INDUCED EMOTIONS ON SHOOT DECISIONS

by

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Presented to the Faculty of the Graduate School of

The University of Texas at Arlington in Partial Fulfillment

of the Requirements

for the Degree of

DOCTOR OF PHILOSOPHY

THE UNIVERSITY OF TEXAS AT ARLINGTON

May 2017

Acknowledgements

I would like to give special thanks to my family and friends, my mentor, my lab mates, and my committee members for all of the support and guidance given to me throughout the process. The journey to the completion of this degree has been filled with trials and tribulations, as it is for most, and I feel very grateful for the special people in my life that have encouraged me to seek my own answers. I want to thank my family and friends for the continued support and encouragement. I want to thank my mentor and lab mates for teaching me to “stay in the struggle” and that when something is important, you fight for it. As for my committee members, thank you for giving me constructive feedback and continued guidance throughout my graduate education. I feel so grateful to have strong leaders, mentors, professors, and most of all, scientists to look up to. Lastly, I want to thank all the women in STEM fields before me who have endured hardships in order to open the doors for all women to be able to have the opportunity to chase their dreams.

March 27, 2017

Abstract

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DECISIONS

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The University of Texas at Arlington, 2017

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The purpose of this experiment was to examine the effect of emotion on shoot decision bias. Student participants from The University of Texas at Arlington were randomly assigned to one of five emotion induction conditions (angry, contemptuous, happy, sad, or neutral) where they wrote about an emotional experience and then participated in a first person shooter task. Initial results revealed no differences with emotion conditions on racial and shooter bias indices. Inspection of the components which make up racial and shooter bias unveiled partial racial and shooter bias. After comparing immigrants to Americans, it was found that immigrants did not exhibit racial bias but did show partial shooter bias. Americans however showed both partial racial and shooter bias. This provided support for the idea that these biases may come from the American stereotype that African Americans are dangerous. Within Americans, a trend emerged where ethnicity interacted with emotion to influence racial bias which revealed bias towards Blacks, reversed bias, and no bias. As for shooter bias, a trend also emerged; within immigrants, ethnicity interacted with emotion to produce bias towards Blacks and reversed bias. Within Americans, ethnicity also interacted with emotion to influence shooter bias. The three patterns of bias were found for different groups. The findings indicate that the effect of emotion on shoot decisions depends on the

participant's ethnicity. The study did not have enough power to fully examine the interaction between ethnicity and emotion on racial and shooter bias. Future directions and implications are discussed.

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Chapter 1

Induced Emotions on Shoot Decisions

Police officer involved shootings are a major concern for U.S. citizens. Unfortunately, 963 individuals were shot and killed by police in 2016 (Tate, Jenkins, Rich, Muyskens, Elliot, & Mellnik, 2016). Specifically, Blacks are 21.3% more likely than Whites to encounter some type of non-lethal force by police (Fryer, 2016). However, little is known about the discrepancy of lethal force used on Black versus White populations. Some suggest that there is no difference in the amount of lethal force used for either ethnicity (Fryer, 2016); while others claim that Blacks are disproportionally shot by police 2.5 times more often than Whites when adjusting for population rates (Lowery, 2016). In fact, very little data exists with which to examine lethal force and the data that does is exist is wrought with problems (e.g. self-report and one-sided testimony; Fryer, 2016).

Regardless, countless videos of Black individuals being shot and killed by police under questionable conditions have appeared on social media. Samuel Du Bose, unarmed, who after being stopped by police for not having a front license plate, attempted to drive away but was subsequently shot fatally in the head. Eric Harris, after selling a gun to a police officer, ran away unarmed from the sting operation, was tackled and then fatally shot while being held down on the pavement. Alton Sterling, who was selling CD's outside of a convenience store, fit the description of a man who allegedly brandished a gun towards a homeless man. After he spoke with police for a few moments, the two officers then tackled Sterling to the ground, restrained one of his hands and mortally shot him several times in the chest. It is unclear if Sterling had a gun in his pocket, however, no guns were visible in his hands.

The horrific nature and questionable situations involving the shootings have sparked outrage in communities. As such, the Black Lives Matter (BLM) national

movement formed to raise awareness of the systemic discrepancy of treatment of Blacks by police officers as compared to Whites and to call for policing reform. Unfortunately, Micah Johnson, a military veteran who had served in Afghanistan, retaliated against police officers in Dallas, via a sniper attack. During a BLM protest, Johnson shot and killed five police officers from a parking garage (Karimi, Schoicet, & Ellis 2016). Consequently, the nation seems to be in a state of unrest with no alleviation until police reform is realized; and that is why it is so important to investigate reasons for racially biased and erroneous shoot decisions.

One possible reason for wrongful shoot decisions is incidental emotions. Incidental emotions are emotions experienced in one area of life that spill over into the next (Lerner, Li, Valdesolo, & Kassam, 2014). For example, an argument with a spouse may cause anger and that incidental anger may impact the individual's job performance. Incidental emotions have been shown to affect decision-making in systematic ways. Specifically, three incidental emotions (anger, contempt and happiness) have been shown to elicit fast and dirty decision-making (when compared to a neutral group) specifically by utilizing stereotypes and heuristics (Ask & Granhag, 2007; Bodenhausen, Kramer, & Susser 1994a; Bodenhausen, Sheppard, & Kramer, 1994; Cuddy, Fiske, & Glick, 2007; Eagly & Chaiken, 1993; Forgas, 1998; Isen & Means, 1983; Park & Banaji, 2000; Petty & Cacioppo, 1986; Petty, Gleicher, & Baker, 1991; Schwarz, Bless, & Bohner, 1991; Stevenson & Hicks, 2016; Ufkes, Otten, van der Zee, Giebels, & Dividio, 2011; Xing, 2014).

This is significant for two reasons. First and more generally, the employment of stereotypes and heuristics creates quick and inaccurate thinking which may create quick and inaccurate shoot decisions. Secondly, this is significant due to the impact stereotypes have on racially biased shoot decisions. Racial bias is an unconscious bias

in shoot decisions and involves the tendency to make more errors shooting unarmed Black men than unarmed White men and more errors not shooting armed White men than armed Black men. Shooter bias, another similar term, is the tendency to make faster shoot decisions for Black armed males than White armed males and the tendency to make faster no-shoot decisions for White unarmed males than Black unarmed males (Correll, Park, Judd, & Wittenbrink, 2002).

Regardless of the individual's outward prejudice, or lack thereof, racial bias and shooter bias have been observed in many shoot decision experiments and it is postulated that it comes from the American stereotype that Blacks are dangerous (Correll et al, 2002). It is explained that even reading about a Black criminal in a newspaper increases unconscious bias in shoot decisions (Correll, Park, Judd, & Wittenbrink, 2007a). Consequently, if anger, contempt, and happiness increase stereotypic thinking, and racial bias and shooter bias in shoot decisions are based on the stereotype that Blacks are dangerous, then these three incidental emotions (anger, contempt and happiness) may increase racial bias and shooter bias in shoot decisions when compared to a neutral group.

On the other hand, incidental sadness has been shown to have the opposite effect on decision-making, eliciting slow and accurate decision-making with less use of stereotypes and heuristics (Ask & Granhag, 2007; Bodenhausen et al., 1994; Bonanno, Goorin, & Coifman, 2008; Lench, Tibbett, & Bench, 2016; Perez Nieto, Fernandez-Abascal, & Miguel-Tobal, 2009). Thus, if incidental sadness elicits slow and accurate decision-making but does not elicit the use of stereotypes, and shoot decisions are based on the Black danger stereotype, then incidental sadness may decrease racial and shooter bias in shoot decisions when compared to incidental anger, contempt, or

happiness. Furthermore, incidental sadness should produce more accurate shoot decisions, but also slower shoot decisions.

Hence, in this dissertation, I will argue that four specific incidental emotions (anger, contempt, happiness, and sadness) as compared to a neutral condition, will affect shoot decisions in the same ways that they affect decision-making in general. Utilizing experimental methodology, an extension of previous research (Unkelbach, Forgas, & Denson, 2008) will occur by employing a larger and more diverse sample, making use of the original shooter paradigm (with Black and White armed and unarmed men), using emotion induction methods shown to be effective (Bodenhausen et al., 1994a; Bodenhausen et al., 1994b; Strack, Schwarz, & Gschneidinger, 1985), and adding to the examination two more emotions known to affect decision-making (contempt and sadness). Broad implications for this research include greater understanding of the facets that can impact quick and dirty decision-making, more familiarity with aspects that affect systemic racism, and knowledge in areas of possible recourse for police reform.

Shoot Decisions

Since the time that unarmed Amadou Diallo, a Black man, was shot at 41 times when retrieving the wallet out of his back pocket (Cooper, 1999), researchers have asked, do racial stereotypes influence the decision to shoot? To examine this, scientists first investigated prejudice. Prejudice is the forming of negative attitudes and emotions about a person or group before actually having any contact with the person or a group. It is the firmly held beliefs about an outgroup. Prejudice is rooted in the negative stereotypes of outgroups and it helps to maintain the social structure, keeping disadvantaged minority groups in subordinate positions (Gonzalez, Riggle, & Rostosky, 2015). However, outwardly expressing prejudice is not accepted in American culture today because egalitarianism is highly valued and therefore, prejudice is often displayed

covertly or not at all. In fact, researchers studying prejudice using self-report measures find that it is less prevalent compared to the 1950's and earlier; and this is most likely due to social desirability. Interestingly though, discrimination is still common (Dovidio, Brigham, Johnson, & Gaertner, 1996; Katz & Hoyt, 2014). Indeed, some individuals report egalitarian values and low prejudice but at the same time (in the same study), they exhibit automatic prejudiced associations (Devine, 1989).

One reason for this conundrum is that prejudice is thought to be made up of automatic and controlled components (Devine, 1989; Dovidio, Kawakami, Johnson, Johnson, & Howard, 1997; Katz & Hoyt, 2014). An individual can firmly believe that they are egalitarian but still show automatic prejudice. Automatic prejudice is an unconscious belief held about the outgroup that influences behavior in the form of bias. Many researchers have examined automatic prejudice (a.k.a. implicit bias) by using computer games which assess reaction times to stimuli. Examples of these games are priming (Payne, 2001), the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998), and the First Person Shooter Task (FPST; Correll, et al., 2002).

The FPST specifically assesses implicit racial bias when dealing with shoot decisions. In the typical shoot decision paradigm, participants see a picture of a White or Black male holding either a gun or an innocuous object (e.g. cell phone) displayed very briefly on the computer screen, then participants make a split-second decision to shoot or not shoot (by pressing a button on the computer keyboard) depending on the object held (e.g. shoot when a gun is shown). Findings from these extensive studies reveal shooter bias, a tendency to shoot more quickly when the armed individual is Black than when the armed individual is White, and a tendency to make a no-shoot decision more quickly for unarmed White individuals than unarmed Black individuals. Similarly, the experiments also find racial bias, a tendency to make more errors for Black males (shooting an

unarmed individual) than for White males, and to make more misses for White males (failing to shoot an armed individual) than for Black males (Correll, et al., 2002; Correll, et al., 2007a; Correll, Park, Judd, Wittenbrink, Sadler, & Keesee, 2007b; Correll, Urland, & Ito, 2006; Correll, Wittenbrink, Park, Judd, & Goyle, 2010). Intriguingly, racial bias and shooter bias have been found for African American participants too. In other words, the race of the person "pulling the trigger" doesn't matter; racial bias and shooter bias in shoot decisions were still evident (Correll, et al., 2002).

In some cases, participants report low or no prejudice but still exhibit racial and shooter bias. The reason for this is believed to be due to the automatic elicitation of the Black-danger stereotype. When an individual comes into contact, interacts with, or sees an African American, the American Black-danger stereotype is automatically elicited regardless of the individual's egalitarian beliefs, and this stereotype elicits biased behaviors towards Blacks (e.g. racial bias). Because of this automatic elicitation of the stereotype and corresponding biased behaviors, low prejudiced individuals who have decided that the Black-danger stereotype is inappropriate have to use cognitive control to override and intentionally inhibit those biased behaviors (Devine, 1989).

To understand the automatic and controlled processes in stereotyping, Gilbert and Hixon (1991) explain that stereotyping occurs in four stages: category identification (e.g. assigning individuals to a category), stereotype activation (e.g. cognitive activation of the stereotyped attributes relative to the category), stereotype application (e.g. use of the stereotypes in interpreting the person), and stereotype correction (e.g. attempts to reverse the use of stereotypes in interpreting the person; as cited in Bodenhausen, Mussweiler, Gabriel, & Moreno, 2001). As related to shoot decision research, the automatic elicitation of the Black-danger stereotype occurs in stage two (stereotype activation) and is triggered when an individual sees or interacts with an African American.

This stage is automatic and unavoidable (Bargh, 1999; Devine, 1989). It is during the next stage, stereotype application, that stereotypes influence behaviors and judgments regarding the social category (Bodenhausen et al., 2001).

For shoot decisions, the Black-danger stereotype infers that race may be used as a heuristic cue for threat, and hence, if stereotype correction is not implemented to override the implicit bias, racial bias and shooter bias is produced. To correct for biases, individuals may use two different methods: Wegener and Petty (1997) suggest that individuals estimate the bias and respond in the opposite fashion, whereas Mussweiler & Strack (1999) indicate that individuals may set aside their stereotyped judgments and recalculate their response. Either way, stereotype correction involves cognitive control and therefore, cognitive resources (Bodenhausen et al., 2001).

Interestingly, the findings of shooter bias show that the American Black-danger stereotype is automatically elicited (faster shoot decision reaction times for armed African Americans) and hence has to be consciously overridden to make correct shoot decisions (which results in longer no-shoot decision reaction times for unarmed African Americans). Similarly, when individuals are not given the time to override the automatically elicited Black-danger stereotype, racial bias is exhibited where more errors are made for African Americans (unarmed Blacks are shot at more than unarmed Whites). Furthermore, individuals keenly aware of the Black-danger stereotype exhibit stronger shooter bias (Correll, et al., 2002).

Shoot decisions involve split second thinking and are greatly influenced by stereotypes. These stereotypes elicit automatic behavioral responses in the form of racial bias and shooter bias. Because emotions trigger the use of stereotypes and heuristics, they may impact shoot decisions by increasing or decreasing racial bias and shooter bias. Some emotions may trigger more stereotype use, creating quick and dirty decision-

making subsequently increasing racial and shooter bias. Some emotions on the other hand may trigger a more deliberate style of processing which should decrease the use of stereotypes and therefore decrease racial and shooter bias.

Emotions and Decision-Making

The terms emotion, mood, and affect are sometimes described independently of each other (e.g. Frederickson, 2001; Gable & Harmon-Jones, 2008; Russell & Barrett, 1999) and other times used synonymously (e.g. Carver & Harmon-Jones, 2009; Isen, 2000). Emotions consist of feelings and appraisals (positive or negative) regarding the event, physiological preparedness, behavioral responses and actions (Gable & Harmon-Jones, 2010; Levenson, 1994) and are generally brief in duration. Affect, very similar to emotion, is also short lived. Affect is thought to be the behavioral response immediately following an internal feeling. Mood however, is different from emotion and affect in that it is longer lasting and accordingly, more closely related to an individual's personal disposition (Alpert & Rosen, 1990; Beedie, Terry, & Lane, 2005). Because emotion and affect are so closely related, they will be used interchangeably in this paper with the term emotion being used the most frequently.

Emotions are a fundamental part of the human experience because they influence how humans process information. Emotions act as a coordinator between physiological, psychological, and behavioral response systems. Physiologically, emotions prepare the body to respond to situations through the activation of the sympathetic nervous system and muscle movements. Psychologically, emotions draw our attention towards situations of importance, and act as motivating factors in approach/avoidance behavior (Levenson, 1994).

Emotions allow for quick, heuristic decision-making because they trigger automatic behavioral, physiological, and communication responses (Frijda, 1988; Lerner,

Li, Valdesolo, & Kassam, 2014; Levenson, 1994; Oatley & Jenkins, 1992). Sometimes higher cognitive processing is bypassed in favor of automatic behavioral responses. For instance, when experiencing a threatening situation, emotions (such as fear) create instinctive action instead of planning and thoughtful processing (Frijda, 1986; Lerner et al., 2014).

However, the way that information is processed (deliberately and accurately versus quickly and inaccurately) can change based on the valence, certainty, and approach/avoidance motivations that different emotions elicit. Valence refers to the positive or negative qualities of the emotion (Frijda, 1986). For example, anger, contempt, and sadness are all negative emotions whereas happiness, hopefulness, and excitement are positive. Numerous studies have found that negative emotions are less likely to induce heuristics or stereotyping but more likely to lead to reliance on rational processing of information (Bless et al., 1996; Bodenhausen, et al., 1994a). However, some studies have found that anger brings about a greater reliance on stereotypes than sadness or neutral feelings (Bodenhausen, et al.,1994b) which is inconsistent with valence findings. This indicates that even within the same valence, negative emotions (sadness, anger, fear, disgust) may operate in completely different ways.

Certainty on the other hand, refers to the feeling of certainty or uncertainty that is evoked in relation to the outcome of the situation. In other words, certainty is the idea that the world is stable and predictable (Gambetti & Giusberti, 2009). For example, surprise, hopefulness, and fear elicit uncertainty, because when individuals experience these emotions, they are uncertain of the outcome and the situation was unpredictable. On the contrary, happiness, anger, and disgust elicit certainty. In these situations, individuals are certain of what has happened because they have already experienced it. Interestingly, the disparity in findings mentioned in the previous paragraph may be explained by the

certainty of the emotion. Researchers find that highly certain emotions (i.e. happiness, anger, disgust) prompt greater use of stereotyping and heuristic processing than uncertain emotions (Tiedens & Linton, 2001). This may be due to the need to reduce uncertainty which requires deliberate processing of information (Weary, Jacobson, Edwards, & Tobin, 2001).

