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# Effects of Skin Color and Clothing Color on Perceived Violence and Aggression of Criminals

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# Effects of Skin Color and Clothing Color on Perceived Violence and Aggression of Criminals

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Abstract

**Introduction**: Society has a history of attaching meaning to colors, and few colors have been given as much attention as red and black. In many contexts, these colors have strong negative associations. Red has long been representative of danger and aggression (Young, Elliot, Feltman, & Ambady, 2013), while black represents death and evil (Adams & Osgood, 1973; Sherman & Clore, 2009). Unfortunately, color associations are not limited to clothing or advertisements; skin color is also a subject of negative associations in the form of stereotyping. Darker skinned people, especially African-Americans, have long been subjected to negative stereotypes. The current study sought to explore how black and red influence person-perception, and specifically how skin color and clothing color influence perceptions of criminal behavior.

**Method**: 156 participants reviewed a hypothetical crime in which a man robbed a woman for drug money. Participants were randomly assigned to see the perpetrator as a White or Black male wearing a red or gray shirt. Then they indicated how aggressive and violent the perpetrator was, followed by recommending an appropriate prison sentence for the crime.

**Results**: African-American participants were more likely to rate White perpetrators as more aggressive in the red shirt condition. Additionally, Black participants perceived perpetrators of both races as more prone to violence when wearing red. Lastly, an in-group versus out-group effect was observed as Black and White participants assigned longer prison sentences to perpetrators of the opposite race.

**Conclusions**: Color can carry meaning in impression formation contexts, and people use color information to make judgments of criminals. This work further highlights the importance of in-group and out-group relations in the domain of person perception, and it may have important real-world implications in the criminal justice system.

# Effects of Skin Color and Clothing Color on Perceived Violence and Aggression of Criminals

Consciously or not, humans are influenced by the presence of colors in their everyday lives. Many years of research has led to the concept of color associations; for example, blue is thought to have a calming effect, while yellow is often linked to happiness (Boyatzis & Varghese, 1993; Hemphill, 1996; Kaya & Epps, 2004). Some colors, however, have more complex associations depending on the context in which they are used. Black can be associated with evil, grief, or immorality (Adams & Osgood, 1973; Jordan & Brodwin, 1975; Sherman & Clore, 2009), or it can be viewed as chic, powerful, and confident (Krupnick, 2017). In the same manner, red can be seen as a sign of aggression, but it can also represent passion and love (Hill & Barton, 2005; Little & Hill, 2007; Young et al., 2013). The impact of color on human psychology is so significant that retailers and their marketing teams have benefitted immensely by appealing to the consumer's eyes. Brands are built around color schemes aimed at specific demographics (Gorn, Chattopadhyay, Yi, & Dahl, 1997; Labrecque & Milne, 2012), businesses select softer interior paint colors to encourage customers to spend more time in their establishment (Gorn, et al., 1997; Levy, 1984), and sales are advertised in colors sure to catch the eye (the most popular color to promote a price cut is, of course, the impactful red (Patil, 2012).

Color associations, however, extend beyond the abstract and into the very real arena of race relations. Throughout history and across cultures there have been countless instances of one group treating another as inferior based on differences in skin tone. Arguably, the most prominent example of this is the slavery era in America, and the subsequent consequences of it. Beginning with the slave trade, many negative associations have been levied against those of African descent; unintelligent, uncivilized, and sub-human are but a few. Many even believed

that African Americans were more closely related to monkeys than humans (Lawrence, 1819; White, 1799). After slavery was abolished and African American communities began to forge their way in a "free" land, the negative associations evolved. Brown skin would become linked to laziness, criminality, recalcitrance, and immorality, and although America has come a long way in terms of race relations, the lingering effects of such long held beliefs by the majority of the population are still at large.

Stereotypes, like color associations, are the result of long-standing beliefs that are not always summoned consciously. A decision regarding someone's trustworthiness can be reached within seconds of observing their physical features (De Neys, Hopfensitz, & Bonnefon, 2017; Porter, England, Juodis, ten Brinke, & Wilson, 2008; Todorov, Pakrashi, & Oosterhof, 2009; Willis & Todorov, 2006), but can the presence of a specific color be the determining factor in such a decision? Can the concept of color association be linked to racial stereotypes? The current study will examine the history of the phenomenon of color associations regarding black and red, as well as stereotypes involving light skin and brown skin; further, it will test whether these colors influence negative judgments toward real people.

