer choice. The source for misattribution error came from participants' misremembering their selection of the purse snatcher to be accurate. After another distraction task and the Implicit Association Test was completed, participants completed one more identification task, which this time contained the actual purse snatcher in every condition. The results of the Helm et al., (2016) study concluded that 32.1% of the participants who were in the initial target-absent lineup condition had a false memory, they incorrectly selected the purse snatcher, while 10.7% of the participants in the other target-present condition had a false memory when selecting the purse snatcher in the final line-up incorrectly. The findings within this study and research regarding memory recall, demonstrate the variability of our memories, emphasizing that many variables can affect our capacity to remember accurately—particularly the association with guilt.

Importance of Proposed Research

The importance of this research is that it questions to what extent does racially driven implicit biases have a direct impact on reaction time and memory? In my view, the proposed components of this bias correlates to the cultural overtone of western society,

and mirrors the situational injustices reported regularly in the news, media, and history. "Many people avoid these discussions because they fear that conversations about race, bias, and racism lead to feelings of anger, guilt, discomfort, sadness, and at times disrespect. The current state of our Union, however, no longer allows for these tough conversations to be ignored. While uncomfortable for some, school psychologists are in a position to lead or at least participate in these conversations" (National Association of School Psychologists, 2016, p. 1). It is imperative to be cognizant that social race related stereotypes are still very much present even in today's society. With this understanding we must acknowledge that stereotypes hinder our ability to recall objectively and accurately, as well as respond appropriately.

Current Research Objective

The central objective of this research is to associate how a person's racially driven implicit bias may alter their reaction time to respond to specific racial stimuli. Implicit bias in multiple studies has served as a predictor for false alarms in participants' memory for similar racial content. This study aims to add to the body of studies already completed (e.g., Correll et al., 2002; Helm et al., 2016) by replicating with a different group of participants.

Research Hypotheses

Hypothesis I. On the first-person-shooter videogame (Correll et al., 2002) participants will demonstrate high levels of Implicit Bias by choosing to shoot photographs of armed people more quickly and more frequently when the photograph appears to be African American, in comparison to European American photographs. The same participants demonstrating bias will also be more prone to incorrectly discern

threating stimuli by shooting unarmed African American stimuli at a more frequent rate than European American stimuli thus illustrating Implicit Bias for race.

Hypothesis II. In the pattern of false memories, participants will inaccurately recall African American faces as being guilty more frequently than European American faces on a given Crime Scenario and Initial Identification tasks taken from Helm et al., 2016.

Hypothesis III. There will be a within-subject correlation between hypothesis I and hypothesis II. Participants with high levels of Implicit Bias on the first-person-shooter videogame (Correll et al., 2002) will also have high levels of False Memories.

CHAPTER II: METHOD

Participants

Sixty-four undergraduate students ($N = 64$) at Middle Tennessee State University were recruited through the MTSU Experiment Sign-Up System (SONA). The sample included college students enrolled in General Psychology. See Table 1 for demographic statistics. The total sample consisted of 23 males, 39 females, and 2 participants identifying as Genderqueer. Based on the participants' report of their ethnicity majority of participants were Other (47%; n = 30) or Black/African American (36%; n = 23). The age groups were almost equally represented with the exception of participants 19 years or younger (82.8%; n = 53). Freshman (75%; n = 48) were the most represented class in the study. Prior to recruiting participants and collecting data, this study gained approval from the Institutional Review Board (IRB) at Middle Tennessee State University (see Appendix A). Before participating, all participants were provided information about the purpose of the study and provided informed consent. Participants received credit for their participation in psychological research, in effort to fulfill requirements in the General Psychology 1410 course.

Table 1. Demographic Information.

Variable	*n*	%
Age (*N* = 64)		
19 years or younger	53	82.8
20 to 29 years old	9	14.1
30 to 39 years old	2	3.1
40 years or older	0	0
Class (*N* = 64)		
Freshman	48	75
Sophomore	15	23.4
Junior	3	4.7
Senior	3	4.7
Graduate	0	0
Gender (*N* = 64)		
Male	23	35.9
Female	39	60.9
Transgender	0	0
Genderqueer	2	3.1
Race/ Ethnicity (*N* = 64)		
Asian/Pacific Islander	2	3.1
Black/ African American	23	35.9
Hispanic or Latino	8	12.5
Native American/ American Indian	0	0
Other	30	46.9
White/ European American	1	1.6

Measures

Measure of Demographics. A brief demographics questionnaire was completed by each participant during the distraction task asking age, gender, classification in school, ethnicity, etc. (see Appendix J).

Measure of Implicit Bias. Implicit Bias was measured with *The Police Officer's Dilemma* videogame obtained from Correll et al., (2002) research concerning the effect of ethnicity on decisions to shoot/don't shoot. The videogame utilized a total of 80 target images with 20 backdrops. Twenty young adult males, 10 European American and 10 African American, were enlisted at a college or university to model as targets within the videogame. Individually, targets appeared in the videogame four times, twice as stimuli in the no-gun condition plus twice as stimuli in the gun condition, accompanying a distinct object and in a distinctive pose every time (five poses were used in the videogame). There were two guns (a black 9-mm pistol and a silver snub-nosed revolver) and four non-gun objects (a silver camera, silver-colored aluminum can, a black wallet, and a black cell phone). All objects, within condition, emerged equally frequent in each of the five poses. The stimuli were overlaid randomly on the 20 determined backdrops that resembled nature, office, and city scenery; such that each backdrop was used only once in the four conditions also no target appeared on the same backdrop more than once (see Appendix K).

Measure of False Memories. To measure false memories, participants were told that they are to assist in a pretend investigation that took place roughly one week ago by reading a crime narrative adopted from the Helm et al. (2016) study. The storyline involves a victim, a purse-snatcher, and two pursuers. The victim in all crime narratives were a woman, similar to Helm et al. (2016). Participants were unaware about completing a subsequent recognition task until they are exposed to the identification question items. Participants were exposed to four narratives (approximately 150 words each) describing a crime. Each narrative presented were accompanied by identifying photos of characters

described in the crime. As each character is described 256 x 310 pixels booking photographs appeared on the computer screen for the duration of the narrative, next to the characters' description. A description of crime scenario, perpetrators, along with the victim are described below in Appendix B - E.

All photographs were selected from public record via the bustedmugshots.com online database. Pictures were selected after the use of a counterbalance scheme to ensure that all ethnicities (Asian American, African American, European American, and Other Ethnicities) were represented as a mugshot within the crime narrative. In the counterbalance scheme the perpetrators were only represented as either African Americans or European Americans, to align with ethnicities of the avatars in Correll et al. (2002). Images for the pursuers and victims were selected based on their ethnicity to fulfil the counterbalance scheme. Such that all other characters in the story (the victim and two pursuers) were either African American, Asian American, European American, or Other. After the selection of the perpetrator and pursuer images, one lure was selected for every 'old picture' on the premise that they resembled a character in the narrative. A resemblance was indicated by similar phenotypical features (e.g., facial features, hair texture, eye color, skin tone). Pursuer lures were also included, in case participants may have improperly encoded that a purse pursuer was the actual purse snatcher. In sum 28 mugshots were used in total, of which 24 mugshots (removing victim mugshots) were used in the recognition task. See Appendix F - I for a visual that includes a summary of mugshots for each character.