Emotions also influence decision-making by their approach/avoidance motivation. For example, positive emotions felt in regards to others might elicit approach behaviors (e.g. helping) whereas negative emotions felt in regards to others might elicit avoidance behaviors (e.g. staying away; Levenson, 1994). It should be noted however, that approach/avoidance motivation and valence are independent of one another (Gable & Harmon-Jones, 2010). For example, anger, a negatively valenced emotion, prompts approach motivation such as attacking (Frijda, Kuipers, & ter Schure, 1989).

Approach/avoidance motivation is rooted in goal acquisition, to either obtain/achieve the goal or object or to avoid the goal or object (Harmon-Jones, Price, & Gable, 2012). Some researchers suggest that the intensity (high or low) of the motivation to approach or avoid is the determinant in whether that emotion increases the use of heuristics (broadens attention) or decreases the use of them (narrows attention). Specifically, when an emotion is high in goal achievement or object acquisition (e.g. desire), the attentional focus will be directed at obtaining the goal or object and thus attention is narrowed. Therefore, the use of heuristics is unlikely. However, when an emotion is low in goal achievement or object acquisition (e.g. happiness), the attentional focus is more broad because there is no specific goal to focus on. Subsequently, the use of heuristics is greater. This is also linked to pre-goal, post goal, and non-goal relevant states. In pre-goal states, attention is directed at achieving the goal and therefore, attention is narrowed. In both post-goal and non-goal relevant states, the goal is already

achieved or is not relevant and consequently, attention is broadened because it is directed elsewhere (Gable & Harmon-Jones, 2010; Harmon-Jones et al., 2012). However, it is important to mention that some researchers explain that individuals use heuristics no matter the intensity of goal acquisition, the incentives offered to make correct decisions, or the weight of the decision (life and death; Reisberg, 2016). Furthermore, heuristics are likely to be used when there isn't enough time to make decisions (Finucane, Alhakami, Slovic, & Johnson, 2000) and when the individual has limited cognitive resources (De Neys, 2006; Gilbert, 1989).

Although this theory explains the findings regarding happy individuals and their increased use of heuristics, it contrasts with many research findings regarding anger and sadness, and their information processing styles. Happiness, which is believed to be a post-goal or non-goal relevant state (Harmon-Jones et al., 2012) is low in motivational intensity and therefore broadens the scope of attention, allowing more heuristic processing of information. In so far as shown in the motivational intensity literature, happiness seems to be the only emotion which past research findings agree is related to a more heuristic style of processing (Eagly & Chaiken, 1993; Forgas, 1998; Forgas, 2007; Isen & Means, 1983; Petty & Cacioppo, 1986; Petty et al., 1991; Schwarz et al., 1991; Sinclair & Mark, 1995; Stevenson & Hicks, 2016).

Specifically, according to this theory, some researchers find that anger, which is believed to be in response to a blocked goal and thus, is highly motivated towards goal attainment, narrows attention (Gable, Poole, & Harmon-Jones, 2015). This allows for attention to be directed at achieving the goal, resulting in less heuristic based judgments due to the processing of local elements (Gable & Harmon-Jones, 2010). However, this is in direct contrast to the findings in present literature which have found that anger is related to more heuristic, quick and dirty processing (Ask & Granhag, 2007;

Bodenhausen et al., 1994; Lerner et al., 1998; Small & Lerner, 2008; Tiedens, 2001; Tiedens & Linton, 2001; Xing, 2014).

Sadness is in response to the loss of a goal or removing oneself from the idea of obtaining a long-term blocked goal and reacting by either giving up on the goal, or becoming open to a new goal (Klinger, 1975; Oatley & Johnson-Laird, 1987). According to the intensity of motivation theory, sadness is lower in motivational intensity due to the goal loss which causes a broadening of attention and increased heuristic use (Gable & Harmon-Jones, 2010; Harmon-Jones et al., 2012). These findings contrast with present research which find that sadness is related to deliberate and accurate processing of information and less use of heuristics (Ask & Granhag, 2007; Bodenhausen et al., 1994; Bodenhausen et al., 2001; Bodenhausen et al., 1994b; Bonanno et al., 2008; Forgas, 1998; Lerner, et al., 1998; Perez Nieto et al., 2009; Schwarz, 1990; Weary, 1990; Small & Lerner, 2008; Tiedens, 2001; Tiedens & Linton, 2001, Xing, 2014). Although interesting, much research is still needed on motivational intensity to fully understand the impact of high versus low intensity motivation on specific emotions and how that impacts quick and dirty versus slow and accurate decision making.

Valence, certainty, approach/avoidance motivation, and goal acquisition all influence the use of heuristics and stereotyping. Each category is linked with the other, however, each can be measured independently of one another. Although there have been mixed findings for heuristic use with positively and negatively valenced emotions, some of the discrepancies are cleared up by research involving certainty and approach/avoidance motivation of emotion. Unfortunately, the intensity of goal acquisition (high/low) with respect to approach and avoidance motivation also muddles the findings with heuristic use for specific emotions.

Types of Emotions

Emotions have been studied in three ways with respect to social groups: chronic integral affect, episodic integral affect, and incidental affect. Both chronic integral affect and episodic integral affect deal with emotions that are elicited by the social group. Incidental affect, on the other hand, refers to emotions that are elicited by the environment, not the social group (Bodenhausen et al., 2001).

Specifically, chronic integral affect refers to the long-harbored emotions held towards a social group due to the cultural beliefs about the group. In the social hierarchy, groups that are stigmatized are viewed as having low value and subsequently elicit corresponding feelings: contempt, anger, and disgust. These negative emotions similarly prompt avoidance responses towards the group. In contrast, groups that are not stigmatized and are also highly valued elicit corresponding positive feelings and prompt approach responses. The emotions elicited and the approach/avoid responses serve to keep the social group in its “rightful” place within the structural hierarchy. Consequently, individuals chronically exposed to the cultural beliefs and status of the group may start to hold the same feelings and beliefs towards the group (Bodenhausen et al., 2001).

Episodic integral affect however, refers to the emotions elicited during an interaction with an outgroup member. Interestingly, episodic affect can be the same or opposite the emotions elicited by chronic affect and therefore can increase or decrease those emotions. For example, in general, one might feel negative feelings (sadness, disgust, avoidance) towards someone with a debilitating illness but when interacting with the individual, one may feel positive emotions (hopefulness, happiness, approach). In this example, the emotions elicited by the situation (episodic) are opposite to the emotions elicited by the culture (chronic). However, if an interaction with an outgroup member goes poorly, this may confirm chronic affect and thus solidify it more (Bodenhausen et al.,

2001). Indeed, contact hypothesis explains just that: interactions with outgroup members that end positively can improve relations between groups (Allport, 1954).

Incidental affect, however, differs from both chronic and episodic affect. Incidental affect refers to emotions arising from everyday activities and how they affect intergroup judgments when they are unrelated to the social group (Bodenhausen et al., 2001; Lerner et al., 2014). This carry over effect happens when emotions experienced or elicited from the environment, an individual's personal disposition, or an event occurring in everyday life influence decision-making in unrelated areas (Cohen, Pham, & Andrade, 2007). For example, if a police officer has an argument with his or her spouse, how does that incidental anger affect future, unrelated shoot decisions? Some theorists explain that prejudice may derive from frustration and anger encountered elsewhere but then displaced onto stigmatized groups (Dollard, Doob, Miller, Mowrer, & Sears, 1939).

Although chronic and episodic integral affect are important to understanding stereotyping and shoot decisions, incidental affect has become a more prominent focus recently. Many researchers induce emotions to investigate the effects of incidental emotions on decision-making. Some have found that induced sadness increased rejections of unfair offers in an ultimatum game (Harle & Sanfey, 2007; Harle, Chang, van't Wout, & Sanfey, 2012). Others have investigated the effects of induced emotions on risk-taking and risk aversion. Researchers have found that induced anger and sadness both separately increased risk-seeking whereas induced fear and anxiety separately increased risk-aversion (Lerner & Keltner, 2001; Raghunathan & Pham, 1999).

One reason for this shift in direction is due to the ability to experimentally manipulate incidental emotions. Participants can easily recall an event which made them feel a specific emotion, and as a result, an incidental emotion is induced. Episodic integral affect can also be manipulated, but less easily. Chronic integral affect however,

cannot be manipulated, and consequently must be studied in already existing groups. Similarly, chronic integral affect is also wrought with social desirability problems. Because today's society values egalitarianism and discourages long-harbored negative emotions towards disadvantaged groups, individuals are unlikely to admit to harboring these emotions. Thus, inducing emotions to investigate their carry over effects on decision-making is an effective and well used alternative method (Bodenhausen et al., 1994a; Bodenhausen et al., 1994b; Dasgupta, DeSteno, Williams, & Hunsinger, 2009; Strack et al., 1985).

Unsurprisingly, some studies have already shown that incidental emotions can impact life and death decisions, specifically shoot decisions. Researchers find that induced incidental fear increases racially biased shoot decisions for females (Hunsinger, 2010) and those induced with incidental anxiety make more error-full shoot decisions (shooting unarmed individuals) and tend to be less accurate in their aim (Nieuwenhuys, Savelsbergh, & Oudejans, 2012). In the "Turban Effect", researchers find that participants induced with anger displayed a more trigger happy response than those induced with happiness or those in a neutral condition. However, participants induced with happiness showed the most racial bias towards non-Caucasian Muslims (Unkelbach et al., 2008).

Although the "Turban Effect" (Unkelbach et al., 2008) was an important preliminary study of incidental emotions on shoot decisions, several issues surfaced. In the original shooter bias/racial bias paradigm, researchers investigated bias towards Blacks and its moderators. In the Turban Effect study, racial bias was examined with regards to Muslim dress and the moderation of bias via incidental emotion. While researching bias towards Muslims is important, it is also important to go back to the original paradigm and assess whether incidental affect moderates racial bias towards Blacks in shoot decisions. Another issue found in the Turban Effect study was that

reaction time scores were not computed nor analyzed. Similarly, small sample sizes were used. Lastly, although not an issue per se, the Turban Effect study employed feedback (negative, positive, or neutral) in response to the participants' life goals in order to induce emotion. In these regards, we wished to expand on this previous literature and more closely resemble the original shooter paradigm of Correll et al., 2002, 2006, 2007a, 2007b, and 2010.

Accordingly, in the present study, we investigated the effect of four incidental emotions (anger, contempt, happiness, and sadness) on bias towards Blacks in shoot decisions. We utilized the well-known and effective method of inducing emotion by having participants recall and write about the time they felt that specific emotion (Bodenhausen et al., 1994a; Bodenhausen et al., 1994b; Dasgupta et al., 2009; Strack et al., 1985). We employed larger sample sizes and we analyze both criterion scores and reaction time scores to assess for both shooter bias and racial bias. We believe that the strength of the present study is due to these changes.

Emotions and Shoot Decisions

While research has investigated fear and anxiety on shoot decisions; anger, contempt, sadness, and happiness may affect shoot decisions through the increase or decrease of stereotyping usage. Specifically, anger, contempt, and happiness may increase stereotyping, the use of heuristics, and the broadening of attention which then may increase racial and shooter bias.

Anger is a negative emotion usually felt in response to a negative event caused by another person (Ask & Granhag, 2006; Lerner & Keltner, 2000; Lerner & Tiedens, 2006). Anger is an emotion that is associated with elements of certainty and control (Smith & Ellsworth, 1985; Xing, 2014). Individuals who experience anger are certain that the negative event was unfair, are certain of who to blame for the negative event, and are

certain of the outcome of the situation (Kuppens, Van Mechelen, Smits, De Boeck, & Ceulemans, 2007; Thiel, Connelly, & Griffith, 2011). Likewise, those who are angry with an individual will be more likely to express that anger if they feel like they have more power and some amount of control over that individual (Fischer & Roseman, 2007).

Anger is often experienced in response to ostracism, rivalry, injustice (Gambetti & Giusberti, 2009), or barriers to obtaining goals. With goal obstruction, if the barrier is removed, the goal could still be obtained (Bodenhausen et al., 2001; Carver, 2004; Carver & Harmon-Jones, 2009; Frijda, 1986; Gross & Levenson, 1995; Harmon-Jones & Sigelman, 2001; Lench, Flores, & Bench, 2011; Lench et al., 2016; Levine, 1996; Levine & Pizarro, 2004; Roseman, Antoniou, & Jose, 1996). This suggests two things: a) that the individual experiencing anger is not powerless, and b) that the situation is not entirely out of the individual's control.

This prompts the angry individual to act by either showing anger or approach/attacking in order to remove the obstacles. Indeed, research shows that angry individuals are more focused on physically reacting than verbally reacting (Grezo & Pilarik, 2013; Rabiner, Lenhart, & Lochman, 1990; Scarpa & Raine, 1997). Angry persons may attempt to stop the individual responsible for the transgression (Hutcherson & Gross, 2011) and may even attack that individual (Harmon-Jones & Allen, 1998; Roseman, Wiest, & Swartz, 1994). So, anger functions to ameliorate the situation by getting others to change their unwanted behavior (Fischer & Roseman, 2007; Frijda et al., 1989; Mackie, Devos, & Smith, 2000; Ufkes et al., 2011).

Anger motivates people into action which enables them to focus on attaining the goal by removing the obstacle. So, cognitively, attention is directed towards the goal and information that is important to the goal (Lench et al., 2016). Also, cognitively, anger has been shown to effect decision-making by fostering quick and dirty processing of

information which leads to more bias (Bodenhausen et al., 2001; DeSteno, Petty, Wegener, & Rucker, 2000; Lench & Levine, 2005; Lench et al., 2016; Lerner & Keltner, 2000, 2001).

In general, incidental anger has been associated with heuristic processing (Ask & Granhag, 2007; Bodenhausen et al.,1994; Lerner et al., 1998; Small & Lerner, 2008; Tiedens, 2001; Tiedens & Linton, 2001; Xing, 2014), increased physiological activity, and increased behavioral expression (Lench et al., 2016). With respect to social situations, anger induces an approach motivation leading to intentions of confronting, attacking, or harming outgroup members (Mackie et al., 2000; Mackie, Smith, & Ray, 2008), intentions of physically assaulting outgroup members (Dijker, Koomen, & van den Heuvel, 1996; Frijda et al., 1989), and riskier decision making (Gambetti & Giusberti, 2009). In regards to ethical dilemmas, induced anger leads to more desire to punish perpetrators (Hutcherson & Gross, 2011), harsher punishments of perpetrators (Grezo & Pilarik, 2013), more stereotypic judgements of perpetrators (Bodenhausen et al., 1994), less cooperation (Polman & Kim, 2013), less recognition of circumstances and less consideration of consequences (Kligyte, Connelly, Thiel, & Devenport, 2013). In essence, people become less ethical when they are angry.

Taken together, these findings suggest that incidental anger may affect shoot decisions in a couple of ways. First, induced anger may influence the decision to use force due to the increase of risky decision making, desire to confront and punish perpetrators, and the inconsideration of consequences of those actions. Second, induced anger may increase shooter and racial bias due to the increase of heuristic processing. Shooter bias is the tendency to make a shoot decision more quickly for armed African American men than armed Caucasian men. Similarly, racial bias is the tendency to make more errors (shooting unarmed individuals) for African American men than for Caucasian

men. Both biases are influenced by the stereotype that African Americans are dangerous (Correll et al., 2002). Indeed, one experiment found that angry participants exhibited marginally more shooter bias than happy or neutral participants (Unkelbach et al., 2008). However, it should be taken into consideration that the authors of this study had an extremely small and uniform sample (n = 22) of Australian participants within each of the three conditions.

Contempt, a negative emotion described as hatred or scorn towards others with undertones of disgust, consists of patronizing condemnation in regards to others (Izard, 1977; Miller, 1997; Sanders, Wisse, & Yperen, 2015) and may evolve from unresolved anger (Fischer & Roseman, 2007). It is elicited in the same types of situations that anger is elicited in, but contempt develops after multiple failed attempts to use anger to get the other person to change their unwanted behavior (Fischer & Roseman, 2007; Tausch et al., 2011). In other words, contempt is in response to failure at the use of anger to remove an obstruction to a blocked goal. These failed attempts may elicit a feeling of lack of influence over others. Indeed, researchers find that contempt is associated with feeling a “lack of control over others” (Ufkes et al., 2011; Weiner, 1980). Similar to anger, contempt is also a certain emotion due to the certainty of the outcome (the inability to remove the obstacle blocking the goal).

The position of power in hierarchical relationships has a role in contempt as well. Those in powerful positions may feel contempt towards subordinates or those in less powerful positions (Brewer & Alexander, 2002; Fischer & Roseman, 2007; Sanders et al., 2015). Thus, contempt is felt towards those who are lower status, inept, and uncontrollable, and this functions as avoidance of those individuals (Fischer & Roseman, 2007; Hutcherson & Gross, 2011; Melwani & Barsade, 2011; Skiffington, Fernandez, & McFarland, 1998; Ufkes et al., 2011). Indeed, some believe that contempt is utilized to

protect oneself from harmful others by avoiding them (Hutcherson & Gross, 2011; Ufkes et al., 2011). As such, researchers have found that those who feel contempt towards others will often exclude them, reject them, or treat them condescendingly (Ekman, 1994; Izard 1977; Hutcherson & Gross, 2011; Ufkes et al., 2011).