## Negative associations with dark skin

To shed greater light on the issues of modern racial stereotyping, the root of the matter should be discussed. Even before the peak of the American slavery era, many crude beliefs regarding Blacks' mental and physical capabilities were commonly held. For example, in the 17th and 18th centuries native Africans and their relations were held to be intellectually and culturally inferior to Europeans; indeed, they were thought to be violent, barbaric, simple-minded, lazy, and subservient (Hunt, 1863). Even the most renowned collection of knowledge, the Encycolpaedia Britannica, published a description of the African race in its eleventh edition

that essentially placed it at the bottom of humankind's evolutionary scale (Joyce, 1911). The physical differences between Africans and Europeans were perhaps the most dissected and discussed within the era's scientific community, with brain size, cranial shape, and bone structure being of particular interest. English surgeon Sir William F. Lawrence (1819) stated that the skull measurements of certain Ethiopian tribes, in addition to the development of certain facial features (i.e., the nose, the jawline), "…approximates unequivocally to that of the monkey. It not only differs from the Caucasian model, but it is distinguished from it in two respects; the intellectual characters are reduced, the animal features are enlarged and exaggerated (p.313)." English physician Charles White (1799) also compared the cranial measurements and bone structure of Africans to those of Europeans and came to the conclusion that the African race was closer in relation to apes than to any other species, including human beings. Africans were also thought to be less susceptible to pain and unable to compose abstract thoughts due to the physical difference between them and Europeans. Such simian comparisons were widespread within society and were carried into the future; in fact, it could be proposed that the early dehumanization of African peoples in this manner contributed to the American slavery era (Hund & Mills, 2016). Thomas Jefferson, third President of the United States, claimed that while African-American slaves might be more musically talented than their White counterparts, he had never heard of one who engaged in stimulating intellectual discussion (Jefferson, 1785). Even the author of the Emancipation Proclamation of 1863, President Abraham Lincoln, believed that the physical differences between White and Black Americans would prevent them from living as equals; instead, Lincoln believed that one race must always be in the position of the superior race, and that position belonged to Whites (Angle, 1958, p.326-327). American slaveholders capitalized on the longstanding belief that their Black slaves were

lazy, ignorant, and animalistic by restricting their education, behavior, and movement, literally and figuratively chaining them to the masters; obedient slaves were rewarded, while misbehaving slaves received brutal punishments; and while all slaves were seen as beneath White Americans, the idea that a hierarchy existed among the slaves kept them divided enough to prevent uprisings. Negative stereotypes followed African-Americans into the 20th century, and have evolved with changing times. Today's society has a tendency to label Blacks as hostile, lazy, poor, and prone to criminality (Devine, 1989, Studies 1 and 2; Dixon, 2008; Dixon & Maddox, 2005). Black children are often regarded as mentally less capable than their White counterparts, despite evidence which does not support this, and are seen as less innocent and more prone to the same criminal tendencies as their adult counterparts (Sagar & Schofield, 1980).

The scientific study of stereotypes toward Black individuals has a relatively short history, starting with Duncan (1976). One purpose of Duncan's study was to measure if White subjects perceived an ambiguous act by a Black person to be more violent that if another White person performed the same act. He also desired to understand *how* individuals assigned cause to the behavior they witnessed and their resulting beliefs about causality. Additionally, Duncan wanted to observe subjects' interpretations of "violent" behavior to determine if they would attribute it to the stimulus, the individual exhibiting the behavior, or the situation. To do this, Duncan taped 2 White and 2 Black men as they read and acted out a script, which involved a heated discussion about a "coworker" and their impending decision to leave or stay with their company. The script ended with what Duncan termed an "ambiguous" shove by one of the students (this student will hereon be referred to as "the harm-doer"). Duncan ensured that each racial pairing was observed (e.g., Black harm-doer and White victim, White harm-doer and White victim, etc.). The subjects,

which consisted of White undergraduate males, were randomly assigned to a harm-doer-victim pairing and asked to rate the harm-doer and victim's behavior first, while the second rating task related to the attribution process. This process was measured using a 9-point scale regarding the following: "…the extent to which the observed behavior of A or B should be attributed to situational forces, the extent to which the behavior of A or B should be attributed to him personally, the extent to which it should be attributed to the issue discussed (stimulus), and other (some combination of a and/or b and/or c)." The results of the study supported Duncan's initial hypothesis regarding labeling behaviors based on the perpetrator; the White subjects were more likely to rate the Black harm-doer as more violent than the White harm-doer committing the same ambiguous act. Also, while subjects were more likely to rate the Black harm-doer as violent when the victim was White, they were also more likely to make the same rating when the harm-doer and victim were both Black. In fact, the White harm-doer paired with the White victim pairing received the lowest violence rating; a White harm-doer was also more likely to be rated as just "playing around" by subjects. Finally, regarding the attributional component of Duncan's study, he found that the subjects were more likely to rate the Black harm-doers as simply being aggressive, whereas White-harm doers were seen as responding to the tense situation (1976). The results of Duncan's study illustrate commonly held negative stereotypes of Black people, including the identification of the Black male as a "thug" prone to breaking the law.

Duncan's study established a foundation for studying stereotypes, and his methodology was later refined by Sagar and Schofield (1980) to further assess individual perceptions of ambiguously aggressive acts. Sagar and Schofield questioned Duncan's use of the scripted and taped interactions, specifically the fact that the actors were allowed to retain their personal brand

of vocabulary and inflection. To the researchers, this could have inadvertently influenced the subjects' responses by exposing them to verbal and behavioral cues, rather than skin color cues. Additionally, all of Duncan's subjects were college-aged White males; Sagar and Schofield wanted to know if racial biases were unique to this group of individuals or if they could be generalized to other races. They chose to conduct a similar experiment with boys in a recently desegregated middle school to test the hypothesis that White subjects would rate ambiguous behavior conducted by a Black actor to be more aggressive than the same act committed by a White actor. Further, they hypothesized that a similar response pattern would be found in Black subjects due to previous research, which indicated that in desegregated schools Black and White students tended to link Blacks with threat, violence, and aggression (Sagar & Schofield, 1980).