Procedure

All stimuli from this study were presented to the participants on Dell CRT monitors located inside a small testing room on the campus of Middle Tennessee State University. Prior to the commencement of each psychological experimentation, participants were provided with a consent form to complete, in order to confirm that she or he agrees to the procedures and is aware of any potential risks that might be involved. Participants were instructed to play *The Police Officer's Dilemma* videogame presented on the monitors. To play this game, participants must observe the object that the target images are holding. If the object being held is a gun (a black 9-mm pistol or a silver snub-nosed revolver) the participant must press the "Q" key to shoot. However, if the object being held is a non-gun object (a silver camera, silver-colored aluminum can, a black wallet, or a black cell phone) the participant must press the "P" key to not shoot. Participants made their decision to shoot/don't shoot on a total of 80 target images at random. To calculate implicit bias, the reaction time it takes the participant to make the decision to shoot or not shoot was automatically calculated by the videogame's software. Similar to previous research, the *D* statistic quantified implicit bias by measuring the difference between incompatible (African American Avatars/ Don't Shoot and European American Avatars/ Shoot) and compatible (African American Avatars/ Shoot and European American Avatars/Don't Shoot) mean reaction times divided by the pooled standard deviation of reaction times on compatible and incompatible blocks (Amodio & Devine, 2006), as an interaction effect for each participant.

The videogame started with sixteen items listed as the null. This is the practice portion of the video game, where the participant practices how to play the video game.

The *Police Officer's Dilemma* presented avatars with an ethnicity that is European American and African American. Categorically both ethnicities of the avatars were presented to the participants armed and unarmed, meaning the avatars were holding a gun or something else. The videogame automatically coded the images as *ba* (African American and Armed), *bu* (African American and Unarmed), *wa* (European American and Armed), and *wu* (European American and Unarmed).

When making the decision to shoot or not shoot the avatars, the participants are allowed at random 500 to 1,000 *ms* to make a response. Recorded responses are based on if the participant pressed *Q* to shoot or *P* to not shoot. If the participant responded in a timely fashion, the videogame automatically coded this as a 1, 0's are given if the participant didn't respond at all or too slowly to be recorded in the amount of time provided. After selecting the key, participants were notified if they made the correct choice, incorrect choice, or if their response was too slow. Additionally, scores are awarded to the participants. 10 points were granted if the participant correctly shot an avatar holding a gun (a hit). 5 points were granted if the participant chooses to not shoot an avatar holding something other than a gun (correct rejection). The participants loss 20 points each time they select to shoot an avatar holding something other than a gun (false alarm). Each participant also loss 40 points for each time they do not shoot an avatar holding a gun (a miss).

Upon the completion of *The Police Officer's Dilemma* videogame, participants partaken in the second half of the study concerning the effect of ethnicity on the ability to recall a crime scenario and initial identification. Participants were instructed to read four illustrated crime narratives about a pretend incident that took place recently at random.

Across all conditions, the crime narrative included a plot about a purse-snatcher, a victim, and two purse pursuers at random. The narrative was accompanied by character images presented in the form of roughly 256 X 310 pixels booking photographs, for as long as the participant is reading the narrative. Participants self-paced the amount of time they need to read each narrative. After the presentation of the four crime scenarios, participants completed a five-minute distraction task in which they were asked to fill out a short questionnaire about their demographics and complete simple math problems. Once the distracter task is completed, participants made one of three responses (Perpetrator, Pursuer, or New Image) to each of the 24 mugshots presented at random one at a time, in relation to the crime narrative. Participants had 5 seconds to respond to each item with a 500-ms inter-stimulus interval. When all participants have completed the experiment, they were debriefed and thanked for their participation.

CHAPTER III: RESULTS

Descriptive Statistics and Analytical Plan

This study incorporated four 2 X 2 within-subject analysis of variance (ANOVA) designs with Implicit Bias in the shoot task (Target Ethnicity vs. Object Type) and False Guilty Memories (Face vs. Role) as repeated measures. The first ANOVA was an analysis of reaction time with the shooter task, and the second ANOVA analyzed the accuracy in the shooter task. Both of these are 2 (Target Ethnicity: African American vs European American) X 2 (Object Type: Armed vs Unarmed) within-subject ANOVAs. The third ANOVA was an analysis of memory in the purse snatcher task as measured by hit rate, and the fourth ANOVA analyzed false alarms in the purse snatcher task. Both of these are 2 (Face: African American vs European American) X 2 (Role: Pursuer vs Perpetrator (or New Image in the false alarm analysis)) within-subject ANOVAs. This statistic was used to identify the *F*-ratio to test the overall fit of the linear model. Within this analytical plan the linear model is defined in terms of group means, and the resulting ANOVA is utilized for an overall test of whether the group means differ. Implicit bias dependent variables consisted of measures of reaction time within the Implicit Association Test (Police Officer's Dilemma videogame). Hits/False Alarms on the recognition task were the dependent variables for the False Memory component. The means, standard deviations, and the standardized difference between means for all measures are presented below in Table 2 and Table 3. Table 4 includes the Pearson correlation of Implicit Bias and False Memories.

Table 2. Reaction times and error rates as a function of target ethnicity and object type in Experiment 1.

	Reaction Time			Accuracy per 25 Trials		
Object Type	European American Targets	African American Targets	Mean	European American Targets	African American Targets	Mean
Armed Targets	432.47 (42.21)*	437.57 (42.70)	435.02 (42.46)	.71 (.15)	.74 (.16)	.73 (.16)
Unarmed Targets	430.00 (49.31)	423.82 (60.17)	426.91 (54.74)	.62 (.16)	.64 (.17)	.63 (.17)
Mean	431.24 (45.76)	430.70 (51.44)	430.97 (48.6)	.67 (.16)	.69 (.17)	.68 (.17)

*Parenthetical values are standard deviations of the means.

Table 3. Correct and false identifications by face in Experiment 1.

	Hits			False Alarms		
Face	Perpetrator	Pursuer	Mean	Pursuer	New Image	Mean
African American	.59 (.35)*	.50 (.50)	.55 (.43)	.23 (.42)	.24 (.27)	.24 (.35)
European American	.59 (.37)	.55 (.50)	.57 (.44)	.17 (.38)	.32 (.27)	.25 (.33)
Mean	.59 (.36)	.53 (.50)	.56 (.44)	.20 (.80)	.28 (.27)	.25 (.34)

*Parenthetical values are standard deviations of the means.

Table 4. Pearson Correlations among implicit bias and false memories in Experiment 1 (n = 64).

	African American New Image False Alarm	European American New Image False Alarm	African American Pursuer False Alarm	European American Pursuer False Alarm
Implicit Bias	-.16	.08	.07	.15
African American New Image False Alarm		.04	.14	-.00
European American New Image False Alarm			.12	-.14
African American Pursuer False Alarm				.24
European American Pursuer False Alarm				1

*Correlation significant at the .05 level (two-tailed)

**Correlation significant at the .01 level (two-tailed)

Analysis of Variance

All descriptions below are in reference to the data represented in the Correll et al., (2002) The Police Officer's Dilemma videogame and the Helm et al. (2016) inspired The Purse Snatcher crime narrative, which occurred for this study. The descriptions directly below are in reference to the data represented in the Correll et al., (2002) *The Police Officer's Dilemma* videogame which occurred for this study. In the first part of this experiment, participants saw images of avatars that were different ethnicities. The task was to decide to shoot or not shoot based on perceived level of danger. There were two factors, ethnicity (African American or European American) and what the avatar was holding (armed or unarmed). Thus, the design was a 2 x 2 ANOVA. A with-in subject repeated measures ANOVA was run to assess whether the within-participant variance was due to the effect of the manipulation constructed from the independent variables, and that be based on individual differences. A total of two univariate repeated measures ANOVAs were conducted. The initial ANOVA was conducted to determine whether avatar's ethnicity and what the avatar was holding is a significant predictor of shooting reaction time. The last ANOVA was conducted to determine whether the avatar's ethnicity and what the avatar was holding are significant predictors of shooting accuracy responses based on perceived level of danger.