However, some researchers explain that in intergroup settings, contempt elicits both approach (i.e. attacking) and avoidance (i.e. excluding) behaviors (Cuddy et al., 2007). Similarly, researchers find that in an intergroup context, contempt is associated with extreme behaviors (i.e. "nonnormative action") such as arson, throwing bricks, and attacking blamable persons (Tausch et al., 2011). Contempt has also been found to be associated with the dehumanization of outgroups (Esses, Veenvliet, Hodson, & Mihic, 2008) which may explain approach and attacking behaviors (Fousiani, Dimitropoulou, & Michaelides, 2016; Haslam, 2006). Interestingly, dehumanization has been found to be associated with prejudice and racism as well (Fousiani et al., 2016). Furthermore, individuals high on dispositional contempt (contempt as a personality style) were found to be "prone to anger, hostility, and aggression". The same authors also found that sadism, the tendency to enjoy hurting others significantly predicted dispositional contempt and that dispositional contempt was significantly and positively associated with racism towards African Americans (Schriber, Chung, Sorensen, & Robins, 2016).

Unfortunately, compared with anger, very little research has been conducted on contempt (Tasch et al., 2011), especially with regards to decision making or use of heuristics. In regards to decision making, contempt has been associated with "irrational" judgments (e.g. rejecting unfair offers) in the Ultimatum Game (Nguyen et al., 2011). Although research suggests that stereotyping others as incompetent can elicit feelings of contempt (Cuddy et al., 2007; Ufkes et al., 2011), it is unknown whether feelings of contempt can elicit stereotyping of others.

However, regardless of the lack of research on contempt and its role in decision-making and heuristic use, contempt may still affect shoot decisions in a couple of ways. Because contempt has been positively associated with the dehumanization of outgroups and dehumanization has been linked to attacking others and racism, this may indicate a greater likelihood for contemptuous others to rely on stereotypes in judgments leading to increased racial and shooter bias in shoot decisions. Similarly, contempt has been shown to be directly related to attacking others, aggression, and racism, which suggest that contempt may facilitate shoot decisions (making them faster) and increase racial and shooter bias. Lastly, because contempt is built on top of anger, contempt may elicit more racial bias and shooter bias than anger. On the contrary, due to the findings that individuals who feel contempt may avoid others, it is possible that feeling contempt may slow shoot decisions and decrease racial and shooter bias. Therefore, it is important to compare the effects of anger versus contempt on shoot decisions with regards to reaction times, accuracy rates, racial bias, and shooter bias.

Happiness is a positively valenced emotion rooted in certainty, with feelings of control over and responsibility for the situation. In regards to approach/avoidance behavior, happiness is related to approach motivations with attention to the happy event of primary interest (Smith & Ellsworth, 1985). Some researchers suggest that happiness may be in response to goal attainment (Gable & Harmon-Jones, 2010). Therefore, happiness is a post-goal state.

Cognitively, incidental happiness is associated with more reliance on heuristics (Forgas, 1998; Isen & Means, 1983; Schwarz et al., 1991), intuitive style thinking (Stevenson & Hicks, 2016), less attention directed towards concrete information (Forgas, 2007), and less accurate decision making (Sinclair & Mark, 1995). Similarly, happy participants pay more attention to heuristic cues in persuasive messages (Eagly &

Chaiken, 1993; Petty & Cacioppo, 1986; Petty et al.,1991). Happy people are generally more risk averse (Guven & Hoxha, 2015) when the consequences of their actions are great, probably because making the wrong decision will take away their happiness (Perez Nieto et al., 2009). Researchers find that happiness increases priming effects (Hänze & Hesse, 1993; Hänze & Meyer, 1998). As with social judgements, happy participants (as compared to neutral participants) relied more on stereotypic cues to determine punishments for perpetrators of alleged crimes (Bodenhausen et al., 1994a). Similarly, happy participants (more so than neutral participants) stereotyped African American names to be more criminal than European names (Park & Banaji, 2000).

Based on these findings, incidental happiness could affect shoot decisions in a couple of different ways. First, because induced incidental happiness increases heuristic processing and stereotyping, racial bias and shooter bias could be increased. Indeed, research has found that happy participants exhibit more racial bias towards Muslims in shoot decisions (Undelbach, et al., 2008). However, it should be noted that this study had an extremely small sample size of Australian students which limits the generalizability of the research. Incidental happiness is also known to decrease accuracy in decision making and accordingly, it could for shoot decisions as well. On the other hand however, happy people are less willing to take risks and want to preserve their happiness which might translate to decreased shoot decisions in general.

Anger, contempt, and happiness are all emotions that have appraisals of certainty. This means that individuals who experience these emotions feel certain of the outcome of their situation. What is interesting is that appraisals of certainty may lead to heuristic processing of information (Tiedens & Linton, 2001) while appraisals of uncertainty compel just the opposite: systematic, logical, and accurate processing of information (Pelham & Wachsmuth, 1995; Thiel et al., 2011; Weary & Jacobson, 1997).

Emotions that are certain involve convictions about the future, which to examine carefully would introduce doubt and uncertainty. Consequently, people who feel certain are less likely to use effortful cognitive strategies and are more likely to rely on unsystematic processing (Theil et al., 2011). Uncertain emotions on the other hand, such as sadness, are more likely to involve systematic processing of information.

Sadness is a negative emotion most likely felt in response to an event caused by an uncontrollable situation and this is coupled with uncertainty of the outcome of the situation (Ask & Granhag, 2006; Ellsworth & Smith, 1988; Smith & Ellsworth, 1985, Xing, 2014). Sadness is often in reaction to the loss of one's goal by a situation outside of one's control, with an inability to regain the goal (Carver, 2004; Frijda, 1986, 1987; Gross & Levenson, 1995; Keltner, Ellsworth, & Edwards, 1993, Lench et al., 2011; Lench et al., 2016; Levine, 1996; Levine & Pizarro, 2004; Oatley & Jenkens, 1996). This suggests that sad individuals may experience powerlessness. Sad individuals experience a drop in physiological activity (Ekman, Levenson, & Friesen, 1983; Kreibig, 2010; Levenson, 2011, 2014) which allows them to focus their attention on the failed goal (Andrews & Thomson, 2009; Forgas, 1998). Sadness has been shown to fall into the avoidance dimension (Smith & Ellsworth, 1985). Others believe that sadness may prime a goal involving pleasure seeking (Raghunathan & Pham, 1999). Still, some suggest that sadness may not have a specific approach/avoidance mechanism (Xing, 2014).

Cognitively, sadness is believed to affect decision-making by encouraging the processing of information in a focused, thoughtful, accurate, and logical manner which leads to less biased judgments (Bodenhausen et al., 2001; Bodenhausen et al., 1994b; Forgas, 1998; Schwarz, 1990; Weary, 1990). This style of cognitive processing is believed to enhance attention towards past goal failures in order to not repeat them (Ambady & Gray, 2002; Andrews & Thomson, 2009; Forgas, 1998; Markman & Weary,

1996). Similarly, incidental sadness is known to be associated with accurate processing of information, relying on details during processing, and less heuristic use (Ask & Granhag, 2007; Bodenhausen et al., 1994; Bonanno et al., 2008; Lerner, et al., 1998; Perez Nieto et al., 2009; Small & Lerner, 2008; Tiedens, 2001; Tiedens & Linton, 2001, Xing, 2014).

In regards to social research involving stereotyping, incidentally sad individuals showed less stereotypic based judgments as compared to incidentally angry individuals indicating a less heuristic and more deliberative information processing approach. Sad participants stereotyped African American names as criminal less than neutral participants (Park & Banaji, 2000). Interestingly, incidentally sad individuals did not differ from incidentally neutral individuals in their social judgments (Bodenhausen et al., 1994). Sad individuals are also more likely to engage in stereotype correction, meaning that sad persons stereotype much less (Lambert, Khan, Lickel, & Fricke, 1997). In regards to social decisions, individuals induced with sadness were less likely to accept unfair monetary offers in the Ultimatum Game (Harle & Sanfey, 2007), were more likely to be fair in an Ultimatum Game (Tan & Forgas, 2010), and helped less fortunate others more than individuals who were induced with anger or individuals in neutral moods (Small & Lerner, 2008). However, induced sadness has also been related to increased selfishness and less sharing. These mixed results may lend credence to the idea that sad individuals are motivated to change their situation by any means necessary (Polman & Kim, 2013).

Taken together, these results indicate that induced sadness should affect shoot decisions the same way that incidental sadness affects decision making. Individuals induced with sadness should take longer to make decisions, and have fewer errors in their decisions. So, individuals induced with sadness should show more accuracy in their shoot decisions and take much longer to make the decision. Similarly, because

incidentally sad individuals show less stereotyping, and less use of heuristics, this should transfer to shoot decisions as well. Induced incidental sadness should lessen racial bias and shooter bias.

To summarize, four incidental emotions (anger, contempt, sadness, and happiness) are known to affect decision-making in systematic ways. Anger, contempt, and happiness rely more on heuristics which make decision-making fast but inaccurate. On the contrary, those induced with incidental sadness tend to lean less on heuristic use and more on deliberate processing thus making decisions more slowly and more accurately. The influence that the specific emotion has on day to day decision-making may also affect harder decisions (e.g. shoot decisions) in the same way. However, little research examines the impact these unrelated emotions have on life and death decisions which, in real life, will affect many people.

Therefore, the purpose of this dissertation is to examine four specific incidental emotions (anger, contempt, sadness, and happiness compared to a neutral emotion) with regards to how they may affect shoot decisions; specifically racial bias, a stereotype driven bias where individuals make more errors in their shoot decisions for Blacks than for Whites, and shooter bias, also a stereotype driven bias where individuals make faster shoot decisions for Blacks than for Whites (Correll et al., 2002). The rationale for these four specific emotions come from the body of literature showing that each, when induced, incidentally influence decision-making in general, and also influence decision-making relative to shoot decisions (moral dilemmas, ethical decisions, risky decisions, and approach/avoidance). Analyzing the four dependent variables separately (racial bias, shooter bias, reaction times, and accuracy rates) will provide more information regarding whether emotions drive heuristic processing in decisions in general (shown with overall

reaction times and accuracy rates) or if emotions drive stereotyped responses specifically (shown with racial bias and shooter bias).

Racial Bias Hypotheses

It was hypothesized that the participants in the angry, contemptuous, and happy conditions would exhibit significantly more racial bias than participants in the neutral condition. Furthermore, contemptuous participants would exhibit more racial bias than angry participants. Lastly, it was hypothesized that sad participants would exhibit less racial bias than angry, contemptuous, or happy participants, but equal to that of neutral participants.

Shooter Bias Hypotheses

It was hypothesized that participants who were angry, contemptuous, and happy, would show more shooter bias than neutral participants. Those who were contemptuous would show more shooter bias than those who were angry. Lastly, sad participants would show less shooter bias than angry, contemptuous, or happy participants and would not differ from neutral participants.

Reaction Time Hypotheses

Angry, contemptuous, and happy participants were hypothesized to have shorter reaction times in their shoot decisions than neutral participants. Sad participants however, were expected to have significantly longer reaction times than angry, contemptuous, and happy participants, but would not differ from neutral participants.

Accuracy Rate Hypotheses

Sad participants were hypothesized to have more accuracy in their shoot decisions than angry, contemptuous, or happy individuals. However, sad participants were not expected to differ in their accuracy from neutral participants. Lastly, happy

participants were expected to show less accuracy in their shoot decisions than neutral participants.

Chapter 2

Method

Participants and Procedure

In order to determine sample size, a power analysis utilizing G*Power 3.1.9.2 (Faul, Erdfelder, Lang, & Buchner, 2007) was conducted. Input parameters were as follows: Effect size f (.29), number of groups (5), utilizing a statistical test of ANOVA: fixed effects, special, main effects and interactions. The power analysis indicated that for five conditions, 300 participants were needed with 60 in each group.

Students from an introductory psychology class at the University of Texas at Arlington (N = 427) were recruited to participate in two seemingly separate in-lab studies investigating “emotional memory recall” and “decision-making” for course credit. Ninety-five participants timed out on more than 50% of the trials in the First Person Shooter Task (similar to Correll et al., 2002 but borrowed from Kenworthy, Barden, Diamond, & del Carmen, 2011) and were not included in analyses. Likewise, 18 participants wrote less than one paragraph or wrote about a different emotion during the emotion induction phase and were not included in the analyses. Similarly, 14 participants timed out on more than 50% of the trials in the game *and* wrote about a wrong emotion or wrote too little to be considered in analyses. Consequently, 300 participants remained (M_{age} = 20.56, SD = 4.63) which included a variety of ethnic backgrounds (16.3% African American, 20.7% Asian, 28.0% Caucasian, 26.3% Hispanic, 1.0% Middle Eastern, 6.0% More than one ethnicity, 1.7% Other). Females (61.0%) made up the majority of the sample as compared to males (39.0%). The breakdown of the number of participants in each condition were as follows: 64 angry, 57 contemptuous, 58 sad, 64 happy, and 57 neutral.

Only participants who had filled out the prescreen questionnaire beforehand were allowed to sign up for the experiment. Upon entering the laboratory, participants were told

that they would be participating in two short studies, one on “emotional memory recall” and the other on “decision-making”. Participants as well as research assistants were kept blind to the purpose of the study. Researcher 1 started the experiment by handing out consent forms, briefly going over the consent forms with the participants and then starting the emotional memory recall study for the participants which was completed online in Qualtrics. Participants were told that when they finished Study 1 (“emotional memory recall”) they should inform the researcher so that Study 2 (“decision-making”) could be implemented. When participants had completed Study 1, Researcher 2 began Study 2 for the participants by clicking on the decision-making game which was located in a folder on the desk-top. After the participants had completed the game, Researcher 2 handed the participants the debriefing statement and thanked them for their participation.

During the “emotional memory recall” part of the experiment (or “Study 1”) participants answered demographic questions regarding their gender, ethnicity, and age. Afterward, participants were asked to rate how they felt at that exact moment with regards to 12 emotions. Next, participants were randomly assigned to one of five emotion induction conditions: anger, contempt, happy, sad, or neutral (which was the control condition) where they were asked to write about an autobiographical experience regarding the emotion assigned to them. Lastly, participants rated their feelings on the same 12 emotions that they saw previously. The manipulation check consisted of rating the 12 emotions before and after the emotion induction.

In the “decision-making” part of the experiment, participants played the First Person Shooter Task. This task required participants to “shoot” (by pressing a button on the computer keyboard) when they saw a gun, and to “not shoot” (also by pressing a button) when they did not see a gun. This game consisted of 18 practice trials and 64 active trials.

Measures

Prescreen Questionnaire

The Adult Temperament Questionnaire Short Form (ATQ SF), measured self-reported negative affect, extraversion/surgency, effortful control, and orienting sensitivity (Derryberry & Rothbart, 1988; Rothbart, Ahadi, & Evans, 2000). Each of the four factor scales (negative affect, extraversion/surgency, effortful control, and orienting sensitivity) consisted of their own subscales. Negative affect was made up of the scales: fear, sadness, discomfort, and frustration. Extraversion/surgency was made up of: sociability, positive affect, and high intensity pleasure. Effort control consisted of: attentional control, inhibitory control, and activation control. Orienting sensitivity was made up of: neutral perceptual sensitivity, affective perceptual sensitivity, and associative sensitivity. Please see Table 2.1 for reliability analysis of the ATQ SF. Participants rated each of the 77 statements on a Likert type scale ranging from 1 (extremely untrue of you) to 7 (extremely true of you). Each statement also included the answer choice “not applicable”. Example ATQ statements were, “I become easily frightened”, “I’m often bothered by light that is too bright”, and “When I hear of an unhappy event, I immediately feel sad”. Participant’ responses to the statements in each of the 13 scales were averaged to create that scale score. Next, to score the four factor scales, participants’ responses to the items within that factor scale were averaged. Out of 300 participants, only one person had missing data.

Immigrant status was also a question on the prescreen which asked participants whether they self-identified as immigrant or American. Specifically, participants were asked, “Do you consider yourself to be an immigrant”. Response options for this question included “yes”, “no”, or participants were able to opt out of answering. Of the 300 participants, only four people decided to opt out of answering this question.

Number of years lived in the U.S was also asked on the prescreen questionnaire. The participants responded by writing the number of years they lived in the U.S. in a blank space provided. Participants who wrote “less than one year” or “0” were coded as .5. Out of 300 participants, 10 did not respond to this question.

Table 2.1

Cronbach's Alpha for Reliability Analysis with the ATQ SF

	Cronbach's α
Negative Affect	**.80**
Fear	.61
Sadness	.65
Discomfort	.71
Frustration	.70
Extraversion/Surgency	**.73**
Sociability	.73
Positive Affect	.64
High Intensity Pleasure	.61
Effortful Control	**.78**
Attentional Control	.69
Inhibitory Control	.50
Activation Control	.72
Orienting Sensitivity	**.72**
Neutral Perceptual Sensitivity	.41
Affective Perceptual Sensitivity	.59
Associative Sensitivity	.60

Note. Factor scales are listed in bold. Scales (i. e. sub-scales) are listed in normal print. Sample size includes 300 participants.

Demographics

The demographics questionnaire consisted of questions regarding the individual’s ethnicity, age, and gender. It was conducted on Qualtrics along with the emotion induction and manipulation check. Please see *Appendix A* for the demographics questionnaire.

Manipulation Check

Next, participants completed the manipulation check questionnaire where they rated their feelings from 0 (not at all) to 9 (extremely) with 12 emotions: happiness, excitement, pleasure, anger, frustration, irritation, sadness, sorrow, gloom, contempt, hatred, and scorn. Each of the emotions was defined for the participants' convenience. The directions stated: "Please rate how you feel now" followed by each of the 12 emotions and their definitions. The emotions were shown to participants in a completely random order. Please see *Appendix B* for the Manipulation Check questionnaire and Table 2.2 for the reliability analysis of the items.