Sagar and Schofield improved upon Duncan's (1976) methods and combined their subject pool so that White and Black subjects were randomly assigned to an experimental design; furthermore, the researchers used black-and-white line drawings of children performing various ambiguous acts that were observed to be fairly common occurrences in the school, such as bumping in the hallway, requesting food from another student, poking a student in the classroom, and using another's pencil without asking. By using pictorial examples, the researchers eliminated the possibility of actors' verbal and behavioral characteristics influencing the subjects' responses. The initial hypothesis was supported and the research revealed findings similar to those of Duncan's; Black initiators were rated by subjects as more threatening and/or mean than White initiators performing the same ambiguous behaviors. Subjects were also more likely to attribute negative personality characteristics, such as thoughtlessness and unfriendliness to Black initiators (Sagar & Schofield, 1980).

Most people are aware of the aforementioned racial stereotypes as well as those regarding other racial groups; however, there are those who allow this knowledge to influence their behavior, while others do not. Devine (1989) sought to examine how stereotypes and personal beliefs influence responses to stereotyped groups. The study found that participants were knowledgeable of various Black cultural stereotypes, regardless of whether or not they agreed with them. Even if subjects reported having no prejudice against Blacks, when they were primed with words related to the negative racial stereotypes of Blacks racial stereotype they produce "stereotype-congruent or prejudice-like responses", such as rating a person whose race is unspecified more negatively than if they had not been primed with the negative stereotype (Study 2). Devine's third study revealed that "low prejudice" individuals, who are aware of the stereotypes attributed to Black people, inhibit the effect this awareness has on their behavior so as to reduce conflict with their nonprejudiced identity; for example, they reported thoughts and beliefs such as "affirmative action will restore historical inequities" and "my father says all Blacks are lazy, I think he is wrong." These thoughts reflect an awareness of cultural stereotypes and the individuals' efforts to negate them. This led Devine to surmise that, contrary to prior research which presumed stereotypical beliefs were inflexible and therefore inescapable, prejudiced attitudes and beliefs can be changed given time, attention, and intention; however, as the following research shows, it has and will continue to take a great deal of all three to overcome stereotype-driven behavior against minorities (1989).

Some research in the domain of stereotypes has focused on microaggressions against minority populations. A 2007 study published by researchers at the University of Utah took a different approach when examining the stereotyping of black men by holding focus group interviews with Black male students enrolled at five elite universities, which the researchers

termed “historically White institutions,” across the United States (Smith, Allen, & Danley, 2007). The research team specifically examined racial microaggressions, which Merriam-Webster defines as “a comment or action that subtly and often unconsciously or unintentionally expresses a prejudiced attitude toward a member of a marginalized group (such as a racial minority)” (“Microaggression,” n.d.). A number of Black male students were interviewed by the research team regarding their personal experiences on campus, and their own stories comprise the data gathered by researchers. Students’ stories revealed their experience of stereotyping in on-campus academic areas (e.g., classrooms, computer labs, administrative offices, etc.), campus social areas, and public spaces near campus that experienced high student traffic, with most of those stories involving campus law enforcement. One student, a former engineering major, described entering an academic building on a weekend to study for an exam, only to be followed and questioned after the campus police department was informed of a “suspicious-looking” man entering the building; the student was asked to provide his campus identification in addition to another form of identification, and when he questioned the responding officer’s request the only explanation given was that it was the officer’s “job” to follow up with such calls (Smith et al., 2007).

Another student described being targeted by campus police as well, but in an on-campus recreational area during an impromptu football game with friends late at night. The student preceded the recollection by stating that it was not unusual for students of other races to use the space for similar reasons during the evening hours, and went on to say that the officers reported “complaints” about the group being too loud and informed them that they would have to leave. He concluded his story with the statement “‘…if we act in a way that we want to react…it’s just going to feed into the stereotype that they think we’re supposed to be violent or

whatever…It reminded me, I'm a Black man at Cal (Smith et al., 2007, p.565-566).'" The researchers pointed out that such events occur due to Whites' deeply rooted beliefs that Black men fit the description of people who do not belong in certain places, be they college campuses, public spaces, or businesses, and therefore should be treated as suspicious individuals (p.563). Further, Smith, et al. (2007) stated that in places like historically White institutions, Black men in large numbers are viewed by other races as being threatening, even in light of evidence demonstrating otherwise. This supports the previously discussed research regarding characteristics of categorization, which included the notion that categorizations can be rational (Allport, 1958) or, as Smith, et al. (2007) concluded, irrational. Another startling example of stereotyping Black men simply because they fit a particular criminal description occurred with a student who happened to be walking to a convenience store at the same time a crime occurred in the area. The student recalled being observed by a young White officer who then followed him into the store and asked him to step outside, where he questioned and even searched the student on the premise that a robbery had just occurred nearby and the student fit the description of the perpetrator. Naturally, the student's response was to calmly refute the officer's allegations, and while the student was released after the actual perpetrator was discovered and detained, the researchers commented that such occurrences are quite common and can lead to similar questioning and detaining or even brutality by White officers (Smith et al., 2007).