The first of the four ANOVAs investigated whether African American and European American avatar's ethnicity, and what the avatar was holding are significant predictors of shooting reaction time. A significant main effect of ethnicity was not identified, F (1,65) = 0.02, MSE = 1180.42, $p > .05$, $\eta^2 = .000$. A significant main effect of object type also not identified, F (1,65) = 2.03, MSE = 882.59, $p > .05$, $\eta^2 = .030$.

Whereas the object type condition elicited slower reaction times amongst participants when presented with armed avatars (M = 435.02, sd = 42.46) in comparison to unarmed avatars (M = 426.91, sd = 54.74), but this difference was not significant. This lack of a significant main effect indicates a nonsignificant decrease of reaction times for African American and European American avatars from the armed condition to the unarmed condition. The interaction between avatar ethnicity and what the avatar was holding was also not significant, F (1,65) = 2.38, MSE = 2097.24, $p > .05$, $\eta^2 = .035$. The lack of a significant interaction shows that the Target Ethnicity and Object Type did not combine, or interact, to influence response times.

The next ANOVA was conducted to determine whether the avatar's ethnicity and what the avatar was holding are significant predictors of shooting accuracy responses based on perceived level of danger. The Mauchly's Test of Sphercity, indicated that the assumption of sphericity can be assumed. A significant main effect of ethnicity was identified, F (1,65) = 4.59, MSE = 0.01, $p < .05$, $\eta^2 = .066$. This main effect indicates that participants were more accurate when deciding to shoot or not shoot African American avatars (M = 0.69, sd = 0.17), in comparison to the accuracy amongst European American avatars (M = 0.67, sd = 0.16). A significant main effect of what the avatar was holding was also identified, F (1,65) = 26.22, MSE = 0.61, $p < .01$, $\eta^2 = .287$. This main effect indicates that participants were more accurate when deciding to shoot or not shoot armed avatars (M = 0.73, sd = 0.16), by pressing indicated keys in comparison to unarmed avatar counterparts (M = 0.63, sd = 0.17) independent of race. The lack of a significant main effect indicates a nonsignificant decrease of accuracy for African American and European American avatars from the armed condition to the unarmed

condition. However, the interaction between avatar ethnicity and what the avatar was holding was not significant, F (1,65) = 0.25, MSE = 0.02, p >.05, η^2 = .004. The lack of a significant interaction indicates that the Target Ethnicity and Object Type did not combine, or interact, to influence accuracy.

In order to calculate Implicit Bias, shooter bias amongst participants was determined by quantifying the differences in reaction time between unarmed European American avatars versus unarmed African American avatars, and armed European American Avatars versus armed African American avatars. That is, with Reaction Time as the dependent variable, calculating (Shoot armed Black – Shoot armed White) + (Don't shoot unarmed White – Don't shoot unarmed Black) for each participant. This specific formula was constructed from the interpretation of Correll et al. (2002) which read: "Shooter Bias, indicate faster responses to unarmed White than to unarmed African American targets, and to armed African American than armed White targets" (Correll et al., 2002, p. 1322). High negative scores would indicate a bias toward shooting African Americans, whereas positive scores would indicate a bias toward shooting European Americans. No bias would lead to scores near 0. The average of all participants' shooter bias (M = 11.27 ms, sd = 59.42 ms) yielded almost no bias amongst participants.

The descriptions directly below are in reference to the data represented in the Helm et al. (2016) inspired *The Purse Snatcher* crime narrative, which occurred for this study. In the second part of this study, participants read crime narratives about several characters. The task was to decide if the character's mugshot was the pursuer, perpetrator, or a new image. There were two factors, face (African American or European American mugshots) and the character's role in the story (Pursuer or Perpetrator). Thus, design was

a 2 x 2 ANOVA. A total of two univariate repeated measures ANOVAs were conducted. The subsequent ANOVA was conducted to determine whether the character's mugshot and what the character's role was in the story are significant predictors of hits. The last ANOVA was conducted to determine whether the character's mugshot and what the character's role was in the story are significant predictors of false alarms.

The third ANOVA investigated whether the African American and European American mugshot face, and what the character's role was in the crime narrative are significant predictors of hit rates. A significant main effect of face was not identified, F (1,63) = 0.20, MSE = 0.17, p >.05, η^2 = .046. Participants attained less hit rates in the crime narrative for African American mugshots (M = 0.55, sd =.43) in comparison to European American mugshots (M = 0.57, sd = 0.44), but this difference was not reliable. A significant main effect for role was also not identified, F (1,63) = 3.04, MSE = 0.10, p > .05, η^2 = .003. This main effect indicates a nonsignificant average of participants correctly identifying the crime narrative character's role for perpetrators (M= 0.59, sd = 0.36) in comparison to pursuers (M = 0.53, sd = .50). The lack of a significant main effect indicates a nonsignificant decrease of hits for African American and European American mugshots from the pursuer condition to the perpetrator condition. The interaction between face and role was not significant, F (1, 63) = 0.19, MSE = 0.18, p > .05, η^2 = .003. The lack of a significant interaction effect shows Face and Role did not combine, or interact, to influence hit rates.

The last ANOVA was conducted to determine whether the character's mugshot and what the character's role was in the story are significant predictors of false alarms. A significant main effect of face was not identified, F (1,63) = 0.04, MSE = 0.09, p >

.05, η^2 = .047. When controlling for the character's ethnicity amongst European American mugshots (*M* = 0.25, *sd* = .33) and African American mugshots (*M* = 0.24, *sd* = .35), there were no significant differences in the extent to which the face of the character in the crime narrative was associated with false alarms. A significant main effect of role was also not identified, *F* (1,63) = 3.14, *MSE* = 0.13, *p* > .05, η^2 = .001. On average participants were more likely to falsely identify the crime narrative character's role for new images (*M*= 0.28, *sd* = 0.27) in comparison to pursuers (*M* = 0.20, *sd* = .40), but this effect was not significant. The lack of a significant main indicates a nonsignificant increase of false alarms for African American and European American mugshots from the pursuer condition to the new image condition. The interaction between face and role was not significant, *F* (1, 63) = 3.08, *MSE* = 0.10, *p* > .05, η^2 = .047. The lack of a significant interaction indicates Face and Role did not combine, or interact, to influence false alarms.

A Bivariate Pearson correlation analysis was performed to examine the relationship between Implicit Bias in the Correll et al., (2002) *The Police Officer's Dilemma* videogame and False Memories in the Helm et al. (2016) inspired *The Purse Snatcher* crime narrative. The obtained relationship between Implicit Bias and African American New Image False Alarms was negative, mild in strength and not statistically significant *r* (64) = -.16, *p* > .05. The obtained relationship between Implicit Bias and European American New Image False Alarms was positive, mild in strength and not statistically significant *r* (64) = 0.08, *p* > .05. The obtained relationship between Implicit Bias and African American Pursuer False Alarms was positive, mild in strength and not statistically significant *r* (64) = 0.07, *p* > .05. The obtained relationship between Implicit

Bias and European American Pursuer False Alarms was positive, mild in strength and not statistically significant r (64) = 0.15, $p > .05$. Consequently, the null hypothesis cannot be rejected as there is no association between participants' level of Implicit Bias on the Correll et al., (2002) *The Police Officer's Dilemma* videogame and False Memories in the Helm et al. (2016) inspired *The Purse Snatcher* crime narrative.