Indices were calculated for the four overarching emotion words (anger, sadness, happiness, and contempt) by averaging the responses to the similar emotions. For example the anger index consisted of the average of responses to anger, frustration, and irritation. The contempt index consisted of responses to contempt, hatred, and scorn. The sadness index consisted of participant responses to sadness, sorrow, and gloom. The happiness index contained the average of the responses to happiness, excitement, and pleasure. Because the manipulation check questionnaire was completed twice (before and after the emotion induction) there were two indexes for each of the four emotions. For example, there was a before-anger index and an after-anger index.

Table 2.2

Cronbach's Alpha for Reliability Analysis with the Manipulation Check

	Cronbach's α	
Emotion Index	Before	After
Happy Index	.83	.88
Anger Index	.84	.91
Sad Index	.88	.91
Contempt Index	.76	.90

Note. Participant sample size was 300. The scale was taken twice. Once before the emotion induction and once after the emotion induction.

Emotion Induction

Each participant was randomly assigned to one of five emotion induction conditions (angry, contemptuous, happy, sad, or neutral). For each condition, participants were asked to write about an autobiographical memory in which they had experienced that emotion. For the angry condition, participants read the directions: “Please recall an event that made you feel very angry (a strong feeling of annoyance, displeasure, or hostility). In the space provided, describe in detail the situation that caused you to feel angry. Remember how you felt during the event and describe any thoughts that increased this feeling”. For the other conditions including sad, contempt, and happy, the directions were the same except that the emotion word and respective definition replaced that of anger. The neutral condition slightly differed in directions. Participants were asked to, “Please recall and describe in detail the mundane (lacking interest or excitement, dull) events of the previous day”. This method of emotion induction has been shown to be effective (Bodenhausen et al., 1994a; Bodenhausen et al., 1994b; Dasgupta et al., 2009; Strack et al., 1985).

First Person Shooter Task

The first-person shooter task (FPST; similar to Correll et al., 2002 but borrowed from Kenworthy et al., 2011) was a split-second decision making game in which participants saw Black and White individuals holding guns or non-guns. The object of the game was to shoot (by pressing a button) when a weapon was shown and not shoot (by pressing a button) when non-lethal objects were shown (i.e. soda cans, cell phones, or wallets). Sixty-four active trials included 16 pictures of African Americans holding safe objects, 16 pictures of African Americans holding guns, 16 pictures of Caucasians holding safe objects, and 16 pictures of Caucasians holding guns. The first 18 pictures were practice and were not included in analyses. Thus, the participant encountered a total of 82 trials.

The directions on the computer read, “You’re about to play a shooter video game. In this game, you are a police officer. If you see a person who does not have a gun, DON’T SHOOT them! If you see a person who has a gun, SHOOT them! Press ‘L’ to shoot (when you see a gun). Press ‘S’ to NOT shoot (when there is no gun). The first 18 pictures are practice. Press {SPACEBAR} to continue.” The participants’ response latencies and errors were recorded.

After the participants pressed the spacebar which started the game, they first saw a fixation cross which was displayed for 100 ms, then the stimulus (a picture of a Black or White person holding a gun or non-gun) was displayed for 400 ms, next, participants were prompted by a screen to “Press L to shoot, Press S to NOT shoot” which was displayed for 330 ms. A feedback screen was displayed to the participants after for 1500 ms which stated the percentage of correct answers and said either “Oops!” if the participant made an error or did not respond in the allotted time, or “Correct” if the participant made the correct decision. Therefore, participants were given an upward 730

ms decision window which has been shown to increase errors but also allow for analysis of response latencies (Correll et al., 2007a).

Responses to the FPST consisted of correct decisions and errors for pictures with Black individuals and for pictures with White individuals. Correct decisions included hits (shooting individuals who were holding a gun) and correct rejections (NOT shooting individuals who were holding a safe item). Errors included false alarms (shooting individuals who were NOT holding a gun) and misses (NOT shooting individuals who were holding a gun). Consequently, there were eight continuous variables: Black hits, Black misses, Black correct rejections, Black false alarms, White hits, White misses, White correct rejections, and White false alarms.

Criterion scores, calculated by conducting Signal Detection Theory (SDT; Green & Swets, 1966; MacMillan & Creelman, 1991) on participant's correct and error responses indicate a threshold at which the participant will shoot based on a specific criterion (i.e. dangerousness). Past research has shown that participants tend to make more errors (shoot unarmed individuals) when the person is Black than when the person is White. This suggests that participants set a lower criterion to shoot for Black individuals than White individuals, and indeed that is what has been found (Correll et al., 2002; Correll et al., 2007a; Correll et al., 2007b).

Criterion scores were computed on each participant's scores twice: once for pictures with Black individuals and once for pictures with White individuals using the equation c = -0.5 x (zFA + zH); where FA = false alarms/total number of pictures in that group, H = hits/total number of pictures for that group, and z = z score transformation. To prevent infinite z-scores, where FA and H equaled 0, a minimum value of 1/(2n) was assigned where n equaled the total number of gun or non-gun trials respectively. Where FA and H equaled 1, a maximum value of 1 – (1/2n) was applied. Hence, each participant

had a Black Criterion score and a White Criterion score ranging from .01 to .99 (Correll, 2005).

Negative criterion scores indicated a willingness to pull the trigger easily or a tendency towards shooting. Positive criterion scores on the other hand indicated a reluctance to pull the trigger. Criterion scores around 0 indicated that participants were not trigger happy nor reluctant to shoot, but chose to shoot and not shoot with roughly equal frequency (Correll et al., 2002). Next, a racial bias index was calculated with the equation: ($c_{white} - c_{black}$). Higher scores indicated more racial bias towards Blacks.

As for response latencies, reaction times (RT) of correct shoot decisions were averaged within each type of picture: Black Unarmed, White Unarmed, Black armed, and White armed. Next, a shooter bias indices score was calculated with the equation: [$RT_{\text{unarmed Black individuals}} - RT_{\text{unarmed White individuals}}$] + [$RT_{\text{armed White individuals}} - RT_{\text{armed Black individuals}}$] where higher scores indicated more shooter bias towards Blacks. It should be noted that for shooter bias, one participant had made only shoot decisions and hence had zero no-shoot decisions. Therefore, this individual had zero correct decisions for RT unarmed Black individuals and RT unarmed White individuals and hence, no shooter bias score could be calculated. Thus, the total number of participants in the shooter bias analyses equaled 299 instead of 300.

Two dependent variables “Reaction Time” and “Accuracy Rate” were calculated in order to assess for overall effects. Reaction time was calculated by taking the overall average of reaction times for correct decisions for each participant. Accuracy rate was calculated by taking the number of correct decisions, dividing that by the total number of decisions made, and then multiplying that number by 100.

Timeouts consisted of participants’ non-responding to pictures either due to an inability to make a decision in the time provided or participants deciding not to respond.

Timeouts were summed within each picture category (Black gun, Black non-gun, White gun, White non-gun) for every participant. This created four repeated measures continuous variables in order to examine differences between participants who were excluded from analyses (those who had more than 32 timeouts) compared with those who were included.

Chapter 3

Results

Data Screening

Before conducting data analysis, the variables were examined for implausible values, normality, outliers, skewedness, and kurtosis. The categorical variables gender, ethnicity, emotion condition, and immigrant status had no implausible values.

ATQ SF (Prescreen Questionnaire)

The ATQ consisted of 13 continuous scales and four continuous factor scales. Out of the 13 scales, activation control, affective perceptual sensitivity, associative sensitivity, attentional control, discomfort, fear, frustration, high intensity pleasure, neutral perceptual sensitivity, positive affect, sadness, and sociability, were all fairly normally distributed with few to zero outliers. Inhibitory control however was negatively skewed with several outliers and so, a squared transformation of the values was conducted in order to reduce skewedness. The square-transformed version of inhibitory control exhibited more normality and fewer outliers and was accordingly retained for future analyses. The four factor scales, negative affect, effortful control, extraversion surgency, and orienting sensitivity were all fairly normally distributed with minimal to zero outliers.

Number of Years Lived in the U.S.

This continuous variable ranged from 0 to 52. This variable had many outliers on both positive and negative ends of the distribution. However, when examining this variable in split file mode with respect to immigrants and Americans (only the immigrant portion was utilized in analyses) it was revealed that the immigrant portion was normally distributed with no outliers. Accordingly, no transformations were conducted on this variable.

Age

The continuous variable age ranged from 18 to 52 and was severely positively skewed with many outliers. A square root transformation, then a logarithmic transformation, and finally an inverse transformation, were each applied and each unable to ameliorate the problem. The number of outliers and severity of nonnormality were unchanged by the transformations. Subsequently, age was analyzed in its original form.

Manipulation Check Questionnaire

The manipulation check questionnaire consisted of a total of eight indices, four before the emotion induction and four after the emotion induction. As for the manipulation check indices given before the emotion induction (happiness, anger, sadness, and contempt), only happiness was normal with no outliers. Anger, sadness, and contempt were all positively skewed with several outliers. Before conducting a square root transformation of the variables (anger, sadness, and contempt), a constant of one was added to the scores due to the variables having zero as a legitimate response. The transformations resulted in normality and reduced to eliminated outliers except for contempt, which was still somewhat skewed with several outliers. Therefore, a logarithmic transformation was examined after adding a constant of two to the original variable, which proved to correct the non-normality and reduce outliers. Hence, the square root transformed versions of the before indices of anger and sadness and the logarithmic transformed version of contempt were used in subsequent analyses. As for the manipulation check indices given after the emotion induction, happiness was the only variable with a normal distribution and no outliers. Anger, sadness, and contempt all were positively skewed with several outliers. Square root transformations of the variables (after again adding a constant of one) revealed normal distributions and zero outliers except for contempt. Contempt was examined with a logarithmic transformation (after adding a

constant of two to the original variable) which again improved non-normality and eliminated outliers. Next, the (before and after - but separately) original versions of happiness, the square root versions of anger and sadness, and the logarithmic versions of contempt were subjected to *z*-scoring in order to put the variables back on the same scale to assess differences during analyses.

Dependent Variables

As for racial bias, the original eight variables, the criterion scores (Black and White) and the racial bias index were all examined for non-normality and outliers. Black hits, Black misses, Black correct rejections, Black false alarms, White hits, White misses, White correct rejections, White false alarms, Black criterion scores, White criterion scores, and the racial bias index were all found to be fairly normally distributed with minimal outliers. For shooter bias, each of the reaction time variables which were used to calculate the index (Black gun, Black non-gun, White gun, and White non-gun) and the shooter bias index variable itself, were investigated for non-normality and outlying variables. Each of the five variables was normally distributed with few to no outliers. Lastly, both reaction time and accuracy rate variables were normally distributed with no outlying data points.

Data Analysis

Manipulation check analyses

A 2 (time) X 4 (manipulation check emotion indices) repeated measures mixed ANOVA was conducted to analyze the effects of the manipulation check (emotion indices) from time 1 (before the emotion induction) to time 2 (after the emotion induction) within the emotion induction conditions (anger, contempt, happiness, sadness, and neutral). Box's M was significant, $F(144, 155513.28) = 2.11$, $p < .001$. However, there were approximately equal groups (Anger, $n = 64$; Contempt, $n = 57$, Sadness, $n = 58$,

Happiness, *n* = 64, and Neutral, *n* = 57). Mauchly's test of sphericity had also been violated, $\chi^2(5) = 281.46$, $p < .001$, and as a result, a Greenhouse-Geisser correction of degrees of freedom was employed ($\varepsilon = .60$.) Fortunately, Levene's test of equality of error variances was not significant for any of the manipulation check emotion indices; happiness before, angry before, sadness before, contempt before, happiness after, or sadness after, but was significant for anger after $F(4, 295) = 8.30$, $p < .001$ and for contempt after $F(4, 295) = 17.28$, $p < .001$.

No significant main effects of time or manipulation check emotion indices were found. A significant main effect of emotion induction condition was found, $F(4, 295) = 4.04$, $p = .003$, $\eta_p^2 = .05$. Participants in the contemptuous condition ($M = .15$, $SE = .07$) and the sad condition ($M = .13$, $SE = .07$) reported significantly greater feelings than the neutral condition ($M = -.19$, $SE = .07$; $p = .02$ and $p = .03$ respectively). Those in the angry condition ($M = .03$, $SE = .07$) and the happy condition ($M = -.11$, $SE = .07$) did not differ from the neutral condition.

The main effects were qualified by significant two-way interactions. An interaction was found between time and emotion induction condition $F(4.00, 295.00) = 5.57$, $p = .04$, $\eta_p^2 = .07$. Those in the contemptuous condition reported increased feelings from Time 1 ($M = .07$, $SE = .09$) to Time 2 ($M = .24$, $SE = .07$, $p = .01$). Participants in the happy condition reported a decrease in their feelings from Time 1 ($M = -.03$, $SE = .08$) to Time 2 ($M = -.20$, $SE = .07$, $p = .003$). Those in the neutral condition also showed this trend from Time 1 ($M = -.13$, $SE = .09$) to Time 2 ($M = -.24$, $SE = .07$, $p = .07$). Angry and sad individuals did not show a significant increase or decrease of their feelings from Time 1 to Time 2. The time by manipulation check emotion indices was not significant.

Another significant two-way interaction was found between the manipulation check emotion indices and the emotion induction condition $F(7.24, 533.67) = 5.15$, $p <$

.001, η_p^2= .07. Those in the angry condition reported feeling significantly more anger (*M* = .23, *SE* = .11) than sadness (*M* = - .07, *SE* = .11, *p* = .003). Those in the contemptuous condition reported feeling more anger (*M* = .30, *SE* = .11) and more contempt (*M* = .31, *SE* = .11) than sadness (*M* = .03, *SE* = .11, *p* = .02 and *p* = .04 respectively). Participants in the sadness condition reported higher feelings of sadness (*M* = .43, *SE* = .11) than anger (*M* = .002, *SE* = .11) or contempt (*M* = .08, *SE* = .11, *p* < .001 and *p* = .003 respectively). Participants in the happiness condition reported significantly more happiness (*M* = .28, *SE* = .11) than anger (*M* = - .30, *SE* = .11, *p* = .003) and contempt (*M* = - .27, *SE* = .11, *p* = .002) and this trend was also found for sadness (*M* = - .16, *SE* = .11, *p* = .06). Participants in the neutral condition did not differ in their feelings from any of the emotions.

Most importantly, the two-way interactions were qualified by a significant three-way interaction of time by manipulation check by emotion induction condition *F*(8.79, 647.94) = 27.68, *p* < .001, η_p^2 = .27. Specifically, within the angry condition, participants reported a significant increase in their anger from Time 1 (*M* = .03, *SE* = .13) to Time 2 (*M* = .43, *SE* = .11, *p* < .001) and a trend of decrease in their happiness from Time 1 (*M* = - .10, *SE* = .12) to Time 2 (*M* = - .29, *SE* = .12, *p* = .06). Participants within the contemptuous condition reported a significant increase in contempt from Time 1 (*M* = - .06, *SE* = .13) to Time 2 (*M* = .67, *SE* = .12, *p* < .001), a significant increase in anger from Time 1 (*M* = .17, *SE* = .13) to Time 2 (*M* = .43, *SE* = .12, *p* = .03), and a significant drop in happiness from Time 1 (*M* = .15, *SE* = .13) to Time 2 (*M* = - .21, *SE* = .12, *p* < .001). Within the sad condition, participants reported a significant increase in feelings of sadness from Time 1 (*M* = .04, *SE* = .13) to Time 2 (*M* = .82, *SE* = .12, *p* < .001) and a significant decrease in their feelings of happiness from Time 1 (*M* = .32, *SE* = .13) to Time 2 (*M* = - .33, *SE* = .12, *p* < .001). Participants within the happy condition reported a

significant increase in feelings of happiness from Time 1 (*M* = - .19, *SE* = .12) to Time 2 (*M* = .76, *SE* = .12, *p* < .001), and significant decreases in feelings of anger from Time 1 (*M* = .03, *SE* = .13) to Time 2 (*M* = - .64, *SE* = .11, *p* < .001), sadness from Time 1 (*M* = .04, *SE* = .13) to Time 2 (*M* = - .36, *SE* = .11, *p* < .001) and contempt from Time 1 (*M* = .02, *SE* = .13) to Time 2 (*M* = - .56, *SE* = .11, *p* < .001). Lastly, those in the neutral condition reported significant decreases in sadness from Time 1 (*M* = - .08, *SE* = .13) to Time 2 (*M* = - .35, *SE* = .12, *p* = .01) and contempt from Time 1 (*M* = - .09, *SE* = .13) to Time 2 (*M* = - .37, *SE* = .12, *p* = .02).

To further examine whether participants in each emotion condition felt their respective emotion much more strongly than participants in the other conditions, a one-way ANOVA was computed with the independent variable as emotion induction condition and the dependent variable as each of the manipulation check indices (happy after, sad after, contempt after, and anger after). Specifically, there was a significant main effect of emotion condition on the amount of happiness the participant reported feeling, $F(4, 295) = 15.00$, $p < .001$, $\eta_p^2 = .17$. Those in the angry condition (*M* = - .29, *SE* = .12), the contempt condition (*M* = -.21, *SE* = .12), the sad condition (*M* = -.33, *SE* = .12), and the neutral condition (*M* = .004, *SE* = .12) all reported feeling significantly less happy than those in the happy condition (*M* = .76, *SE* = .12, *p* < .001).

As for perceived anger, there was a significant overall effect of emotion condition on participants' reported anger, $F(4, 295) = 15.41$, $p < .001$, $\eta_p^2 = .17$. Participants in the angry condition (*M* = .43, *SE* = .11) reported significantly more anger than those in the happy (*M* = -.64, *SE* = .11, *p* < .001). and neutral conditions (*M* = -.24, *SE* = .12, *p* = .001). However, participants in the contempt condition (*M* = -.33, *SE* = .12) reported feeling the same amount of anger as those in the angry condition (*p* = 1.00). There were

no differences in reported anger for those in the sad condition (M = .05, SE = .12) as compared to those in the angry condition (p = .24).