Perhaps more pertinent to the current tone of today's news reports is a 2001 study conducted by Payne in which participants were primed with Black and White faces before being asked to distinguish guns from hand tools. Payne expected that in the first experiment, which was not timed, participants would identify guns more quickly when primed with Black faces; in

the second, timed experiment, it was hypothesized that participants would be more likely to mistakenly identify tools as guns when primed with a Black face. The timed experiment was conducted to highlight those *automatic* processes which stereotype Blacks as violent and dangerous, and the results indicated a tendency for participants to commit what Payne described as "race-specific errors." This study demonstrates the presence of racial bias when an observer perceives a weapon, and examines the automatic and controlled influences that contribute to that bias (i.e., awareness of a stereotype and the judgment used to act or not act on that awareness). In order for an observer to make a "race-specific error," such as mistaking a cell phone for a gun, the stereotypic cue must be present along with a limited opportunity to measure one's response – these are precisely the conditions that exist when police officers are confronted with a stereotyped suspect.

In an effort to build on the aforementioned results, Correll, Park, Judd, and Wittenbrink (2002) examined the effect of a target's ethnicity on a participants' decision to shoot. They hypothesized that Black targets would be considered dangerous regardless of the nature of the object they were holding (weapon or non-weapon) and were more likely to be fired upon by participants. The experiment was designed as a simple video game, which contained black-and-white pictures of various real-world settings like parking lots, offices, and public parks; the targets, White and Black, were randomly superimposed on these photos along with a gun or non-weapon (e.g., a black wallet, an aluminum can, or silver camera). Participants were instructed to shoot targets holding weapons in order to gain points, while shooting an unarmed target resulted in lost points. The video game design allowed researchers to observe whether ethnicity affected participants' judgment, the implication being that their reactions could be applied to understanding the thought processes of police officers in similar real-world

situations. As hypothesized, Black targets, armed and unarmed, were shot at more often than White targets. Even after researchers removed ambiguous targets and tightened the time limit for the game, participants were not only more likely to shoot armed Black targets, they also shot *unarmed* Black targets at a higher rate than armed and unarmed White targets (Correll, et al., 2002).

The existence of the stereotype of Black men being aggressive and prone to criminality is not only observable in scientific research, but has even extended to media outlets. The research team of Coltrane and Messineo (2000) conducted a study on race and gender imagery in 1990s advertising, and found that Black men were portrayed less often than White men and were three times more likely to be portrayed as aggressive when they were (aggressiveness in this study was categorized as bold, forceful, antagonistic, or rough behavior; a specific example would be playing rough during a basketball game); in fact, of all the advertisement characteristics the researchers examined, this proved to be one of the greatest discrepancies (Coltrane & Messineo, 2000).

The negative stereotyping of Black men actually occurs very early in life. Goff, Jackson, Di Leone, Culotta & DiTomasso (2014) hypothesized that Black children are not viewed as possessing innocence like their White peers, and that they also experience less distinction from Black adults (for example, Black prepubescent boys were more likely to be misperceived as legal adults) and are therefore offered less basic human protections (such as needing protection and care). The results of the study showed an inclination by subjects (the majority of whom reported as White college aged females) to rate Black children after the age of 9 as less innocent than White children; further, subjects rated Black children *and* adults as less innocent than Whites and people in general. It was also found that subjects were more likely to

overestimate the ages of Black teens by up to four-and-a-half years, in contrast to more or less correctly estimating the ages of White and Latino boys. This overestimation also increased the chances of the Black boys to be seen as more culpable for their actions than the Whites or Latinos. Another part of the Goff, et al. (2014) study examined the perception of children's innocence in real-world criminal justice outcomes. The researchers relied on the same methodology used with the student subjects, but used active duty police officers instead. The officers also disproportionately overestimated the age of Black boys and were more likely to view them as less innocent than their White and Latino counterparts; this also predicted the likelihood of police violence against Black boys in real world settings.

Recent years have seen an uptick in reports of both civilian- and law enforcement-involved shootings of unarmed and/or non-threatening African-American men. In 2012, a Florida neighborhood watch volunteer called 911 to report a man wearing a black sweatshirt, whom the volunteer determined to be "suspicious." Disregarding the emergency dispatcher's instructions to avoid engagement, the volunteer confronted the man in the hoodie and, after a reported physical altercation, shot him. The suspicious Black man was unarmed 17-year-old Trayvon Martin, who was walking home from a convenience store when volunteer George Zimmerman began following him (Gutman & Tienabeso, 2012). It is interesting to note that Martin was reported to be five feet, eleven inches tall (Office of the Medical Examiner of Florida, 2012), which is not much taller than the average teenaged male (five feet, ten inches) (Schwanke, 2015); however, at this height a boy is tall enough to possibly be misperceived as a grown man and therefore a threat (Goff, et al., 2014). Likely the most disturbing incident involving a Black child in recent years is that of the police-involved shooting of Tamir Rice. The 12-year-old was playing with a toy gun in a public park when two police officers drove their

patrol car onto the park lawn and shot Rice within seconds of exiting the vehicle; one officer then radioed in to dispatch to say that the suspect appeared to be a 20-year-old Black male (Izadi & Holley, 2014). Other incidents involving law enforcement and Black adult males – the shootings of Philando Castile and Alton Sterling, the physical altercation that led to Eric Garner's death – echo a similar theme: a Black man is presumed to be a threat, regardless of his current behavior, and is subsequently killed by use of what many describe as excessive force (Baker, Goodman, & Mueller, 2015; Capecchi & Smith, 2016; Fausset, Pérez-Peña, & Robertson, 2016).