CHAPTER IV: DISCUSSION

The findings of the current experiment are in contrast to all hypotheses proposed in the introduction. The ultimate goal was to assess the influence of the avatar's ethnicity in the Correll et al., (2002) *The Police Officer's Dilemma* videogame on the decision to shoot armed avatars and not shoot unarmed avatars. It was rationalized that participants might incorporate negative stereotypes and/or attitudes that African Americans are presumably more violent in comparison to holding attitudes that are positive in nature (Correll et al., 2002; Helm et al., 2016; Payne et al., 2004). Thus participants were hypothesized to consequently respond with greater accuracy and speed to expectancy-consistent targets (unarmed European American avatars and armed African American avatars) than to expectancy-inconsistent avatars (unarmed African Americans and armed European Americans), based on the previous research of Correll et al. (2002). However, this research found that participants were more accurate in response to African American photos. This finding contradicts Hypothesis I, if participants were biased toward shooting African American avatars, then they should be less accurate in their shooting responses, but participants were more accurate in the Correll et al., (2002) *The Police Officer's Dilemma* videogame.

Despite these nonsignificant findings, history has both quantitatively and qualitatively illustrated that people of color are in greater magnitude, and chronically subjected to higher frequencies of assaults and aggressions (Clark, Mercer, Zeigler-Hill, & Dufrene, 2012; Franklin, 1999; National Association of School Psychologists, 2016; Parham et al., 2015; Pierce, 1995; Sue, Bucceri, Lin, Nadal, & Torin, 2007). Micro-aggressions are not simply isolated to a particular race and/or ethnicity. The focus group

analysis in Sue et al., (2007) identified 8 major micro-aggressive themes directed toward Asian American participants. Within two focus groups of five, participants of different Asian backgrounds and cultures identified as experiencing the following common micro-aggressions: "(a) alien in own land, (b) ascription of intelligence, (c) exoticization of Asian women, (d) invalidation of interethnic differences, (e) denial of racial reality, (f) pathologizing cultural values/communication styles, (g) second class citizenship, and (h) invisibility" (Sue et al., 2007, pp. 93-96).

> NASP believes that racism, prejudice, and discrimination harm all children and youth, and have a profoundly negative effect on school achievement, self-efficacy, and social–emotional growth. Poor student outcomes for all historically marginalized groups ultimately damage the well-being of our nation because of the long-term implications of educational success for adult employment, civic engagement, and health (as cited in National Association of School Psychologists, 2012).

It was also theorized that if and when participants had high levels of Implicit Bias, their responses would suggest that the retrieval of false memories was the result of implicitly associating similar expectancy-consistent stereotypes onto specific mugshots based on ethnicity within the Helm et al. (2016) inspired *The Purse Snatcher* crime narrative. The findings within this thesis did not replicate those findings. In fact, although participants demonstrated slight variances in the level of hits and false alarms based on the face of the mugshot, the small differences were not significant.

Alternative Explanation

The absence of a significant effect with implicit bias and the corresponding effects of false memories is somewhat of a puzzlement given that the present experiment was similar to past experiments that produced implicit bias and false memories (Correll et al., 2002, 2006; Helm et al., 2016). The deviations in results from implicit bias and false memories highlight differences in experimental design and methodology. The ethnic sensitive social theory (Green, Creswell, Shope, & Clark, 2007; Longres, 1990; McInnis, 1991) could explain why majority of participants in this study did not exhibit the same quantities of implicit bias (Correll et al., 2002) and false memories (Helm et al., 2016) as the samples in research it was replicated from. The sample demographics in other studies were composed of all White and/or European American participants, this study had a combination of a variety of ethnicities. Also interestingly enough, although several students at Middle Tennessee State University recruited through the MTSU Experiment Sign-Up System (SONA) appeared European American and/or White only one participant selected this demographic category during the short survey, instead said participants opted to choose Other as their racial identity. Perhaps participants were hypersensitive about what their performance might reveal, and thus consciously monitored their own behaviors and demographic labels. On the contrary, supposedly the beauty of the IAT is that participants couldn't hide bias using this measure even if they wanted to. So to explain these results simply, perhaps there wasn't any significant bias amongst the group of participants.

One theory that could be having an impact on the results of this experiment is the rise in white disenfranchisement movements on campus and in the area. Ideally, I would

hope that the racial tension on campus, concerning the debate of lack of cultural sensitivity by retaining confederate iconography on campus grounds (Tamburin, 2018; Middle Tennessee State University, 2018) has adjusted participant bias. Also within the same idealistic perspective, due to the White Lives Matter counter-protest of 2017 in Murfreesboro, I would like to deem that participants and others are acknowledging the need for change and have adjusted our personal biases accordingly (Tamburin & Wadhwani, 2017). Even so, I would think that what is possibly happening might be broader than this… perhaps the cumulative life experiences of this generation (16 years later than the Correll et al. (2002)) show some movement in the direction to be more accepting of diversity.

Limitations of Methodology

The limitations of this study are specifically related to the design and/or methodology that impacted the interpretation of the findings from this experiment. They are the constraints on this graduate thesis' generalizability, applications to practice, and/or the result of unanticipated challenges that emerged during the study. This research is a small contributor to the scientific literature on the role of implicit bias and false memories that will require a great deal of continuous research. In future research, as some specific drawbacks related to this thesis, one might consider the sample and the sample size as specific areas of improvement. Due to not many participants exhibiting significant levels of bias, the sample size was perhaps too small. Basing this research on a larger sample size could have possibly generated more participants who exhibited bias similarly to the participants in previous research (e.g., Correll et al., 2002; Helm et al., 2016). Perhaps even if there were more participants, the sample profile might still serve as a

limitation. Sampling exclusively from Middle Tennessee State University may also be extremely limiting if the population of the study is comprised of people with various profiles that may or may not hold the same biased ideologies as the participants in previous research (e.g., Correll et al., 2002; Helm et al., 2016).

Another limitation that can be explored as an area of improvement could be the timing of the study, as it relates to the methodology used. Investigating a phenomenon within Correll et al. (2002), long after it happened may not have been exactly suitable for participants. Making current assumptions based on an old methodology could pose as a strong limitation.