There was a significant main effect of emotion condition on participants' reported sadness, $F(4, 295) = 17.00$, $p < .001$, $\eta_p^2 = .19$. Those in the sad condition (M = .82, SE = .12) reported significantly greater sadness than those in the angry (M = -.12, SE = .11), contempt (M = .06, SE = .12), happy (M = -.36, SE = .11), and neutral conditions (M = -.35, SE = .12, $p < .001$).

Lastly, there was a significant main effect of emotion condition on participants' perceived contempt, $F(4, 295) = 17.61$, $p < .001$, $\eta_p^2 = .19$. Those in the contempt condition (M = 68, SE = .12) reported significantly greater contemptuousness than those in the happy (M = -.56, SE = .11, $p < .001$), neutral (M = -.37, SE = .12, $p < .001$), and sad conditions (M = .07, SE = .12, p = .001). However, those in the angry condition (M = .23, SE = .11), reported no differences in their perceived contempt than those in the contempt condition (p = .07).

Overall, these results indicate that the specific emotions that were induced in participants significantly increased that emotion in the participant. This was particularly true for participants in the happy and sad conditions. Interestingly, participants in the contempt condition reported feeling the same amount of anger that participants in the angry condition felt and participants in the angry condition reported feeling the same amount of contempt that participants in the contempt condition felt. Clearly, anger and contempt are very much intertwined. Similarly, participants in the sad condition reported feeling as much anger as participants in the angry condition, perhaps indicating that there may be elements to sad situations that elicit anger in response.

To investigate this further, a bivariate correlation was examined between each of the manipulation check after indices (happiness, anger, sadness, and contempt). Anger

was significantly and positively related to both sadness and contempt. Specifically, anger and contempt were highly related whereas anger and sadness were moderately related. Sadness was also significantly, positively, and moderately related to contempt. Please see Table 3.1 for correlation statistics.

Table 3.1

Correlation between each of the manipulation indices after

Variable	1	2	3	4
1. Happy After	1			
2. Angry After	- .37**	1		
3. Sadness After	- .37**	.54**	1	
4. Contempt After	- .26**	.76**	.47**	1

Note. Does not include the before indices.
**$p < .01$.

In light of the previous findings, it was necessary to examine a hierarchical regression to a) determine if sadness and contemptuousness both predict anger, b) determine if sadness predicts anger over and above contemptuousness, and c) determine if contemptuousness predicts anger over and above sadness. By itself, contempt significantly predicted anger, $F(1, 298) = 415.97$, $p < .001$ and accounted for 58.3% of the variance in anger. Sadness significantly predicted anger over and above contempt, $\Delta F(1, 297) = 32.54$, $p < .001$. Together, contempt and sadness accounted for an additional 4.1% and a total of 62.4% of the variance in anger. After controlling for contempt, sadness contributed a unique amount of variance in anger, $b = .23$, $SE = .04$, $t(297) = 5.71$, $p < .001$, $sr^2 = .04$. Furthermore, contempt significantly predicted anger over and above sadness, $\Delta F(1, 297) = 264.89$, $p < .001$. After controlling for sadness, contempt also contributed a unique amount of variance in anger, $b = .67$, $SE = .04$, $t(297) = 16.28$, $p < .001$, $sr^2 = .34$. These findings suggest that sadness and contempt have intricate relationships with anger. Individuals may feel contempt in response to

unresolved anger leading to a reporting of both anger and contempt. Similarly, individuals may feel anger in response to a sad situation, which may lead to reporting both sadness and anger.

Demographic variables

To assess for differences within participant characteristics among the frustration, sadness, and positive affect sub-scales of the ATQ SF, a 2 (gender) X 8 (ethnicity) factorial ANOVA was conducted for each of the sub-scales with Bonferroni post hoc corrections for comparisons. No significant main effects or interactions were found for participants' frustration scores. However, it should be noted that the main effect for ethnicity on participants' frustration scores may be meaningful due to its approaching-medium effect size, $F(6, 286) = 1.91$, $p = .08$, $\eta_p^2 = .04$. Here, African Americans reported the lowest means of frustration whereas those who identified as Middle Eastern or Other reported the highest means of frustration. All other ethnic groups (Caucasian, Hispanic, Asian, and More than one) reported frustration scores that were in the middle. Please see Table 3.1 for means and standard errors

As for positive affect, a significant main effect for gender was found, $F(1, 286) = 5.76$, $p = .02$, $\eta_p^2 = .02$. Females ($M = 4.87$, $SE = .14$) reported higher positive affect than males ($M = 4.57$, $SE = .15$), but this was not significant after Bonferroni corrections ($p = .14$). Although no statistically significant main effect was found for participant ethnicity on trait positive affect, it may still be important due to its effect size, $F(6, 286) = 1.86$, $p = .09$, $\eta_p^2 = .04$. Participants who identified as Other reported the lowest means of positive affect, whereas those who identified as Middle Eastern reported the highest means of positive affect. All other ethnic groups reported scores in the middle. Please see Table 3.1 for means and standard errors. Also, no significant interaction effect was found for gender by ethnicity on positive affect.

As for sadness, significant main effects for gender $F(1, 286) = 5.16$, $p = .02$, $\eta_p^2 = .02$ and ethnicity $F(6, 286) = 2.21$, $p = .04$, $\eta_p^2 = .04$ were found. Within gender, females ($M = 4.51$, $SE = .13$) reported significantly greater sadness than males ($M = 4.01$, $SE = .14$, $p = .01$). Within ethnicity, participants who identified as Middle Eastern reported the lowest mean scores of sadness whereas those who identified as Other reported the highest mean scores of sadness. However, no significant pairwise comparisons were found. Please see Table 3.2 for the means and standard errors. Likewise, no significant interaction effect was found between gender and ethnicity.

Table 3.2

Participant mean frustration, positive affect, and sadness scores by ethnicity

	Frustration		Positive Affect		Sadness	
Ethnicity	*M*	*SE*	*M*	*SE*	*M*	*SE*
African American	3.43	.17	4.97	.16	4.01	0.16
Caucasian	3.78	.12	4.56	.11	4.40	0.11
Hispanic	3.99	.13	4.75	.12	4.00	0.12
Asian	3.91	.14	4.53	.13	4.47	0.13
Middle Eastern	4.44[a]	.61	5.60[a]	.58	3.62[a]	0.56
More than one	3.66	.28	4.72	.26	4.22	0.26
Other	4.54	.48	4.30	.45	4.66	0.45

Note. [a]Based on modified population marginal mean.

To investigate gender and ethnicity on racial bias, shooter bias, reaction times, and accuracy rates, a 2 (gender) X 8 (ethnicity) factorial ANOVA was conducted on each of the dependent variables (racial bias indices, shooter bias indices, reaction times, and accuracy rates) with Bonferroni corrections for post hoc comparisons. No significant main effects or interaction effects were found for any of the dependent variables: racial bias, shooter bias, reaction times, or accuracy rates with respect to gender or ethnicity. Please see Table 3.3 for *F* values.

Table 3.3

Factorial ANOVA results with gender and ethnicity on four DVs

Main Effects

IV	DV	*F*	(*df*s)	*p*	partial η^2
Gender	Racial Bias	0.34	(1, 287)	.56	.001
Ethnicity	Racial Bias	0.23	(6, 287)	.97	.01
Gender	Shooter Bias	0.09	(1, 286)	.76	.000
Ethnicity	Shooter Bias	0.50	(6, 286)	.81	.02
Gender	Reaction Time	2.35	(1, 287)	.13	.01
Ethnicity	Reaction Time	1.44	(6, 287)	.20	.03
Gender	Accuracy Rate	1.37	(1, 287)	.24	.01
Ethnicity	Accuracy Rate	1.86	(6, 287)	.09	.04

Two-way Interaction Effects

IV1	IV2	DV				
Gender	Ethnicity	Racial Bias	1.01	(5, 287)	.41	.02
Gender	Ethnicity	Shooter Bias	1.25	(5, 286)	.29	.02
Gender	Ethnicity	Reaction Time	0.74	(5, 287)	.59	.01
Gender	Ethnicity	Accuracy Rate	0.83	(5, 287)	.53	.01

Note. No significant effects were found.

Next, participant age was examined with respect to trait frustration, trait positive affect, and trait sadness, racial bias, shooter bias, reaction time, and accuracy rate. Simple linear regressions were conducted examining age predicting each of the seven dependent variables. Age did not significantly predict trait frustration, positive affect, or sadness. Relatedly, age did not account for a significant amount of variance in racial bias, shooter bias, reaction time, or accuracy rate. Please see Table 3.4 for regression statistics.

Table 3.4

Simple regression results of age predicting seven DVs

DV	*R*	R^2	*F* Change	(*df*s)	*b*	*t*	*p*
ATQ SF Frustration	.07	.005	1.44	(1, 297)	-.02	-1.20	.23
ATQ SF Positive Affect	.05	.002	0.73	(1, 297)	.01	0.86	.39
ATQ SF Sadness	.02	.001	0.16	(1, 297)	.01	0.40	.69
Racial Bias	.04	.002	0.59	(1, 298)	.01	0.77	.44
Shooter Bias	.08	.01	1.91	(1, 297)	-.81	-1.38	.17
Reaction Time	.04	.001	0.45	(1, 297)	.33	0.67	.50
Accuracy Rate	.004	.000	0.01	(1, 297)	.01	0.07	.95

Note. ATQ SF = Adult Temperament Questionnaire Short Form.

Sub-scales from the ATQ SF (frustration, positive affect, and sadness) were being considered for use as covariates in hypothesis testing. In order to test that the covariates were related to the dependent variables, a bivariate correlation was examined. However, none of the subscales were significantly related to any of the dependent variables (racial bias indices, shooter bias indices, reaction times, or accuracy rates), and thus, the ATQ SF subscales were not mentioned again. Please see Table 3.5 for the correlation values.

Table 3.5

Correlation of ATQ SF sub-scales and dependent variables

Variable	1	2	3	4	5	6	7
1. Frustration ATQ SF	1						
2. Positive Affect ATQ SF	- .19**	1					
3. Sadness ATQ SF	.22**	- .17**	1				
4. Racial Bias Indices	-.10	.01	.001	1			
5. Shooter Bias Indices	-.03	.09	-.01	.02	1		
6. Reaction Times	-.002	-.11	-.08	.02	.13*	1	
7. Accuracy Rates	-.004	-.01	-.01	-.02	.25**	.62**	1

Note. ATQ SF = Adult Temperament Questionnaire Short Form.
*$p < .05$. **$p < .01$.

Racial bias hypotheses

First, it was hypothesized that participants in the angry, contemptuous, and happy conditions would exhibit significantly more racial bias than participants in the neutral condition and that participants in the sad condition would exhibit significantly less racial bias than those in the angry, contemptuous, and happiness conditions but not differ significantly from participants in the neutral condition. Furthermore, it was hypothesized that those in the contemptuous condition would exhibit more racial bias than those in the angry condition. To test this hypothesis, a one-way analysis of variance (ANOVA) was examined with the between-subjects variable emotion induction condition (five levels: anger, contempt, sadness, happiness, neutral) and the dependent variable racial bias indices. In contrast to expectations, no significant main effect of emotion condition was found, $F(4, 295) = 1.40$, $p = .23$, $\eta_p^2 = .02$, meaning that participants did not differ on racial bias scores with regards to the emotion that was induced.

As this was an unexpected finding, a linear regression was conducted to examine whether participants' reported feelings on the manipulation check indices after (happiness, angry, contempt, and sadness) predicted racial bias. Together, participants' reported happiness, anger, contemptuousness, and sadness did not account for a significant amount of the variance in the racial bias indices $R^2 = .01$, $F(4, 295) = 0.65$, $p = .63$. Neither anger, happiness, sadness, or contemptuousness significantly predicted racial bias. Please see Table 3.6 for regression statistics.

Table 3.6

Simple regression results of manipulation indices after predicting racial bias indices

IV	*b*	*SE*	*Beta*	*t*	*p*	sr^2
Happiness After	.04	.05	.05	0.85	.40	.002
Anger After	-.07	.07	-.10	-0.99	.32	.003
Contempt After	.09	.07	.11	1.25	.21	.005
Sadness After	.01	.06	.01	0.20	.85	.0001

Note. The before version of the manipulation indices was not examined.

Because racial bias is made up of many components: the race of the individual (Black or White), what object the individual is holding (gun or non-gun), and the type of decision made by the participant (correct decision or error), it was beneficial to examine the different emotions on racial bias utilizing a repeated measures design in order to 1) increase power and 2) examine the components with respect to emotion condition. Therefore, a 2 (race) X 2 (object) X 2 (decision) repeated measures mixed ANOVA was employed with the emotion induction condition as the between-subjects factor and participants' decisions as the dependent variable. Bonferroni post hoc corrections were utilized for multiple comparisons. Box's M and Levene's test were both not significant.

As expected, a significant three-way interaction between race, object, and decision was found, Wilk's $\lambda = .97$, Multi. $F(1.00, 295.00) = 8.86$, $p = .003$, $\eta_p^2 = .03$, more correct decisions (hits) were made for Blacks with guns ($M = 9.30$, $SE = .17$) than Whites with guns ($M = 8.87$, $SE = .18$, $p = .007$), see *Figure* 3.1 for representation. Similarly, more incorrect decisions (misses) were made for Whites with guns ($M = 3.68$, $SE = .12$) than Blacks with guns ($M = 3.00$, $SE = .11$, $p < .001$) indicating racial bias, see *Figure* 3.2 for representation. Also in support of racial bias literature was the finding that within pictures of Black individuals, participants made more false alarms ($M = 3.46$, $SE = .13$) than misses ($p = .003$). Contrary to racial bias literature, no differences were found

between Blacks and Whites with respect to false alarms or correct rejections. Also, contrary to expectations was the fact that no significant four-way interaction was found between race, object, decision, and condition, Wilk's λ = .98, Multi. $F(4.00, 295.00) = 1.50$, $p = .20$, $\eta_p^2 = .02$. Therefore, although partial support for racial bias was found, there was no support for differences between the emotions induced and racial bias.

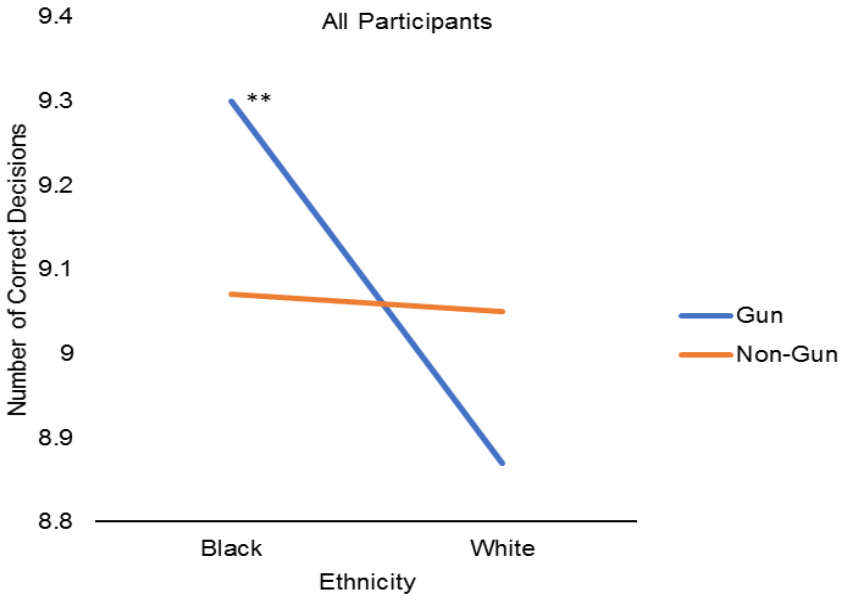

Figure 3-1 Interaction between Hits and Correct Rejections $^{**}p < .01$

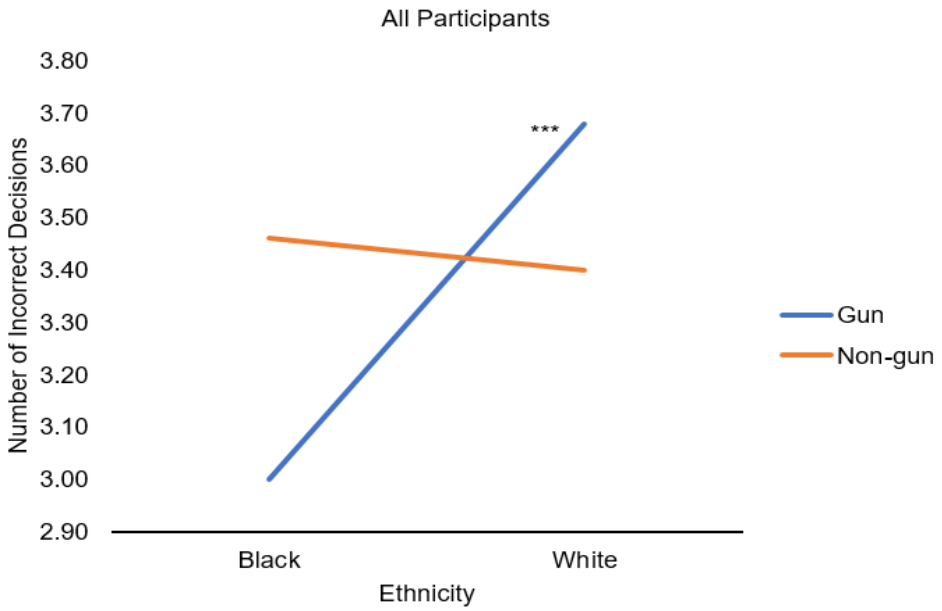

Figure 3-2 Interaction between Misses and False Alarms ***$p < .001$

The finding of only partial support for racial bias was surprising especially due to the fact that many (12) journal articles have reported finding racial bias in varied experiments (Akinola & Mendes, 2012; Correll et al., 2002; Correll et al., 2007a; Correll et al., 2007b; Correll et al., 2006; Correll et al., 2010; Ho, 1993; Ito et al., 2015; Ma & Correll, 2011; Ma et al., 2013; Sadler, Correll, Park & Judd, 2012; Sim, Correll, & Sadler, 2012). However, the majority of research conducted on racial bias has been conducted in Boulder, Colorado at the University of Colorado, followed by the University of Chicago in Illinois. Although Chicago itself is very ethnically and culturally diverse, the university was ranked 417th in ethnic diversity nationwide. Likewise, the University of Colorado at Boulder is ranked 1459th in ethnic diversity. Both of these colleges pale in comparison to the University of Texas at Arlington's 104th ranking in ethnic diversity (College Factual, n.d.). Furthermore, the U. S. News and World Report ranked The University of Texas at Arlington, the campus in which this experiment was conducted, as 5th in the nation for undergraduate ethnic diversity (Lewis, 2015). Specifically, in our sample, there were 40

international students. This is important due to the idea that racial bias is posited to be founded upon an American stereotype that Blacks are dangerous (Correll, 2002). Accordingly, it may be that individuals who did not spend the majority of their life in America have not been exposed to this stereotype and hence, should not exhibit it. Interestingly, no other study to date has compared Americans to international students on racial bias and shooter bias.