## Symbolic associations with black

Black also has abstract negative associations outside of the context of skin color. Bereaved families don the color in times of mourning, while the term "black magic" conjures images of pentagrams and satanic rituals. Additionally, black cats and crows are associated with bad luck and portentous omens, and the bubonic plague, dubbed the Black Death by historians, decimated the European population in the 1300s. The color is also used in the entertainment industry to denote the antagonist; for example, the evil queens of Walt Disney's *Snow White* and *Sleeping Beauty* wear black cloaks, while Darth Vader and Kylo Ren of the *Star Wars* franchise wear head-to-toe black ensembles. Further, languages include phrases that have negative connotations, such as describing someone as having a "dark past" or labelling social outcasts as "black sheep." Such undesirable traits associated to the color black might contribute to the larger social perception of Black individuals as inherently bad or violent (Adams & Osgood, 1973; Vrij, 1997).

This link between the color black and negative connotations was also explored by Sherman and Clore (2009), as they presented participants with black font words associated with

immorality and white font words associated with morality. They found that the responses to the black font words associated with immorality were quicker and relatively automatic compared to the reaction times for white font words associated with morality. They followed this initial study with a priming condition that exposed participants to an unethical situation, and then asked them to rate the moral and immoral words again; the results indicated that for those participants who initially exhibited no Stroop effect (this occurred when participants were exposed to words in colors that were incongruent with their associations, thereby slowing their reaction times; i.e., color-naming was slowed when the word "sin," associated with immorality, was presented with white letters, white being associated with purity), exposure to the unethical situation prompted them to respond more quickly to the black font words than in the first study. A study of children also found that when comparing two boxes, identical in physical presentation aside from one being black and the other white, the children expected something "good" to be inside the white box and something "bad" to be in the black box. When pre-recorded messages were played from the boxes, the children stated that the positive self-statements came from the white box and negative self-statements came from the black box (Stabler & Johnson, 1972).

Other studies have examined how color affects the viewer's perception, like Frank and Gilovich's (1988) research on the use of black uniforms in professional sports and the teams' perceived aggressiveness. They found that sports teams wearing black uniforms were more likely to be penalized that other teams; additionally, they were more likely to receive harsher penalties from referees than their rival, even when their actions could not be considered more aggressive or illegal than those of the opposing team. That study also revealed a connection between one's self-perception and the influence of color; when subjects were placed in teams wearing black or white jerseys and informed that they would be choosing games in which to compete with each

other, the team in black jerseys chose more aggressive games to play (Frank & Gilovich, 1988). Another study that examined the perception of uniform color on perception was conducted using police uniforms, where evidence was found that an all-black color scheme was rated most negatively by subjects, while a uniform combination of light blue shirts and navy blue pants received the most positive ratings (Johnson, 2005).

Vrij (1997) conducted two separate experiments to determine if clothing color would influence what type of impression participants would form about an offender. In the first experiment, participants observed one of two situations: the "aggressive" situation involved a man (the offender) in a social setting angrily approaching participants with a knife, while the "ambiguous" situation involved a man tampering with a bicycle who, upon seeing the participants, begins to approach them with a screwdriver in hand. In both situations, the offenders were wearing either a light shirt or a black shirt. In each situation, participants ranked how aggressive they felt the offender was as well as how they felt about him. Results showed that when the offender was wearing black participants rated him as being more aggressive, and reported that they felt more irritated by his actions. In the second experiment, participants were informed that a female was suspected of committing a crime, but at the moment she was innocent until proven guilty; they were then exposed to a mugshot of the suspect, who was either wearing a light shirt or a black shirt. Participants then completed a questionnaire regarding the woman, including her possible criminal background and the likelihood of her exhibiting aggressive behavior. The results indicated that when the woman was wearing a black shirt participants were more likely to believe her guilty of the suspected crime, and likely to be argumentative and prone to aggression.

Prior research indicates that the link between color and emotion begins at an early age. Boyatzis and Varghese (1993) showed 5- and 6-year-old children nine different colors, and inquired how each color made them feel. The children's responses were predominantly positive for bright colors like pink, red, yellow, green, purple and blue; for these colors, the children responded with emotions such as happiness, strength, and excitement. For darker colors like black, brown, and gray, boys tended to associate more positive emotions to them than girls, although they did attribute positive emotions to bright colors at a higher rate. The researchers attributed this to the role that color plays in gender-appropriate materials (i.e., boys' clothes and home furnishings trend toward darker colors). Despite this, girls and boys had more positive responses overall to bright color as opposed to dark colors. Similarly, the color black, although receiving the fewest positive emotion associations, did evoke positive emotions in half of the children's responses. Anger was the predominant negative emotional response to the color black, but happiness, excitement, and strength were the positive emotions associated with the color (p. 80, Table 1). The research team used this data to caution against research which asserts the long-standing claims regarding the negative associations with black.