REFERENCES

Amodio, D. M., & Devine, P. G. (2006). Stereotyping and evaluation in implicit race bias: evidence for independent constructs and unique effects on behavior. *Journal of Personality and Social Psychology*, *91*(4), 652. doi: 10.1037/0022-3514.91.4.652

Banaji, M. R., & Bhaskar, R. (2000). Implicit stereotypes and memory: The bounded rationality of social beliefs. *Memory, Brain, and Belief*, 139-175. Retrieved from http://www.people.fas.harvard.edu/~mrbworks/articles/2000_HUP.pdf

Banaji, M. R., & Greenwald, A. G. (1995). Implicit gender stereotyping in judgments of fame. *Journal of Personality and Social Psychology*, *68*(2), 181. doi: 10.1037//0022-3514.68.2.181

Bandura, A., Barbaranelli, C., Caprara, G. V., & Pastorelli, C. (2001). Self-efficacy beliefs as shapers of children's aspirations and career trajectories. *Child Development*, *72*(1), 187-206. doi: 10.1111/1467-8624.00273

Black Lives Matter Global Network. (2018). Build Power [Resource and Publication]. Retrieved from https://blacklivesmatter.com/about/

Brainerd, C. J., & Reyna, V. F. (2002). Fuzzy-trace theory and false memory. *Current Directions in Psychological Science*, *11*(5), 164-169. doi: 10.1111/1467-8721.00192

Clark, K. B., & Clark, M. P. (1939). The development of consciousness of self and the emergence of racial identity in Negro preschool school-children. *Journal of Social Psychology*, 10, 591–599. doi: 10.1080/00224545.1939.9713394

Clark, K. B., & Clark, M. K. (1940). Skin color as a factor in racial identification of Negro preschool children. *The Journal of Social Psychology*. doi: 10.1080/00224545.1940.9918741

Clark, K. B., & Clark, M. P. (1950). Emotional factors in racial identification and preference in Negro children. *The Journal of Negro Education*, *19*(3), 341-350. doi: 10.2307/2966491

Clark, C. R., Mercer, S. H., Zeigler-Hill, V., & Dufrene, B. A. (2012). Barriers to the success of ethnic minority students in school psychology graduate programs. *School Psychology Review*, *41*(2), 176. Retrieved from http://www.zeigler-hill.com/uploads/7/7/3/2/7732402/clark_mercer_zeigler-hill__dufrene_2012.pdf

Conrey, F. R., Sherman, J. W., Gawronski, B., Hugenberg, K., & Groom, C. J. (2005). Separating multiple processes in implicit social cognition: the quad model of implicit task performance. *Journal of Personality and Social Psychology*, *89*(4), 469. doi: 10.1037/0022-3514.89.4.469

Correll, J., Park, B., Judd, C. M., & Wittenbrink, B. (2002). The police officer's dilemma: Using ethnicity to disambiguate potentially threatening individuals. *Journal of Personality and Social Psychology, 83*, 1314–1329. doi: 10.1037//0022-3514.83.6.1314

Correll, J., Urland, G. R., & Ito, T. A. (2006). Event-related potentials and the decision to shoot: The role of threat perception and cognitive control. *Journal of Experimental Social Psychology*, *42*(1), 120-128. doi:10.1016/j.jesp.2005.02.006

Dade, K., Tartakov, C., Hargrave, C., & Leigh, P. (2015). Assessing the impact of racism on black faculty in white academe: A collective case study of African American female faculty. *Western Journal of Black Studies*, *39*(2), 134. Retrieved from https://ezproxy.mtsu.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=asn&AN=109380557&site=eds-live&scope=site

Davis, A. Y. (2003). *Are prisons obsolete?* New York, NY: Seven Stories Press.

Devine, P. G. (1989). Stereotypes and prejudice: Their automatic and controlled components. *Journal of Personality and Social Psychology*, *56*(1), 5. doi: 10.1037//0022-3514.56.1.5

Foner, P. S., ed. (1955). *The Life and Writings of Frederick Douglass. Volume 4: Reconstruction and After*. New York, NY: International Publishers.

Franklin, A. J. (1999). Invisibility syndrome and racial identity development in psychotherapy and counseling African American men. *The Counseling Psychologist*, *27*(6), 761-793. doi: 10.1177/0011000099276002

Gilbert, D. T., & Hixon, J. G. (1991). The trouble of thinking: Activation and application of stereotypic beliefs. *Journal of Personality and Social Psychology*, *60*(4), 509. doi: 10.1037/0022-3514.60.4.509

Green, D. O., Creswell, J. W., Shope, R. J., & Clark, V. L. P. (2007). Grounded theory and racial/ethnic diversity. *The Sage Handbook of Grounded Theory*, (Part V), 472-92. doi: 10.4135/9781848607941.n22

Greenwald, A. G., & Krieger, L. H. (2006). Implicit bias: Scientific foundations. *California Law Review*, *94*(4), 945-967. doi: 10.15779/Z38GH7F

Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. (1998). Measuring individual differences in implicit cognition: The implicit association test. *Journal of Personality and Social Psychology*, *74*(6), 1464. doi: 10.1037//0022-3514.74.6.1464

Greenwald, A. G., Nosek, B. A., & Banaji, M. R. (2003). Understanding and using the implicit association test: I. An improved scoring algorithm. *Journal of Personality and Social Psychology*, *85*(2), 197. doi: 10.1037/0022-3514.85.2.197

Hamilton, C. V., & Ture, K. (2011). *Black power: Politics of liberation in America*. New York, NY: Vintage Books.

Hamilton, D. L., Sherman, S. J., & Ruvolo, C. M. (1990). Stereotype-based expectancies: Effects on information processing and social behavior. *Journal of Social Issues*, *46*(2), 35-60. doi: 10.1111/j.1540-4560.1990.tb01922.x

Helm, R. K., Ceci, S. J., & Burd, K. A. (2016). Can implicit associations distinguish true and false eyewitness memory? Development and preliminary testing of the IATe. *Behavioral Sciences and the Law*, *34*(6), 803-819. doi: 10.1002/bsl.2272

Kleider, H. M., Pezdek, K., Goldinger, S. D., & Kirk, A. (2008). Schema-driven source misattribution errors: remembering the expected from a witnessed event. *Applied Cognitive Psychology*, *22*(1), 1-20. doi: 10.1002/acp.1361

Lawrence, C. R. (1987). The id, the ego, and equal protection: Reckoning with unconscious racism. *Stanford Law Review*, 317-388. doi: 10.2307/1228797

Lenton, A. P., Blair, I. V., & Hastie, R. (2001). Illusions of gender: Stereotypes evoke false memories. *Journal of Experimental Social Psychology*, *37*(1), 3-14. doi: 10.1006/jesp.2000.1426

Library of Congress. (n.d.). Brown v. board at fifty: "With an even hand" [Resource & Publication]. Retrieved from https://www.loc.gov/exhibits/brown/brown-brown.html

LoConto, D. G., & Francis, A. D. (2005). Cultural variation within European American families. In C. Frisby & C. R. Reynolds (Eds.), *Comprehensive Handbook of Multicultural School Psychology* (pp. 205-233). Hoboken, New Jersey: John Wiley & Sons, Inc.