To investigate this a 2 (race) X 2 (object) X 2 (decision) repeated measures mixed ANOVA was conducted with two between subjects variables immigrant status (2 levels: immigrant vs. American) and emotion induction condition (5 levels: angry, contempt, happy, sad, and neutral) on the dependent variable decisions. The participant breakdown was not even across groups for the variable immigrant status (immigrants, *N* = 40; Americans, *N* = 256). Bonferroni corrections were applied to post hoc pairwise comparisons. Box's M was not violated (*p* = .06) whereas Levene's test was violated for one out of the eight dependent variables: Black false alarms $F(9, 286) = 2.40$, $p = .01$. However, because of the unequal sample sizes, Pillai's Trace was reported.

A significant two-way interaction between immigrant status and decision was found, Pillai's Trace = .03, Multi. $F(1.00, 286.00) = 9.47$, $p = .002$, $\eta_p^2 = .03$. Immigrants made significantly more incorrect decisions (i.e. false alarms and misses; $M = 4.24$, $SE = .23$) than Americans ($M = 3.26$, $SE = .09$, $p < .001$). Similarly, Americans made significantly more correct decisions (i.e. hits and correct rejections; $M = 9.20$, $SE = .17$) than immigrants ($M = 8.14$, $SE = .45$, $p = .03$). A significant three-way interaction between object, decision, and immigrant was also found, Pillai's Trace = .02, Multi. $F(1.00, 286.00) = 6.23$, $p = .01$, $\eta_p^2 = .02$. This was qualified by a significant four-way interaction between race, object, decision, and immigrant, Pillai's Trace = .02, Multi. $F(1.00, 286.00) = 4.50$, $p = .04$, $\eta_p^2 = .02$.

Within immigrants, no racial bias was found. Immigrants had an equal number of hits for both Black and White males (p = .70), an equal number of correct rejections for both Black and White males (p = .18), an equal number of misses for Black and White males (p = .61) and an equal number of false alarms for Black and White males (p = .19). Within the Americans, partial support for racial bias was found again. Americans had more hits for Black males (M = 9.36, SE = .19) than White males (M = 8.88, SE = .19, p = .01) and more misses for White males (M = 3.63, SE = .13) than Black males (M = 2.90, SE = .12, p < .001). Americans had an equal number of correct rejections for both Black and White males (p = .66) and an equal number of false alarms for both Black and White males (p = .40). Please see *Figure* 3.3, *Figure* 3.4, *Figure* 3.5, and *Figure* 3.6 for graphical representation of the above findings. However, no significant five-way interaction between race, object, decision, immigrant, and emotion induction condition was found (p = .31). This indicated that the emotion induced did not have an effect on racial bias, regardless of whether the participant was an immigrant or American.

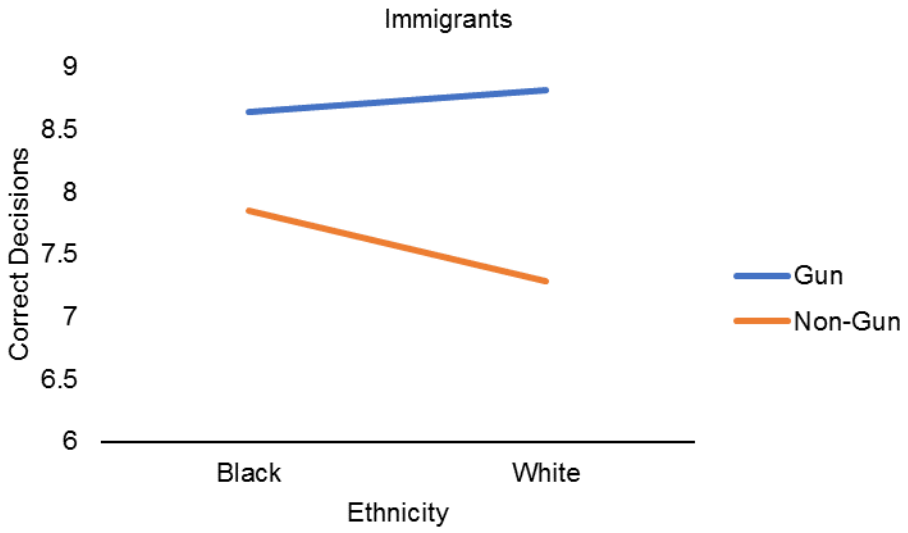

Figure 3-3 Immigrants' Hits and Correct Rejections

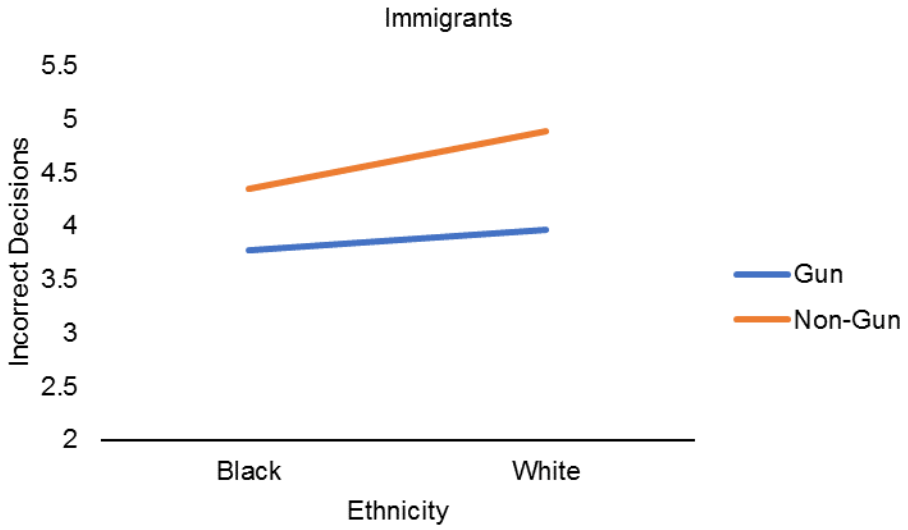

Figure 3-4 Immigrants' Misses and False Alarms

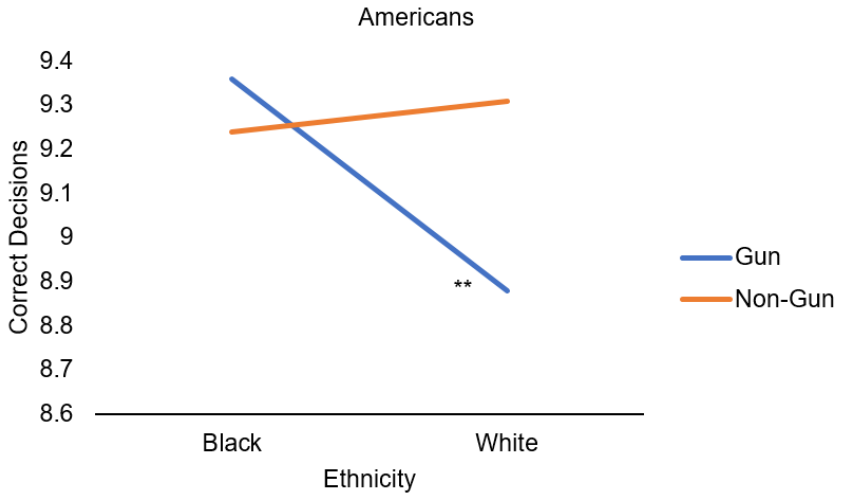

Figure 3-5 Americans' Interaction between Hits and Correct Rejections **p = .01

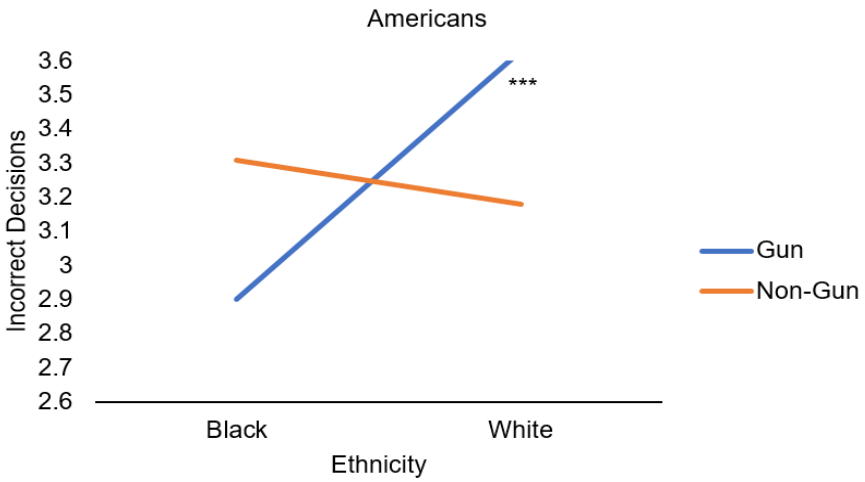

Figure 3-6 Americans' Interaction between Misses and False Alarms ***$p < .001$

Because past research has found that both Black and White participants exhibit racial bias towards Blacks (Correll et al., 2002) it was important to investigate participants' ethnicity as another independent variable which may interact with emotion to reveal different patterns of racial bias. To examine this, a 2 (race) X 2 (object) X 2 (decision) repeated measures mixed ANOVA was conducted on only American participants with the between subjects variables as ethnicity and emotion induction condition and with the dependent variable as participants' decisions. Because so few individuals identified as Middle Eastern, American Indian, More than one, or Other, they were not included in the analysis. Box's M was violated, $F(468, 13837.37) = 1.21$, $p = .002$. Similarly, Levene's test was violated for three out of eight variables: White false alarms ($p = .01$), White misses ($p = .005$), and Black false alarms ($p = .02$).

Racial bias was present in the data as indicated by a significant three way interaction between race, object, and decision, Pillai's Trace = .04, $F(1.00, 212.00) = 8.48$, $p = .004$, $\eta_p^2 = .04$. More importantly, however, was the five-way interaction trend observed between race, object, decision, ethnicity, and emotion condition, Pillai's Trace = .09, $F(12.00, 212.00) = 1.72$, $p = .07$, $\eta_p^2 = .09$. Bonferroni corrected post hoc

comparisons revealed within American participants identifying as African American, partial racial bias was exhibited in the sad condition in the form of greater hits for Black males (M = 10.50, SE = 1.09) than White males (M = 8.75, SE = 1.06, p = .08), and in the happy condition as greater false alarms exhibited for Black males (M = 4.44, SE = .71) than White males (M = 2.22, SE = .81, p = .008). African American participants did not exhibit racial bias in the angry, contempt, or the neutral conditions.

Within American participants identifying as Caucasian, partial racial bias was exhibited in the angry, contemptuous, happy, and neutral conditions. Specifically, those in the angry condition exhibited racial bias in the form of more hits for Black males (M = 9.56, SE = .77) than White males (M = 8.38, SE = .75, p = .09), and more misses for White males (M = 4.50, SE = .50) than Black males (M = 2.69, SE = .46, p = .003). Partial racial bias for the contemptuous condition was in the form of more misses for White males (M = 4.27, SE = .52) than Black males (M = 3.13, SE = .48, p = .07). Those in the happy condition exhibited racial bias by more correct rejections for Black males (M = 9.44, SE = .88) than White males (M = 8.13, SE = .90, p = .05) and more false alarms for White males (M = 3.94, SE = .61) than Black males (M = 2.69, SE = .54, p = .05). Neutral participants had more misses for White males (M = 3.47, SE = .48) than Black males (M = 1.88, SE = .45, p = .008) indicating partial racial bias. In the Americans identifying as Caucasian, only those in the sad condition did not exhibit some form of racial bias.

Within Americans identifying as Hispanic, those in the angry and happy conditions exhibited partial racial bias while those in the contempt, sad, and neutral conditions did not exhibit any racial bias. Specifically, American Hispanics in the angry condition had more correct rejections for Blacks (M = 9.59, SE = .75) than Whites (M = 8.59, SE = .77, p = .07). Those in the happy condition had more hits for Blacks (M = 7.79,

SE = .83) than Whites (*M* = 6.43, *SE* = .81, *p* = .07) and more misses for Whites (*M* = 5.36, *SE* = .53) than Blacks (*M* = 3.71, *SE* = .50, *p* = .01).

Within Americans identifying as Asian, participants in the sad and neutral conditions exhibited forms of racial bias while those in the angry, contempt, and happy conditions did not exhibit racial bias. Particularly, those in the sad condition exhibited more misses for Whites (*M* = 3.93, *SE* = .53) than Blacks (*M* = 2.79, *SE* = .50, *p* = .08), while those in the neutral condition exhibited more hits for Blacks (*M* = 9.55, *SE* = .93) than Whites (*M* = 7.82, *SE* = .91, *p* = .04) and more misses for Whites (*M* = 4.73, *SE* = .60) than Blacks (*M* = 2.64, *SE* = .56, *p* = .01).

Shooter bias hypotheses

It was hypothesized that participants in the angry, contemptuous, and happy conditions would exhibit more shooter bias than neutral participants and those in the sad condition would exhibit significantly less shooter bias than those in the angry, contemptuous, and happy conditions but not differ from the neutral participants. Furthermore, it was expected that the participants in the contemptuous condition would exhibit significantly greater shooter bias than those in the angry condition. In order to test these hypotheses, a one-way ANOVA was employed with emotion induction condition (five levels: anger, contempt, sadness, happiness, neutral) as the between-subjects measure and shooter bias indices as the dependent variable utilizing Bonferroni post hoc corrections for multiple comparisons. Contrary to expectations, no main effect of emotion condition was found, $F(4, 294) = 0.79$, $p = .53$, $\eta_p^2 = .01$, meaning that participants did not differ on shooter bias with regards to the emotion that was induced.

A linear regression was conducted to examine whether participants' reported feelings on the manipulation check indices after (happiness, sadness, anger, and contempt) predicted the shooter bias indices. Together, happiness, sadness, anger, and

contempt did not account for a significant amount of the variance in shooter bias, R^2 = .01, $F(4, 244) = 0.56$, $p = .69$. Neither happiness, sadness, anger, or contempt predicted shooter bias. Please see Table 3.7 for regression statistics.

Table 3.7

Simple regression results of manipulation indices after predicting shooter bias indices

IV	*b*	*SE*	*Beta*	*t*	*p*	sr^2
Happiness After	3.38	3.03	.07	1.12	.26	.004
Anger After	.91	4.55	.02	0.20	.84	.0001
Contempt After	-1.19	4.26	-.03	-0.28	.78	.0003
Sadness After	3.91	3.34	.08	1.17	.24	.005

Note. The before version of the manipulation indices was not examined.

Because shooter bias consists of participants' reaction times for shoot/no shoot decisions regarding seeing Whites holding guns, Whites holding non-guns, Blacks holding guns, and Blacks holding non-guns, it was important to examine incidental emotions on shooter bias through a repeated measures design which increased power and allowed for the investigation of its components. Thus, a 2 (race) X 2 (object) repeated measures mixed ANOVA was analyzed with the between-subjects variable emotion induction condition, the within-subjects variable as participants' reaction times to their correct decisions and Bonferroni post hoc corrections for multiple pairwise comparisons.

Box's M and Levene's test were not significant. Contrary to expectations no significant effect of emotion condition was observed, $F(4, 294) = 0.46$, $p = .77$, $\eta_p^2 = .01$. As expected however, a significant main effect of race was found Wilk's $\lambda = .94$, Multi. $F(1.00, 294.00) = 19.61$, $p < .001$, $\eta_p^2 = .06$, participants made faster decisions for Black males ($M = 131.75$, $SE = 2.38$) than for White males ($M = 138.47$, $SE = 2.43$, $p < .001$). Also, as expected, a significant main effect of object was found Multi. $F(1.00, 294.00) =$

194.85, $p < .001$, $\eta_p^2 = .40$, participants made faster decisions for pictures with guns (M = 121.60, SE = 2.34) than with non-guns (M = 148.61, SE = 2.61, $p < .001$).