### Symbolic associations with red

The color red also contains associations with abstract concepts, depending on the context in which it is perceived. On one hand, red can symbolize romance or passion, as wearing red can influence male perceptions of attractiveness in females (Elliot & Niesta, 2008; Pazda, Elliot, & Greitemeyer, 2012; Re, Whitehead, Xiao, & Perrett, 2011; Roberts, Owen, & Havlicek, 2010); however, red can also symbolize dominance, anger, and aggression (Hill & Barton, 2005; Little & Hill, 2007; Young et al., 2013). Feltman and Elliot (2011) found that imagining oneself wearing red during a sports competition led to participants

perceiving themselves to be more dominant and threatening than their blue-clad opponents; further, participants who were informed that their opponent would be wearing red perceived that opponent to be more dominant. Interestingly, the participants in that study reported that color had had no effect on their responses, which suggested minimal awareness of the color effect. Also, Hill and Barton (2005) found that Olympic athletes competing in combat sports won more fights if they were wearing red outfits. Similarly, they observed that soccer teams also tended to score more goals when playing in primarily red shirts as opposed to other colors (e.g., blue, white). To test the effect of priming and color manipulation, Fetterman, Robinson, Gordon, and Elliot (2011) asked participants to categorize words as anger- or sadness-related, then determine if an ambiguous color was red or blue; they found that participants were more likely to label the color red if they were primed with anger-related words.

Instead of a laboratory setting, Guéguen, Jacob, Lourel, and Pascual (2012) took their research to the streets – literally – to test the effect of red on aggressiveness. A study confederate was instructed to remain stopped at a traffic light after it turned green, while two observers reported on the reactions of the drivers blocked by his vehicle. It was found that the red vehicle elicited the quickest, most aggressive responses from blocked drivers (e.g., more frequent horn honking and headlight beaming).

Young et al. (2013) examined how red affects the processing of angry facial expressions and found that exposure to the color enabled subjects to identify anger more quickly and accurately than happiness. Gil and le Bigot (2015) also provided consistent results, revealing that red has an affective meaning; that is, it can cause ambiguous information to be perceived negatively. In that study, they presented participants with neutral and surprised male and female faces displayed on a red, green, red-green, or achromatic background and instructed them to rate

the faces as positive or negative. Neutral faces of both sexes were rated more negatively when presented against a red background than a green background; in fact, the red background was more likely to elicit a negative rating than any of the other backgrounds. Participants also assessed each color background using an affective scale and it was found that the red background was rated as being significantly closer to anger, and was judged to be the most negative color out of the backgrounds overall. Further, red was rated as the most arousing color. The research team also pointed out that female participants were more likely to rate male faces presented against red backgrounds as negative, as opposed to male participants (Gil & Le Bigot, 2015).

In a 2016 study, Young, Thorstenson, and Pazda examined how the color red can influence perceived emotional state; results showed that as facial redness increased, so did participants' perception of anger. More studies have provided evidence for the effect of colors on emotional states, with subjects responding to bright colors like yellow, green, and blue with positive emotional reactions (e.g., happy, hopeful, calm, excited) and to dark colors like gray and black with negative emotional reactions (e.g., sad, depressed, bored) (Boyatzis & Varghese, 1993; Hemphill, 1996; Kaya & Epps, 2004). Interestingly, another study discovered that people who have a preference for the color red exhibited more interpersonal hostility; when presented with a set of moral dilemmas, those participants who previously exhibited a preference for red were more likely to respond to the dilemmas aggressively or even violently (Fetterman, Liu, & Robinson, 2015).

The research reviewed thus far provides evidence that black and red carry symbolic meaning related to negativity, hostility, and aggression in certain contexts. The goal of the present study is to explore how these colors influence person-perception. Specifically, it will

examine how skin color and clothing color influence perceptions of criminal behavior. The following hypotheses have been derived from review of past literature:

H1: Perpetrators of crimes will be perceived as more aggressive, violent, and be assigned a longer prison sentence when the perpetrator is Black, relative to White.

H2: Perpetrators of crimes will be perceived as more aggressive, violent, and be assigned a longer prison sentence when the perpetrator is wearing a red, relative to gray shirt.

H3: There will be an interaction between race and shirt color, such that perceived aggression, violence, and prison sentence length will be especially pronounced for Blacks in the red shirt condition.

Interactive effects with participant race will also be examined for each of the hypotheses described above.

## Method

*Participants.* One hundred fifty six participants were recruited from the undergraduate research subject pool at the University of South Carolina Aiken (111 women, 45 men). The average age of participants was 19 years old (*SD* = 3.64). Regarding ethnicity, 96 participants identified as White, 48 as Black, 6 as Hispanic, 2 as Asian, 1 as American Indian, and 3 did not answer; those 3 participants' responses were not counted in the final analyses.