Loftus, E. F., & Pickrell, J. E. (1995). The formation of false memories. *Psychiatric Annals*, *25*(12), 720-725. doi: 10.3928/0048-5713-19951201-07

Longres, J. F. (1990). Toward a status model of ethnic sensitive practice. *Journal of Multicultural Social Work*, *1*(1), 41-56. doi: 10.1300/j285v01n01_04

Lynch, M. (2013). Institutionalizing bias: The death penalty, federal drug prosecutions, and mechanisms of disparate punishment. *American Journal of Criminal Law*, *41*, 91. Retrieved from https://ssrn.com/abstract=2387145

Lynch, W. (2009). *The Willie Lynch letter and the making of a slave.* Hawthorne, CA: BN Publishing

Macrae, C. N., Schloerscheidt, A. M., Bodenhausen, G. V., & Milne, A. B. (2002). Creating memory illusions: Expectancy-based processing and the generation of false memories. *Memory*, *10*(1), 63-80. doi:10.1080/09658210143000254

McInnis, K. (1991). Ethnic-sensitive work with Hmong refugee children. *Child Welfare: Journal of Policy, Practice, and Program*. Retrieved from https://ezproxy.mtsu.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=edsghw&AN=edsgcl.11320208&site=eds-live&scope=site

Mendez, L. M. R., & Crawford, K. M. (2002). Gender-role stereotyping and career aspirations: A comparison of gifted early adolescent boys and girls. *Journal of Secondary Gifted Education*, *13*(3), 96-107. doi: 10.4219/jsge-2002-375

Middle Tennessee State University (2018). MTSU will not appeal historical commission denial for Forrest Hall wavier [Online article]. Retrieved from https://www.mtsu.edu/forresthall/updates.php

National Association of School Psychologists. (2017). *Implicit bias: A foundation for school psychologists* [handout]. Bethesda, MD: Author. Retrieved from

https://www.nasponline.org/resources-and-publications/resources/diversity/social-justice/implicit-bias-a-foundation-for-school-psychologists

National Association of School Psychologists. (2018). *Implicit bias, part 2—Addressing disproportionality in discipline: A prospective look at culturally responsive positive behavior intervention and supports* [handout]. Bethesda, MD: Author. Retrieved from https://www.nasponline.org/resources-and-publications/resources/diversity/social-justice/implicit-bias-a-foundation-for-school-psychologists/implicit-bias-part-2

National Association of School Psychologists. (2012). *Racism, prejudice, and discrimination* [Position Statement]. Bethesda, MD: Author. Retrieved from https://www.nasponline.org/x26830.xml

National Association of School Psychologists. (2017). *Social justice* [Resources & Publications]. Retrieved from http://www.nasponline.org/resources-and-publications/resources/diversity/social-justice

National Association of School Psychologists. (2016). *Understanding Race and Privilege* [handout]. Bethesda, MD: Author. Retrieved from https://www.nasponline.org/resources-and-publications/resources/diversity/social-justice/understanding-race-and-privilege

Obasogie, O. K., & Newman, Z. (2016). Black Lives Matter and respectability politics in local news accounts of officer-involved civilian deaths: An early empirical assessment. *Wisconsin Law Review*, 541. Retrieved from http://wisconsinlawreview.org/wp-content/uploads/2016/06/5-Obasogie-Newman-Final.pdf

Okonofua, J. A., & Eberhardt, J. L. (2015). Two strikes: Race and disciplining students. *Psychological Science, 26,* 617–624. doi: 10.1177/0956797615570365

Osborne, D., & Davies, P. G. (2012). Eyewitness identifications are affected by stereotypes about a suspect's level of perceived stereotypicality. *Group Processes & Intergroup Relations*, *16*(4), 488-504. doi: 10.1177/1368430212454927

Osborne, D., & Davies, P. G. (2014). Crime type, perceived stereotypicality, and memory biases: A contextual model of eyewitness identification. *Applied Cognitive Psychology*, *28*(3), 392-402. doi: 10.1002/acp.3009

Parham, T. A., White, J. L., & Ajamu, A. (2015). *Psychology of Blacks: Centering our perspectives in the African consciousness*. New York, NY: Psychology Press.

Payne, B. K., Jacoby, L. L., & Lambert, A. J. (2004). Memory monitoring and the control of stereotype distortion. *Journal of Experimental Social Psychology*, *40*(1), 52-64. doi:10.1016/S0022-1031(03)00069-6

Pierce, C. (1995). Stress analogs of racism and sexism: Terrorism, torture, and disaster. *Mental health, racism, and sexism*, 277-293. New York, NY: University of Pittsburg Press.

Project Implicit. (2011). *Frequently Asked Questions* [Resource & Publications]. Retrieved from https://implicit.harvard.edu/implicit/faqs.html#faq0

Roediger, H. L., & McDermott, K. B. (1995). Creating false memories: Remembering words not presented in lists. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *21*(4), 803. doi: 10.1037//0278-7393.21.4.803

Roediger III, H. L., & McDermott, K. B. (2000). Tricks of memory. *Current Directions in Psychological Science*, *9*(4), 123-127. doi: 10.1111/1467-8721.00075

Schmader, T., & Johns, M. (2003). Converging evidence that stereotype threat reduces working memory capacity. *Journal of Personality and Social Psychology*, *85*(3), 440. doi: 10.1037/0022-3514.85.3.440

Schmidt, K., & Nosek, B. A. (2010). Implicit (and explicit) racial attitudes barely changed during Barack Obama's presidential campaign and early presidency. *Journal of Experimental Social Psychology*, *46*(2), 308-314. doi: 10.1016/j.jesp.2009.12.003

Sherman, J. W., Groom, C. J., Ehrenberg, K., & Klauer, K. C. (2003). Bearing false witness under pressure: Implicit and explicit components of stereotype-driven memory distortions. *Social Cognition*, *21*(3), 213-246. doi: 10.1521/soco.21.3.213.25340

Slusher, M. P., & Anderson, C. A. (1987). When reality monitoring fails: The role of imagination in stereotype maintenance. *Journal of Personality and Social Psychology*, *52*(4), 653. doi: 10.1037//0022-3514.52.4.653

Smeets, T., Jelicic, M., Merckelbach, Peters, M., Fett, A., Taverniers, J., ... & Dautzenberg, J. (2006). Enhanced memory performance on an internal-internal source monitoring test following acute psychosocial stress. *Behavioral Neuroscience*, *120*(6), 1204. doi: 10.1037/0735-7044.120.6.1204

Staats, C., Capatosto, K., Wright, R. A., & Contractor, D. (2015). State of the science: Implicit bias review 2015 (Vol. 3). *Kirwan Institute for the Study of Race and Ethnicity, The Ohio State University*. Retrieved from: http://kirwaninstitute.osu.edu/wp-content/uploads/2015/05/2015-kirwan-implicit-bias.pdf

Steele, C. M., & Aronson, J. (1995). Stereotype threat and the intellectual test performance of African Americans. *Journal of Personality and Social Psychology*, *69*(5), 797. doi: 10.1037//0022-3514.69.5.797

Stevens, M. (2015). Historical PTSD–In the midst of a tragedy. In E.H. & A.T. (Eds.), *The Trayvon Martin in US: An American Tragedy* (105-111). New York: Peter Lang.

Stimson, J. A. (1991). *Public opinion in America: Moods, cycles, and swings* (Vol. 14). New York, NY: Westview Press.