A race by object interaction trend was observed Wilk's λ = .99, Multi. F(1.00, 294.00) = 3.37, p = .07, η_p^2 = .01. Although the interaction was not significant, the Bonferroni corrected post hoc comparisons were. In line with past shooter bias literature, participants made faster shoot decisions for Blacks with guns (M = 116.99, SE = 2.39) than Whites with guns (M = 126.22, SE = 2.66, $p < .001$). However, opposite of shooter bias literature, participants made faster no-shoot decisions for Blacks with non-guns (M = 146.50, SE = 2.88) than for Whites with non-guns (M = 150.72, SE = 2.77, p = .05). Please see *Figure* 3.7 for graphical representation. So, although partial support for shooter bias was found, there was absolutely no support found for differences on shooter bias scores based on the emotion induced because the three-way interaction between race, object, and emotion induction condition was not significant, Wilk's λ = .99, Multi. F(4.00, 294.00) = 0.79, p = .53, η_p^2 = .01.

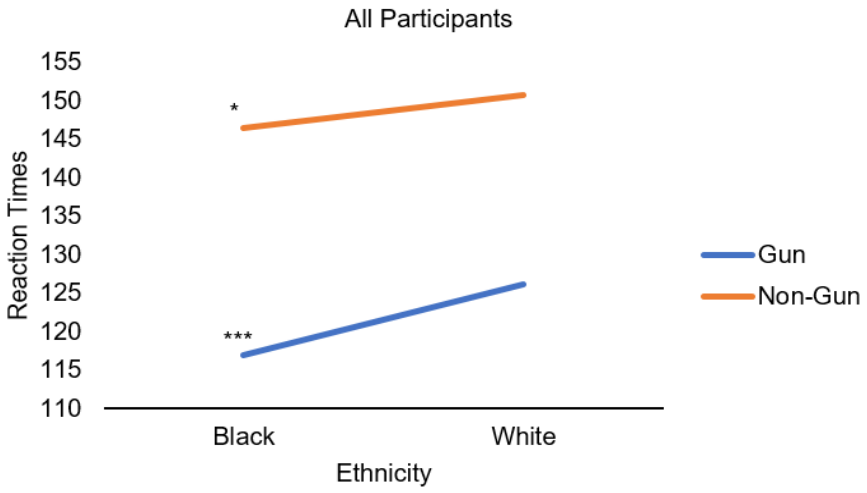

Figure 3-7 All Participants' Hits and Correct Rejections *p = .05, ***p < .001

Typically, in shooter bias findings, quicker shoot decisions are made for Blacks than Whites and quicker no-shoot decisions are made for Whites than Blacks. Because shooter bias is thought to be evolved from the American stereotype that African Americans are dangerous, it was important to investigate whether immigrants also exhibit this bias. Specifically, it was hypothesized that immigrants would not exhibit shooter bias but that Americans would.

Accordingly, a 2 (race) X 2 (object) repeated measures ANOVA was conducted on the dependent variable reaction times with the between subjects variables as immigrant status (immigrant, $N = 40$; or American, $N = 255$) and emotion induction condition. Box's M and Levene's test were not violated. The same pattern of findings was found as stated above: there was a significant main effect of race Wilk's $\lambda = .97$, Multi. $F(1.00, 285.00) = 10.27$, $p = .002$, $\eta_p^2 = .04$ and object Wilk's $\lambda = .78$, Multi. $F(1.00, 285.00) = 79.08$, $p < .001$, $\eta_p^2 = .22$. Participants responded faster to Black males ($M = 129.92$, $SE = 3.67$) than White males ($M = 137.27$, $SE = 3.74$) and faster to guns ($M = 120.40$, $SE = 3.63$) than non-guns ($M = 146.79$, $SE = 4.01$).

However, instead of a significant race by object interaction, only a nonsignificant trend was observed Wilk's $\lambda = .99$, Multi. $F(1.00, 285.00) = 2.79$, $p = .10$, $\eta_p^2 = .01$. Participants responded more quickly to Black males with guns ($M = 114.97$, $SE = 3.70$) than White males with guns ($M = 125.84$, $SE = 4.13$). However, participants responded in roughly the same amount of time for Black males with non-guns ($M = 144.88$, $SE = 4.43$) as White males with non-guns ($M = 148.70$, $SE = 4.23$, $p = .24$).

Interestingly, the three-way interaction between race, object, and immigrant was not significant ($p = .54$). However, because this interaction previously showed a trend ($p = .07$) and because power was lost by adding another variable into the model, the post hoc simple effects were still examined to assess if the same pattern emerged within the

American sample. The same pattern did emerge for the Americans. American participants made significantly faster shoot decisions for Black males (M = 116.85, SE = 2.60) than White males (M = 126.22, SE = 2.91, $p < .001$) and significantly faster no shoot decisions for Black males (M = 146.59, SE = 3.12) than White males (M = 151.49, SE = 2.97, p = .03). However, the pattern revealed for immigrants was different, but only for no-shoot decisions. Immigrant participants made significantly faster shoot decisions for Black males (M = 113.09, SE = 6.92) than White males (M = 125.46, SE = 7.74, p = .03). But, immigrant participants did not differ in the quickness of their no-shoot decisions for Black or White males (p = .65). Please see *Figures* 3.8 and 3.9 for graphical representation of the findings. Lastly, there was no significant four-way interaction between race, object, immigrant status, and condition (p = .83). This suggested that the emotion induced did not have an effect on participants' shooter bias in either the immigrant or the American sample.

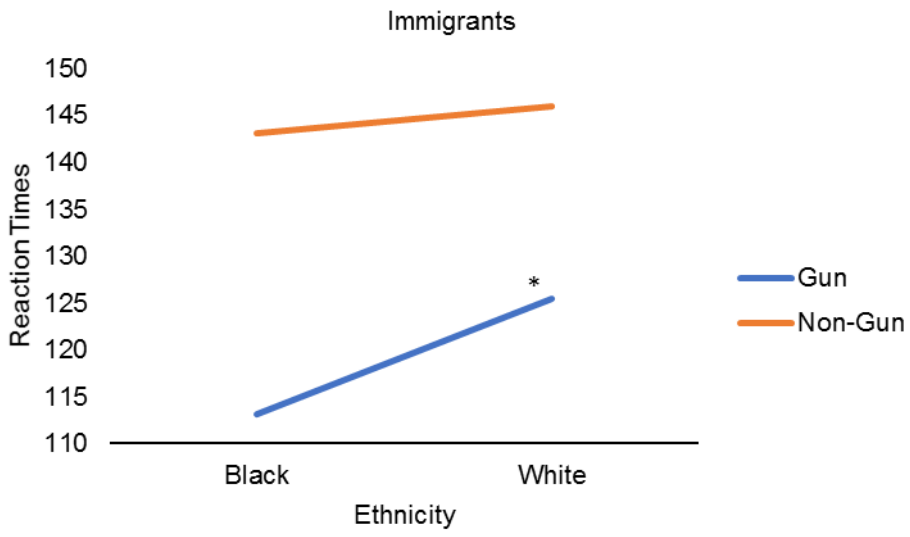

Figure 3-8 Immigrants' Hits and Correct Rejections *$p < .05$

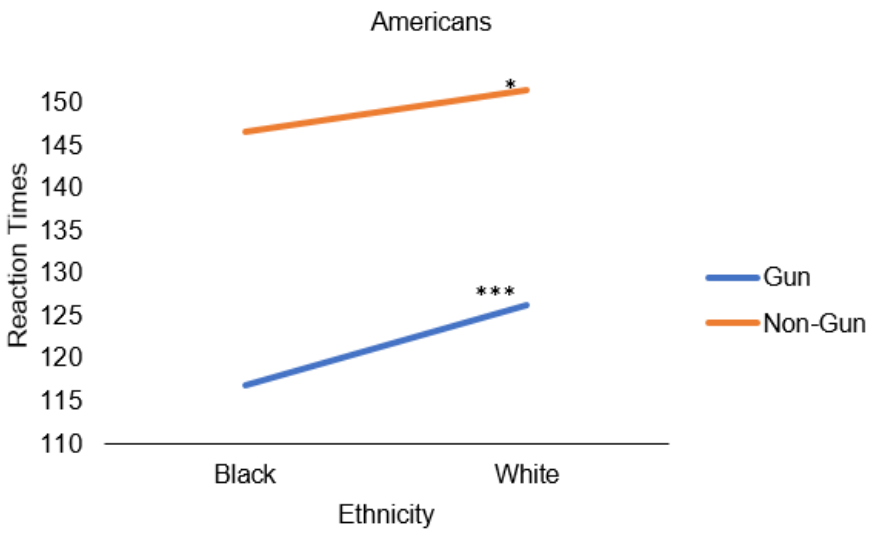

Figure 3-9 Americans' Hits and Correct Rejections *p < .05, ***p < .001

Because past research has found that both Black and White participants exhibit shooter bias towards Blacks (Correll et al., 2002) it was important to investigate participants' ethnicity as another independent variable which may interact with emotion and immigrant status to reveal different patterns of shooter bias. To examine this, a 2 (race) X 2 (object) repeated measures mixed ANOVA was conducted with the between subjects variables as immigrant status, ethnicity, and emotion induction condition with the dependent variable as participants' reaction times to correct decisions. Box's M was not significant (p = .52). However, Levene's test was significant for two out of the four variables (reaction times for White men with non-guns, p = .02; and reaction times for Black men with non-guns, p = .01).

The two-way interaction between race and object was significant, indicating shooter bias in the sample, Wilk's λ = .98, Multi. F(1.00, 233.00) = 5.81, p = .02, η_p^2 = .02. The five-way interaction between race, object, immigrant status, participant ethnicity, and emotion condition was not significant, Wilk's λ = .95, Multi. F(8.00, 233.00) = 1.44, p = .18, η_p^2 = .05. Due to the approaching medium effect size, post hoc comparisons were

examined for potential differences between groups. Several emotion conditions did not have a specific immigrant ethnicities because there were so few immigrant participants to begin with (*N* = 40). Thus, comparisons could not be made for immigrant African American participants in the angry condition, immigrant Caucasian participants in the sad and happy conditions, or immigrant Hispanic participants in the sad condition.

Within African American immigrant participants, no shooter bias was found in any of the emotion conditions: contempt, sad, happy, or neutral. Within Caucasian immigrant participants, no shooter bias was found in any of the emotion conditions: angry, contempt, or neutral. Within Hispanic immigrants, some shooter bias was found. For those in the angry condition, participants made faster shoot decisions for Blacks (*M* = 122.82, *SE* = 23.42) than Whites (*M* = 158.89, *SE* = 26.36, *p* = .07). Those in the contempt condition made faster no shoot decisions for Whites (*M* = 100.55, *SE* = 30.81) than Blacks (*M* = 159.87, *SE* = 34.67, *p* = .02). However, Hispanic immigrant participants did not exhibit any form of racial bias in the happy or neutral conditions. Within Asian immigrant participants, no shooter bias was found in the contempt, happy, or neutral conditions. However, in the angry condition, participants made faster no shoot decisions for Blacks (*M* = 124.47, *SE* = 34.67) than Whites (*M* = 181.75, *SE* = 30.81, *p* = .02) which was opposite of typical shooter bias findings. In the sad condition, participants made faster shoot decisions for Blacks (*M* = 69.00, *SE* = 40.56) than Whites (*M* = 178.33, *SE* = 45.65, *p* = .001).

Within the American participants, African Americans in the angry condition made faster no shoot decisions for Whites (*M* = 116.93, *SE* = 16.47) than Blacks (*M* = 145.45, *SE* = 18.58, *p* = .04). African Americans in the sad condition made faster shoot decisions for Blacks (*M* = 114.58, *SE* = 14.34) than Whites (*M* = 135.35, *SE* = 16.14, *p* = .08). Both findings were typical of shooter bias. Those in the happy condition made faster no shoot

decisions for Blacks (*M* = 143.04, *SE* = 16.35) than Whites (*M* = 166.97, *SE* = 14.52, *p* = .05) which is opposite of typical shooter bias. Those in the contempt and neutral conditions did not exhibit shooter bias.

Within Caucasian Americans, participants in the angry condition made faster shoot decisions for Blacks (*M* = 103.94, *SE* = 10.47) than Whites (*M* = 123.86, *SE* = 11.79, *p* = .02). Caucasian American participants in the contempt condition made faster shoot decisions for Blacks (*M* = 106.64, *SE* = 10.47) than Whites (*M* = 122.69, *SE* = 11.79, *p* = .07). Those in the happy condition made faster shoot decisions for Blacks (*M* = 107.22, *SE* = 10.13) than Whites (*M* = 121.99, *SE* = 11.41, *p* = .08). All findings of were respective of past shooter bias findings. Participants in the sad and neutral conditions did not exhibit shooter bias.

Interestingly, Hispanic American participants in every emotion condition (angry, contempt, sad, happy, and neutral) did not exhibit any shooter bias. Within Asian Americans, participants in the angry condition made faster no shoot decisions for Whites (*M* = 164.52, *SE* = 16.47) than Blacks (*M* = 189.17, *SE* = 18.53, *p* = .07). However, Asian Americans in all of the other conditions (contempt, sad, happy, or neutral) did not exhibit any shooter bias.

Reaction time hypotheses

It was hypothesized that participants in the angry, contemptuous, and happy conditions would exhibit shorter overall reaction times in their shoot decisions than participants in the neutral and sad conditions. Furthermore, it was hypothesized that participants in the sad condition would not differ significantly from participants in the neutral condition. To investigate these hypotheses, a one-way ANOVA was examined with the between-subjects variable as emotion induction condition (five conditions) and the dependent variable as overall reaction time. Contrary to expectations, no significant

main effect was found, $F(4, 295) = 0.48$, $p = .75$, $\eta_p^2 = .01$. It did not matter the condition the participant was in, there were no significant differences with reaction time. Therefore, this hypothesis was not supported.

Accuracy rate hypotheses

It was hypothesized that participants in the sad condition would exhibit significantly greater overall accuracy in their shoot decisions than participants in the angry, contemptuous, or happy conditions. Furthermore, participants in the happy condition were expected to exhibit less accuracy than those in the neutral condition while participants in the sad condition were expected not to differ significantly from the neutral condition.

To test these hypotheses, a one-way ANOVA was employed with the between-subjects variable emotion induction condition (five conditions) and the dependent variable overall accuracy rate. Again, contrary to expectations, no significant effect of emotion condition on accuracy rate was revealed, $F(1, 295) = 0.56$, $p = .69$, $\eta_p^2 = .01$. Participants' accuracy did not differ by their emotion. As a result, this hypothesis was not supported.

Timeouts

Because so many participants timed out on more than 50% of the trials in the First Person Shooter Task, we wished to examine whether the specific emotion induced was causing participants to not be able to make decisions in time. Consequently, a 2 (race) X 2 (object) repeated measures mixed ANOVA was conducted with the between subjects variables as inclusion status (whether the participant's data was included in previous analyses) and emotion condition on the dependent variable number of timeouts. We wished to examine if emotions influenced participants' timeouts, if emotions influenced participants' timeouts depending on race or object held, and if there were any

interactions between the variables race, object held, inclusion status and emotion condition on timeouts.

Box's M was not significant (p = .57) and Levene's Test for each of the four variables was also not significant, Black males with guns (p = .97), Black males without guns (p = .95), White males with guns (p = .68), and White males without guns (p = .45). No significant main effect of emotion condition was found, $F(4, 385) = 0.97$, p = .43, η_p^2 = .01. The number of timeouts did not differ based on emotion induced. Similarly, there was no significant interaction between inclusion status and emotion condition on timeouts $F(4, 385) = 0.86$, p = .49, η_p^2 = .01. This means that it didn't matter whether the participant's data was excluded from previous analyses for having too many timeouts or included in previous analyses, emotions did not affect timeouts for either group. A race by inclusion status interaction was found, Multi. $F(1.00, 385.00) = 4.01$, p = .05, η_p^2 = .01. Participants that were excluded due to excessive timeouts had slightly more timeouts for Whites (M = 11.41, SE = .24) than Blacks (M = 11.10, SE = .24, p = .07). Participants who were included in the analyses did not differ on timeouts with respect to race (p = .38). No other significant differences were found.

To examine associations between timeouts, reaction times, and accuracy rates, a correlational analysis was conducted by splitting the file between participants who were excluded from original hypotheses (those who timed out on more than 50% of the trials) and those who were included in the original hypotheses. Within excluded participants, there was a significant correlation between timeouts for Black males with guns and reaction time, $r(92) = -.28$, p = .01, such that more timeouts were associated with shorter reaction times. The same was true for accuracy rate, $r(92) = -.25$, p = .02. More timeouts for Black males with guns was associated with less accuracy. No significant correlations

were found for the other timeout variables (Blacks with non-guns, Whites with guns, or Whites with non-guns) and reaction times or accuracy rates.

Participants that had data included in the original analyses, showed significant correlations for all four of the timeout variables (Blacks with guns, Blacks with non-guns, Whites with guns, and Whites with non-guns) and reaction times and accuracy rates. All were negative, moderate and significant. As timeouts increased, reaction time decreased $r(300) = -.35, -.34, -.34$, and $-.29$, $p < .001$ respectively. Similarly, as timeouts increased, accuracy decreased, $r(300) = -.44, -.46, -.40$, and $-.44$, $p < .001$ respectively. This may further elucidate the relationship between time and decision making. When individuals have a very short amount of time to make decisions, accuracy typically plummets and timeouts increase. Thus, it makes sense that timeouts, reaction times, and accuracy rates should be related.

Chapter 4

Discussion

The importance of continued investigation of shoot decision research lies in the large number of officer involved shooting fatalities each year. In 2016, 963 individuals were shot and killed by police (Tate et al., 2016). Policing is a very difficult, highly stressful, and thankless job. The nature of the job itself may create incidental emotions which may spill over into shoot decisions. Thus, the purpose of this study was to investigate whether incidental emotions do in fact affect shoot decisions and to assess whether specific emotions (when compared to a neutral condition) increased or decreased racially biased responses.