*Materials.* Two photographs were selected from the Nimstim Face Stimulus Set (http://www.macbrain.org/resources.htm). The photographs are of one Caucasian and one African-American man, front-facing, with a neutral facial expression. Each photograph was taken from the neck up, and both of the men are wearing a gray, high neck shirt. In addition to the original stimulus photos, an additional set was created by manipulating the shirt color in each photograph to red using Adobe Photoshop CS5.

*Procedure*. Participants arrived to the laboratory to complete a study described as assessing attitudes toward criminal punishment. They were seated at a computer where the duration of the experiment took place. A consent form was provided electronically at the onset of the study.

After thoroughly reading the consent form (Appendix A) and agreeing to participate, the computer advanced to a series of trials describing various crimes. For each trial, photographs of the perpetrator and victim were presented on the computer screen, side-by-side. A description of the crime was presented directly above the photographs. After reading the crime description, participants answered a series of questions regarding how aggressive and violent the perpetrator was, then they recommended an appropriate prison sentence for the perpetrator. Perceived dispositional aggressiveness was assessed with two face valid items ("How aggressive is John?"; "How prone to violence is John?"). Perceived behavioral violence was assessed with two face valid items ("How likely is it that John has committed a violent crime in the past?"; "How likely is it that John will commit a violent crime in the future?"). Participants responded to these items on a scale from 1 (not at all) to 9 (very much). Recommended prison sentence for the perpetrator was assessed with one face valid item ("How many years in prison do you sentence John to serve) to which participants could indicate a number between 1 and 20.

In total, participants completed 20 trials. The first trial familiarized participants with the task. The second trial, hereon referred to as the critical trial, was the one where the independent variables were manipulated. The critical trial described a robbery committed by a man named John. The photograph of John varied in race and shirt color. Specifically, participants saw John as either an African-American or Caucasian individual wearing either a red or gray shirt, resulting in four possible conditions (see Figure 1). The photograph of the victim was not altered,

and showed a White woman who appeared to be in her twenties (see Appendix B for the crime description, dependent measures, and image of the victim). The remaining 18 trials were intended to disguise the content of the study and described a variety of crimes such as robbery, physical assault, and sexual assault; the victims and perpetrators of these crimes were different ages and ethnicities, but all participants saw identical versions of the remaining trails. These filler trials were administered after the critical trial so that responses to those crimes would not influence responses to the critical trial. Only the critical trial varied the perpetrator race and shirt color. After all trials were completed, participants were asked to provide demographic information (e.g., age, ethnicity, sex; Appendix C). This experiment took approximately 30 minutes to complete.

## Results

Composite scores were created by averaging the 2 perceived dispositional aggression items ($\alpha = .78$), as well as the 2 perceived behavioral violence items ($\alpha = .89$). This resulted in 3 dependent variables (perceived dispositional aggression, perceived behavioral violence, and recommended prison sentence). Each of these dependent variables were submitted to a 2×2×2 factorial analysis of variance with perpetrator race (Black vs. White), participant race (Black vs. Other), and shirt color (red vs. gray) serving as the independent variables.

*Perceived dispositional aggressiveness*. None of the main effects of perpetrator race, participant race, or shirt color were significant. However, there was a significant three-way interaction, $F(1, 148) = 5.14$, $p = .025$, $\eta_p^2 = .034$, indicating that perceived aggressiveness of the perpetrator varied as a function of race (of the perpetrator and participant) and color condition (see Table 1). Thus, the effects of shirt color and participant race on perceived aggressiveness judgments was tested separately for Black and non-Black participants. For Black participants, the

2-way interaction between perpetrator race and shirt color was marginally significant, $F(1,44) = 3.66$, $p = .062$, eta = .077. Simple effects analyses revealed that, when judging the White perpetrator, the effect of color was significant, $F(1,23) = 4.43$, $p = .046$, $\eta_p^2 = .16$, such that red increased perceived aggressiveness ($M = 6.00$, $SE = .66$), relative to gray ($M = 4.00$, $SE = .69$). When judging the Black perpetrator, the effect of color was not significant ($F = .48$, $p = .50$; Figure 2).

For non-Black participants, none of the main effects were significant, nor was the 2-way interaction. In sum, red increased perceived aggressiveness of the perpetrator, but only for Black participants viewing White perpetrators.

*Perceived behavioral violence*. No main effects emerged, however, there was a significant 2-way interaction between color condition and participant race, $F(1,148) = 4.04$, $p = .046$, $\eta_p^2 = .027$, indicating that color affected judgments of perceived violence differently for Black and non-Black participants (Table 2). Simple effects analyses revealed that the effect of color (collapsed across perpetrator race) was significant for Black participants, $F(1,46) = 3.88$, $p = .055$, $\eta_p^2 = .078$, such that red increased judgments of perceived violence ($M = 7.28$, $SE = .48$), relative to gray ($M = 5.91$, $SE = .50$). The effect of color was not significant for non-Black participants ($F = 1.08$, $p = .30$; Figure 3).