Sue, D. W., Bucceri, J., Lin, A. I., Nadal, K. L., & Torino, G. C. (2007). Racial microaggressions and the Asian American experience. *Cultural Diversity and Ethnic Minority Psychology*, *13*(1), 72. doi: 10.1037/1099-9809.13.1.72

Tamburin, A. (2018). Commission denies MTSU's request to change the name of Forrest Hall [Online article]. Retrieved from https://www.tennessean.com/story/news/2018/02/16/commission-denies-mtsus-request-change-name-forrest-hall/346998002/

Tamburin, A. & Wadhwani A. (2017). Murfreesboro rally canceled as counterprotesters outnumber white lives matter activists [Online article]. Retrieved from https://www.tennessean.com/story/news/2017/10/28/white-lives-matter-rally-murfreesboro-tn-live-updates-shelbyville-tn-stream-video/804380001/

Williams, T. L., & Davidson, D. (2009). Interracial and intra-racial stereotypes and constructive memory in 7-and 9-year-old African-American children. *Journal of Applied Developmental Psychology*, *30*(3), 366-377. doi: 10.1016/j.appdev.2009.02.002

APPENDICES

APPENDIX A

Middle Tennessee State University IRB Approval

IRB
INSTITUTIONAL REVIEW BOARD
Office of Research Compliance,
010A Sam Ingram Building,
2269 Middle Tennessee Blvd
Murfreesboro, TN 37129

IRBN007 – EXEMPTION DETERMINATION NOTICE

Monday, October 15, 2018

Principal Investigator	**Tamara Tucker** (Student)
Faculty Advisor	Stephen Schmidt
Co-Investigators	NONE
Investigator Email(s)	*tat3c@mtmail.mtsu.edu; stephen.schmodt@mtsu.edu*
Department	Psychology
Protocol Title	***Implicit bias and corresponding effects of false memories***
Protocol ID	**19-1034**

Dear Investigator(s),

The above identified research proposal has been reviewed by the MTSU Institutional Review Board (IRB) through the **EXEMPT** review mechanism under 45 CFR 46.101(b)(2) within the research category *(2) Educational Tests* A summary of the IRB action and other particulars in regard to this protocol application is tabulated as shown below:

IRB Action	**EXEMPT from furhter IRB review*** **	Date	**10/15/18**
Date of Expiration	NOT APPLICABLE		
Sample Size	50 (FIFTY)		
Participant Pool	**Healthy Adults (18 or older) - MTSU SONA**		
Exceptions	NONE		
Mandatory Restrictions	1. Participants must be 18 years or older 2. Informed consent must be obtained from the participants 3. Identifying information must not be collected		
Restrictions	**All restrictions for exemption apply**		
Comments	NONE		

***This exemption determination only allows above defined protocol from further IRB review such as continuing review. However, the following post-approval requirements still apply:

- Addition/removal of subject population should not be implemented without IRB approval
- Change in investigators must be notified and approved
- Modifications to procedures must be clearly articulated in an addendum request and the proposed changes must not be incorporated without an approval
- Be advised that the proposed change must comply within the requirements for exemption
- Changes to the research location must be approved – appropriate permission letter(s) from external institutions must accompany the addendum request form
- Changes to funding source must be notified via email (irb_submissions@mtsu.edu)
- The exemption does not expire as long as the protocol is in good standing
- Project completion must be reported via email (irb_submissions@mtsu.edu)
- Research-related injuries to the participants and other events must be reported within 48 hours of such events to compliance@mtsu.edu

Post-approval Protocol Amendments:

The current MTSU IRB policies allow the investigators to make the following types of changes to this protocol without the need to report to the Office of Compliance, as long as the proposed changes do not result in the cancellation of the protocols eligibility for exemption:

- Editorial and minor administrative revisions to the consent form or other study documents
- Increasing/decreasing the participant size

Only THREE procedural amendment requests will be entertained per year. This amendment restriction does not apply to minor changes such as language usage and addition/removal of research personnel.

Date	Amendment(s)	IRB Comments
NONE	NONE.	NONE

The investigator(s) indicated in this notification should read and abide by all applicable post-approval conditions imposed with this approval. Refer to the post-approval guidelines posted in the MTSU IRB's website. Any unanticipated harms to participants or adverse events must be reported to the Office of Compliance at (615) 494-8918 within 48 hours of the incident.

All of the research-related records, which include signed consent forms, current & past investigator information, training certificates, survey instruments and other documents related to the study, must be retained by the PI or the faculty advisor (if the PI is a student) at the sacure location mentioned in the protocol application. The data storage must be maintained for at least three (3) years after study completion. Subsequently, the researcher may destroy the data in a manner that maintains confidentiality and anonymity. IRB reserves the right to modify, change or cancel the terms of this letter without prior notice. Be advised that IRB also reserves the right to inspect or audit your records if needed.

Sincerely,

Institutional Review Board
Middle Tennessee State University

Quick Links:

Click here for a detailed list of the post-approval responsibilities.
More information on exmpt procedures can be found here.

APPENDIX B

Crime Scenario 1: A Description of Crime Scenario, Perpetrators, and Victim

Crime Scenario 1:

Last Wednesday, a startling purse snatching incident happened outside a donut shop on 113th Avenue. You and your friend Malorie, had been walking along the side of the road in New York to get to the grand opening of an art exhibit. Malorie had just finished telling you about her day when you saw some commotion ahead of you, so you stopped to see what has happening.

You saw one person approach another person and violently knocked the woman to the pavement. The woman attempted to hold on dearly to her purse, as the man dragged the woman for quite some time until he was able to yank the purse completely away from him. The man then quickly ran in the opposite direction of you towards South Lowry Drive. You saw two people attempt to follow the purse-snatcher, but failed to find him.

APPENDIX C

Crime Scenario 2: A Description of Crime Scenario, Perpetrators, and Victim

Crime Scenario 2:

You had been walking along the sidewalk at Peachtree Evers Park in New York with a friend one summer in June. On this hot summer day, the wind slipped a cool breeze across your shoulder. The breeze was so refreshing, as the weather station indicated it was the hottest day of the year. Just then you noticed some movement ahead of you behind the hotdog stand, so you looked over to see what was happening.

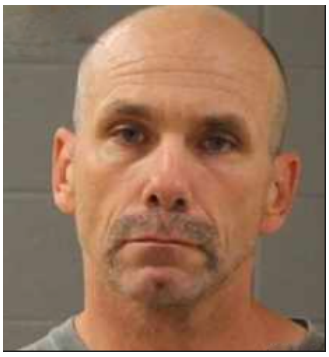
You saw one person swiftly approach another person while she was ordering a beef hotdog, with bacon strips, onions, and mustard. The man swiftly snatched the woman's purse right off her shoulders, as she lifted her hand up to gesture her order. The man quickly ran towards the parking lot with the woman's purse. You saw two people

attempt to follow the purse-snatcher, but failed to find him.

APPENDIX D

Crime Scenario 3: A Description of Crime Scenario, Perpetrators, and Victim

Crime Scenario 3:

One Sunday afternoon, you had been walking along the side of a road in New York with your friend Steve. Paper Cut was a trendy new bookstore that opened the week prior. You and Steve had walked thirteen blocks to get to the bookstore, when you saw movement ahead of you. So you abruptly turned to Steve, as you both stopped walking to see what was happening. You saw one person  approach another person . The man attacked the woman, by ripping her black leather purse away from her. The woman refused to let go and tugged back and forth with the man as she screamed for help. Fifteen dollars and twenty-nine cent fell out of the coin pouch as the man ran away with the purse. You saw two people attempt to follow the purse-snatcher, but failed to find him.

APPENDIX E

Crime Scenario 4: A Description of Crime Scenario, Perpetrators, and Victim

Crime Scenario 4:

Last Tuesday, a startling purse snatching incident happened outside a grocery store on the intersection of Smit Avenue and South Park Place. You and your friend Jordan, had been walking along the side of the road in New York to get to the grocery store. Jordan had just finished telling you about the recipe she was making for lunch when you saw some commotion ahead of you, so you stopped to see what has happening. You saw one person

approach another person and violently knocked the woman to the pavement. The woman attempted to hold on dearly to her purse, as the man dragged the woman for quite some time until he was able to yank the purse completely away from her. The man then quickly ran in the opposite direction of you towards South Lowry Drive. You saw two people attempt to follow the purse-snatcher, but failed to find him.