While the manipulation check revealed that the specific emotions were induced in participants, those in the separate emotion conditions did not exhibit differences on racial bias indices or shooter bias indices. Likewise, the participants' rated feelings did not predict racial bias indices or shooter bias indices scores. This is probably due to the fact that the racial bias indices score is based on proportions dealing with false alarms and hits whereas shooter bias indices is based on correct rejections and hits.

Several interesting findings arose when examining the components which make up racial bias. First, this sample had many immigrant participants which did not exhibit any components of racial bias at all. Second, American students only exhibited partial racial bias: more hits for Black men than White men and more misses for White men than Black men, but participants did not exhibit any differences with false alarms or correct rejections for Black men or White men. Most likely, the reason why no differences were found with the racial bias indices was due to the lack of differences in false alarms and correct rejections in this sample.

As for shooter bias, both American and immigrant participants showed partial shooter bias, faster shoot decisions were made for Black men than White men. Contrary to expectations however was the fact that American participants also exhibited the opposite of typical shooter bias findings: they made faster no shoot decisions for Black males than White males. Again, this a-typical finding most likely impacted the shooter bias indices score, leading to no differences found.

When examining the interaction trend between participants' ethnicity, the emotion induced, and participants' racial bias, different patterns emerged. Partial racial bias in its typical form (bias towards Blacks) was found for happy and sad African Americans, angry, contemptuous, and neutral Caucasians, happy Hispanics, and sad and neutral Asians. Interestingly, the only group who exhibited more false alarms for unarmed Black men than unarmed White men were happy African American participants. *Reversed* racial bias was found for happy Caucasians and angry Hispanics. Specifically, Caucasians who were happy showed bias towards Whites, shooting more unarmed White men than unarmed Black men while angry Hispanics showed less bias towards Blacks by making more no shoot decisions for unarmed Black men than for unarmed White men. The following conditions exhibited no racial bias: angry, contemptuous, or neutral African Americans, sad Caucasians, contemptuous, sad, or neutral Hispanics, and angry, contemptuous, or happy Asians. All simple effects reported as significant were $p < .10$.

Similarly, when the interaction trend between ethnicity, immigrant status, emotion condition, and shooter bias was examined, different patterns were revealed. First, within immigrants, partial shooter bias in its typical form (bias towards Blacks) was found for angry and contemptuous Hispanics and sad Asians. However, angry Asian immigrants showed *reversed* shooter bias, making faster no shoot decisions for unarmed Black men

than unarmed White men. Second, within Americans, partial shooter bias in its typical form was found for angry and sad African Americans, angry, contemptuous, and happy Caucasians, and angry Asians. *Reversed* shooter bias was exhibited by happy African Americans making faster no shoot decisions for unarmed Black men than unarmed White men. No shooter bias was exhibited in the following conditions: neutral and contemptuous African Americans, neutral and sad Caucasians, and happy, sad, neutral, and contemptuous Asians. Americans identifying as Hispanic did not exhibit shooter bias in any of the emotion conditions. All simple effects reported as significant were $p < .10$.

Although preliminary research previously conducted in this area suggested that incidental happiness increased racial bias and that anger may increase shooter bias (Undelbach, et al., 2008), our results suggest that the way racial bias is displayed within the emotion conditions (bias towards Blacks, bias towards Whites, no bias) is dependent upon the individual's ethnicity and whether the individual was raised in the United States. Previous research has postulated that racial bias and shooter bias are founded upon the American cultural stereotype that African Americans are dangerous. This American stereotype is thought to be automatically elicited when seeing or interacting with an African American and therefore, in shoot decision research, reveals itself as racial bias and shooter bias (Devine, 1989; Correll et al., 2002; Correll et al., 2007a; Correll et al., 2007b). Consequently, immigrants, or individuals who were not raised in the United States should not have encountered this stereotype and thus, should not show these biases. In our sample, we found this to be true for racial bias but not for shooter bias.

A few other findings were puzzling as well. First, even though an interaction was found between ethnicity and emotion condition on racial bias, still American participants overall did not exhibit more false alarms (shooting an unarmed person) for Black males than White males. Second, although immigrant participants did not show racial bias they

did exhibit partial shooter bias. One explanation is that the Americans may be influencing the immigrants to be more biased and perhaps the immigrants are influencing the Americans to be less biased. Indeed, when the association between shooter bias indices and the number of years lived in the U.S. was examined by splitting the file by immigrant versus American, a significant, moderate, positive correlation was revealed for immigrants, $r(33) = .35$, $p = .04$. The longer the immigrant has lived in the U.S., the greater shooter bias exhibited towards Blacks. However, to test the idea that immigrants may be influencing the Americans to be less biased would require another experiment which is beyond the scope of this project.

The contact hypothesis sheds some light on this idea, however. Gordon Allport (1954) originally hypothesized that direct positive contact with outgroup members would reduce prejudice. This idea has been well supported with research findings, the most notably of which consists of a meta-analysis of 515 studies on the subject. The meta-analysis discovered that friendships with individuals from outgroups was the most effective in reducing prejudice (Pettigrew & Tropp, 2006). Even beyond this, other researchers have found that if an individual witnesses or knows about someone who has an outgroup friend, that individual exhibits less prejudice (Extended contact; Wright, Aron, McLaughlin-Vlope, & Ropp, 1997). This indicates that the greater the diversity, the greater the opportunity for outgroup friendships to form and the greater the likelihood of knowing someone with an outgroup friend and consequently, less bias. In other words, because The University of Texas at Arlington is very diverse and diverse friendships are fostered on campus, prejudice is likely to be very low and this is exhibited with less racially biased shoot decisions.

As for our original hypotheses examining the influence of incidental emotions on shoot decisions, this research provides support that emotions experienced in everyday

life do spill over into other unrelated areas of life including decision making. However, contrary to our expectations, we did not find support for specific emotions (happy, angry, and contemptuousness) increasing bias nor did we find support for specific emotions (sad and neutral) decreasing or not showing bias. Interestingly, only when ethnicity was added to the model did the effect of emotions on racial and shooter bias reveal itself. Clearly this indicates that an individual's ethnicity influences how the emotion affects decision-making. No research to date has examined either immigrant status on shoot decisions or the interacting effect of ethnicity and emotion on shoot decisions.

For the latter, the Affect Infusion Model (AIM; Forgas, 1995) may shed some light on the effects of emotion on shoot decisions. According to AIM, induced emotions are likely to affect decision-making under two processing strategies: heuristic processing and substantive processing, and unlikely to affect decision-making under two different processing styles: direct access and motivated processing. Heuristic processing is utilized by participants when making judgements about targets that are familiar or typical, when the task is not personally relevant to the participant, when the participant is under time constraint, when the participant is not motivated to produce a specific outcome, and when accuracy is not a serious concern. Substantive processing, as its name implies, requires the participant to think deeply about the information provided in order to make a judgement. This style of processing is utilized when the target is complex or atypical, and the participant is not under time constraint, is not motivated by producing a specific outcome but is motivated to be accurate. Both heuristic and substantive processing styles allow induced emotions to influence judgments in decision-making.

The direct access strategy is typically used by participants when the judgment can be produced by retrieving a pre-existing schema. Participants use this strategy when the target is prototypical or familiar and when the familiarity triggers an already stored,

pre-existing judgement about the target. The motivated processing strategy, on the other hand, occurs when the participant is motivated to produce a specific outcome. This strategy goes beyond merely the motivation to be generally accurate. Participants using this strategy have a pre-existing motivation which influences their decision making. Unfortunately, this strategy suggests that it can be triggered by directing the participants' attention to how they feel, which can then motivate participants into reducing that emotion which would also reduce the impact the emotion had on decision-making. Both the direct access and motivation processing strategies are low affect infusion meaning that they prevent emotions from influencing decisions (Forgas, 1995).

These processing strategies may affect our results in a couple of ways. First, because participants are under severe time constraints (730 ms) to make split second shoot decisions, heuristic processing may occur which allows for emotions to influence the participants' decisions. Second, participants who believe that African Americans are dangerous would have this schema readily available for retrieval to apply to the shoot decision task which would likely lead to the use of a direct access strategy to make judgments. The use of this strategy would potentially prevent emotions from influencing decisions. Third, participants who believe they are egalitarian, who are also aware that there is a stereotype that African Americans are dangerous may be motivated to prove that they do not approve of the stereotype and so they may invoke a motivated processing style which would prevent emotions from influencing their decisions. Similarly, because we asked participants to rate how they felt in the moment directly after the emotion induction, this may have triggered the need to manage their emotions, thus utilizing a motivated processing strategy which then prevented emotions induced from influencing the participants' judgments.

Any of these processing tactics may have influenced how participants decide to shoot or not shoot. These information processing approaches might also interact with the individual's ethnicity creating an even more particular set of circumstances in which emotions affect decisions. However, no research to date has examined participants' ethnicity on the use of these processing strategies.

Limitations and Future Directions

Our study is not without limitations. First, we could not fully investigate how emotions affect racial and shooter bias due to the fact that we did not have enough power to fully examine the five and six-way interactions and post hoc comparisons of the simple effects. Thus, only non-significant five and six-way interaction trends were revealed. Similarly, when probing the interaction between immigrant status, ethnicity, emotion condition, and shooter bias, several of the simple effects could not be analyzed due to not having any participants within that subset (e.g. African American immigrants).

Second, we could not fully investigate the interaction effects of ethnicity and emotion condition on racial and shooter bias because only partial racial and shooter bias was found. Within just the American participants and not including ethnicity in the model, participants did not exhibit false alarm differences and they tended to show some bias in favor of Blacks by making faster no shoot decisions for unarmed Blacks than unarmed Whites. On one hand, this finding is considerable because it indicates that individuals living in Arlington, Texas, may actually have reduced bias in shoot decisions. On the other hand, it leaves questions as to whether this is an anomaly.

Perhaps the media coverage of erroneous shoot decisions and police brutality have shed light on the issue making individuals aware that racial bias is an on-going problem which must be counteracted. Therefore, those who are aware of the issue may be motivated to not show racial bias, and hence use a motivated processing strategy in

an attempt to counteract the implicit bias. Similarly, the media attention to the terroristic actions of active shooters (who are typically White and male) may have created a shift in racial stereotype regarding dangerousness. It may be that citizens are starting to view White males as dangerous instead of Black males. This may explain some of our reversed bias findings. Either way, future studies should examine the interaction of American participants' ethnicity and emotion condition on racial bias in areas where it has previously been shown to occur.

Third, in order to investigate why only partial racial and shooter bias was found, we examined the data by separating immigrants from Americans due to the idea that the bias may be based on an American stereotype. Because this analysis was conducted as a follow-up, it was limited in a couple of ways. Particularly, our sample sizes were unequal. We had only 40 participants in the immigrant group and over 200 in our American group. Also, we asked participants if they self-identified as an immigrant. Immigrant status can include a wide range of people, people who have technically lived in the U.S. for their entire lives. This may hamper the results. If the individual moved into the U.S. as a young child and was raised in the American culture, then it is very likely that they were exposed to the American stereotype that African Americans are dangerous. Thus, future studies should examine this important finding that immigrants do not exhibit racial bias by separating participants by the country that they spent the majority of their childhood in and utilizing equal sample sizes. This will allow not only the investigation of bias towards Blacks but also the possibility of bias towards Whites and no bias, based on the country that the individual was raised in. For researchers that wish to study moderators and mediators of racial and shooter bias, it is best to only recruit participants who were raised in America.

Fourth, the participants in our study were students, not police officers. This may affect the results in a couple of ways. Police officers have training specifically in shoot decisions which may make them better at discriminating individuals with guns from individuals without guns. In fact, some research shows that officers are better able to discriminate guns from non-guns when compared to civilians (Correll et al., 2007b). Furthermore, police officers' training may teach them how to better manage their emotions in stressful situations which may impact how emotions actually affect their shoot decisions. On the other hand, police may have more negative contact with the outgroup members which may lead to biased shoot decisions. Because police officers have to interact with individuals committing crimes and or behaving abhorrently, they may generalize these past experiences to all people of that certain group and this can increase prejudice. Particularly, researchers find that negative contact increases racial group membership salience and this allows for the negative experience to generalize to the entire group (Paolini, Harwood, & Rubin, 2010). Furthermore, researchers find that negative contact predicted increased prejudice even more strongly than positive contact predicted decreased prejudice (Barlow et al., 2010).

Fifth, we did not examine long harbored emotions and their effect on shoot decisions. Long harbored emotions can be thought of as similar to prejudice. Prejudice is defined as long held negative attitudes or beliefs about a group of people which is based upon their group membership. Prejudice consists of three components: cognitions, emotions, and behavior. Specifically, these components deal with beliefs about the individuals in the group, emotions that arise in response to group members, and behaviors acted out towards those in the group (Baumeister & Vohs, 2007). Although prejudice is linked to violent behaviors towards outgroup members, explicit prejudice or "Jim Crow Racism" (Sears, Hetts, Sidanius, & Bobo, 2000) is rarely expressed in today's

society. However, subtle prejudice is still very active, although harder to assess (Yzerbyt & Demoulin, 2010). Because of social desirability and wanting to be viewed as egalitarian, individuals who were prejudiced would be unlikely to admit so in experimental settings. Consequently, researchers now rely on implicit measures to examine prejudice such as the IAT (Greenwald et al., 1998) or the First Person Shooter Task (Correll et al., 2002). Accordingly, in our experiment, we relied upon an implicit measure of prejudice similar to the First Person Shooter Task. However, future studies interested in extremist groups (who may be more likely to admit to prejudice) might examine extremists' responses on long held emotions towards outgroup members and their association with responses on an implicit measure.

Lastly, emotions that affect shoot decisions may be personal to the situation itself, not incidental emotions encountered in other aspects of life. In other words, shoot decisions might only be affected by emotions elicited by the person who is at the receiving end of the weapon. For instance, police officers involved in a situation that requires the decision to shoot (or not) may be more likely to base their decision on their feelings that are derived from interacting with that individual. Therefore, if anger or hatred is elicited, officers may be more inclined to shoot in retaliation. Indeed, research had found that explicit (self-reported) hate mediates the effect of prejudice on punishment and that two out of three components of hate (disgust and anger but not attributions of inhumanness) predicted punishment (specifically length of sentencing and giving the death penalty) respectively (Pearson, Dovidio, & Pratto, 2007).

In conclusion, results from this experiment elucidate several directions for future research. First, future shoot decision research should focus on providing support for the hypothesis that racial and shooter bias is based on an American stereotype and thus conduct research comparing bias from participants that were raised in different countries.

Second, although many of the interesting findings dealing with emotions were non-significant trends, they reveal that emotions are likely to interact with the individual's ethnicity to affect shoot decisions. This is an important step to understanding how a police officer's daily experiences may affect the life and death decisions he or she has to make. With a larger sample size, the study would have enough power to detect all of the patterns of bias within emotion and ethnicity groups. Detectable and replicable patterns could lead to new emotional training for specific ethnicities of police officers to reduce bias towards specific ethnic groups.

Appendix A

Demographics Questionnaire

What is your gender?

- Male
- Female
- Other

What is your ethnicity?

- African American
- Caucasian
- Hispanic
- Asian
- Middle Eastern
- American Indian/Alaskan Native
- More than one
- Other

What is your age?

Appendix B

Manipulation Check Questionnaire

Please rate how you feel now.

HAPPINESS (the state of being happy)

Not at all happy — Extremely happy

0	1	2	3	4	5	6	7	8	9

EXCITEMENT (a feeling of great enthusiasm and eagerness)

Not at all excited — Extremely excited

0	1	2	3	4	5	6	7	8	9

PLEASURE (a feeling of happy satisfaction and enjoyment)

Not at all pleasurable — Extremely pleasurable

0	1	2	3	4	5	6	7	8	9

ANGER (a strong feeling of annoyance, displeasure, or hostility)

Not at all angry — Extremely angry

0	1	2	3	4	5	6	7	8	9

FRUSTRATION (the feeling of being upset or annoyed)

Not at all frustrated — Extremely frustrated

0	1	2	3	4	5	6	7	8	9

IRRITATION (the state of feeling annoyed, impatient, or angry)

Not at all irritated — Extremely irritated

0	1	2	3	4	5	6	7	8	9

SADNESS (the condition or quality of being sad)

Not at all sad — Extremely sad

0	1	2	3	4	5	6	7	8	9

SORROW (a feeling of deep distress caused by loss)

Not at all sorrowful — Extremely sorrowful

0	1	2	3	4	5	6	7	8	9

GLOOM (a state of depression or despondency)

Not at all gloomy — Extremely gloomy

0	1	2	3	4	5	6	7	8	9

CONTEMPT (the feeling that a person or a thing is beneath consideration, worthless or deserving scorn, hatred)

Not at all contemptuous — Extremely contemptuous

0	1	2	3	4	5	6	7	8	9

HATRED (intense dislike or ill will)

Not at all hateful Extremely hateful

0	1	2	3	4	5	6	7	8	9

SCORN (the feeling or belief that someone or something is worthless or despicable)

Not at all scornful Extremely scornful

0	1	2	3	4	5	6	7	8	9

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Biographical Information

Audrey Snowden was first introduced to her love of learning at Hill College in Burleson, Texas where she earned her earned her Associates of Arts in May of 2011. She went on to receive two more degrees, a Bachelor of Science in Psychology from Texas Wesleyan University in May of 2013 and a Master of Science in Experimental Psychology from The University of Texas at Arlington in May of 2015. During her tour in post-secondary education, she found a love for cognitive science, specifically, decision-making. However, it was in graduate school that she really began to realize that her passion was rooted in statistics. Above all else, she found that she cherished data analysis.