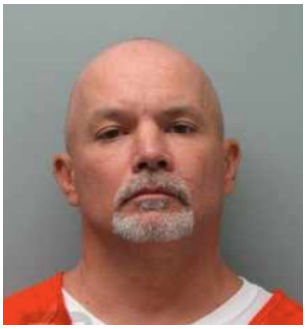
APPENDIX F

Crime Narrative 1: Visual Summary of Mugshots for Each Character with Additional Lures for Misattribution of Pursuer to Purse Snatcher

Crime Narrative 1

European American Perpetrator	African American Victim	Other Ethnicity Pursuer	Asian American Pursuer

Narrative 1 Lures

	This is intentionally left blank.		

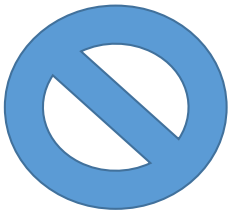
APPENDIX G

Crime Narrative 2: Visual Summary of Mugshots for Each Character with Additional Lures for Misattribution of Pursuer to Purse Snatcher

Crime Narrative 2

African American Perpetrator	European American Victim	Asian American Pursuer	Other Ethnicity Pursuer

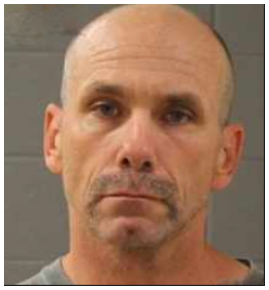
Narrative 2 Lures

	This is intentionally left blank. 		

APPENDIX H

Crime Narrative 3: Visual Summary of Mugshots for Each Character with Additional Lures for Misattribution of Pursuer to Purse Snatcher

Crime Narrative 3

European American Perpetrator	Asian American Victim	African American Pursuer	Other Ethnicity Pursuer
			

Narrative 3 Lures

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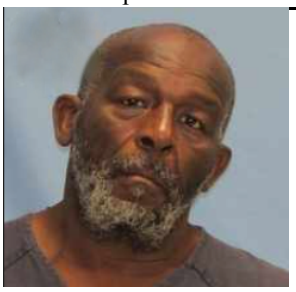
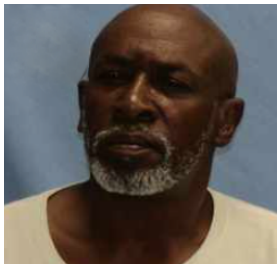
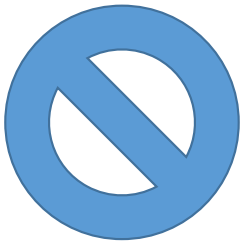
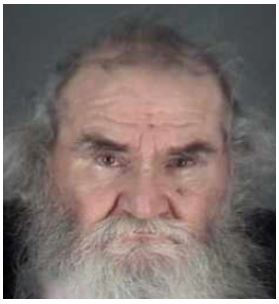
APPENDIX I

Crime Narrative 4: Visual Summary of Mugshots for Each Character with Additional Lures for Misattribution of Pursuer to Purse Snatcher

Crime Narrative 4

African American Perpetrator	Other Ethnicity Victim	European American Pursuer	Asian American Pursuer
			

Narrative 4 Lures

	This is intentionally left blank. 		

APPENDIX J

Demographic Form

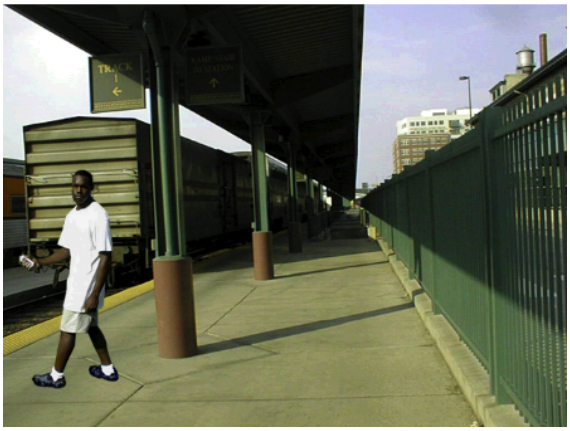
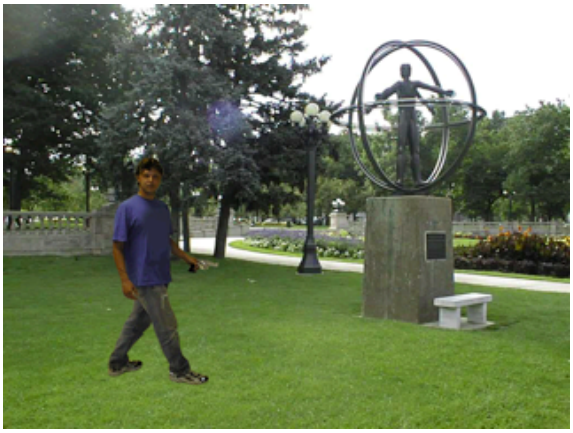
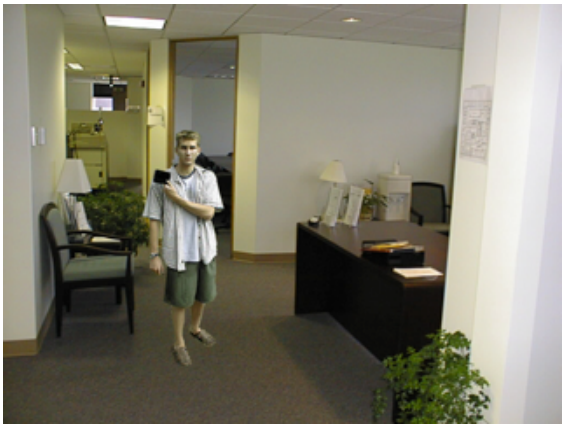
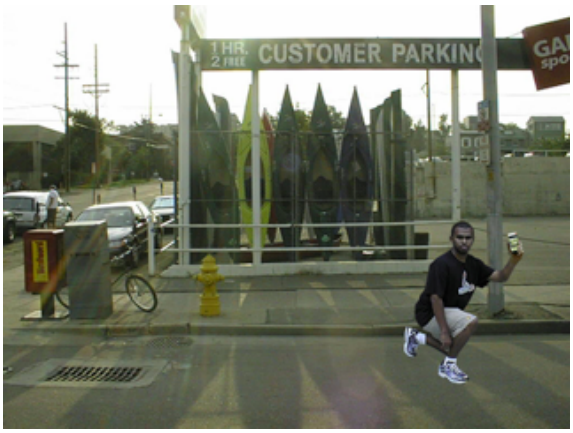
Demographics

- Which gender do you identify most with?
  - Male
  - Female
  - Transgender
  - Genderqueer

- What is your age?
  - 19 years or younger
  - 20-23 years old
  - 24-29 years old
  - 30-39 years old
  - 40-55 years old
  - 55 years or older

- Ethnicity origin (or Race): Please specify your ethnicity.
  - Asian / Pacific Islander
  - Black or African American
  - Hispanic or Latino
  - Native American or American Indian
  - Other
  - White or European American

- What is your current classification in college?
  - Freshman
  - Sophomore
  - Junior
  - Senior
  - Graduate student

APPENDIX K

Example of Avatar and Backdrop Scenes from the Correll et al. (2002) Videogame