*Years in prison*. A main effect of color emerged, $F(1, 148) = 4.53$, $p = .035$, $\eta_p^2 = .03$, such that participants recommended longer prison sentences for perpetrators wearing red ($M = 7.40$, $SE = .49$), relative to gray ($M = 5.85$, $SE = .54$; Figure 4). There was also a 2-way interaction between perpetrator race and participant race, $F(1, 148) = 6.88$, $p = .01$, $\eta_p^2 = .044$ (Table 3). Simple effects analyses revealed that Black participants tended to give more prison

time to White perpetrators ($M$ = 8.04, $SE$ = .94) than Black perpetrators ($M$ = 5.44, $SE$ = .98), $F(1, 46) = 3.71$, $p = .06$, $\eta_p^2 = .075$. The opposite pattern was observed for non-Black participants, such that they recommended longer prison sentences to Black perpetrators ($M$ = 7.33, $SE$ = .54) than White perpetrators ($M$ = 6.04, $SE$ = .54), $F(1, 106) = 2.93$, $p = .09$, $\eta_p^2 = .027$; see Figure 5.

Exploratory analyses examining whether participant sex influenced any of the results reported above were also conducted. No main effects of participant sex emerged for any of the dependent variables. Furthermore, participant sex did not moderate any of the effects of perpetrator race, shirt color, or participant race on the dependent variables.

## Discussion

Prior research has shown that the color black bears many negative connotations, such as being associated with immorality, anger, and aggression (Boyatzis & Varghese, 1993; Frank & Gilovich, 1988; Sherman & Clore, 2009; Stabler & Johnson, 1972; Vrij, 1997). Additionally, studies on race have shown that stereotypes of Black Americans, specifically Black men, err on the negative side, with them typically being described as hostile and prone to criminality (Coltrane & Messineo, 2000; Devine, 1989, Studies 1 and 2; Dixon, 2008; Dixon & Maddox, 2005; Duncan, 1976; Goff, Jackson, Di Leone, Culotta, & DiTomasso, 2014; Hund & Mills, 2016;. Hunt, 1863; Joyce, 1911). Associations with the color red depend on the context in which the color is presented, as red can symbolize romance or passion (Elliot & Niesta, 2008; Pazda, Elliot, & Greitemeyer, 2012; Re, Whitehead, Xiao, & Perrett, 2011; Roberts, Owen, & Havlicek, 2010) or danger, anger, and aggression (Hill & Barton, 2005; Little & Hill, 2007; Young et al., 2013). The current study shows that Black perpetrators were not perceived as more aggressive or violent than their White counterparts. However, the color red did affect prison

sentences for all perpetrators, regardless of race. Red also influenced subjects' perception of aggression, but only for Black participants viewing White perpetrators, and influenced perceived behavioral violence, but again only for Black participants. This could be due to perceived facial flushing of perpetrators in the red shirt condition, which can indicate emotional states, such as anger (Drummond & Quah, 2001).

While these results show some support for the established hypotheses, they reflect a complex occurrence that depends on many variables. Rather than the color red increasing negative perceptions, the results indicate that perception depends on in-group and outgroup status; for example, participants were more likely to issue longer prison sentences to perpetrator of the opposite race as them. The rejection of out-group members is not uncommon and the results support extensive research of in-group and out-group relations, with in-group members choosing to avoid potential violence and resource-sharing by adopting an "us vs. them" mindset (Brewer, 1999; Brigham, 1971; Castano, Yzerbyt, Bourguignon, & Seron, 2002). Campbell (1967) discussed that regardless of levels of interactions between in-groups and out-groups, each would maintain a stereotype of the other that would predict negative perceptions of one another. Recently, Thorstenson, Pazda, Young, and Slepian (in press) found White participants (the in-group) were more likely to categorize the faces of Black males (the out-group) presented against a red background as threatening when they already possessed negative stereotypes of Black men. Such results, though disheartening, set the stage for future studies.

Future research would benefit from a more diverse subject population that would include Hispanic, Asian, Middle Eastern, and other minority groups to determine if the results of the current study are specific to Black/White men or can be applied to all out-groups. Additionally, adding a third color condition by making one of the shirt colors black would assist in

determining if clothing of that color would have a similar impact on perceived aggression as red clothing. Recall the study of Frank and Gilovich (1988), which found that sports teams wearing black uniforms were more likely to be penalized that other teams and were more likely to receive harsher penalties.

The limitations of the current study involve the participants as well as the experimental task. This study used only college students in the sample, and consisted of more non-Black participants than Black participants. A larger sample size with a more diverse age group and more Black participants would provide a clearer picture of the results, and would especially shed light on the interaction of the color red with Black participants' perception of aggression and perceived violence. Further, recent research has shown that college students have many cross-racial friendships characterized by more depth (that is, greater levels of emotional expression and self-disclosure) (Plummer, Stone, Powell, & Allison, 2016), which could influence responses to the questions regarding criminality and aggression of an ethnic minority. Additionally, the experimental task was a computerized "mock jury" style judgment, and it is unclear if the results would extend to real circumstances, such as criminal trials involving real people. Recall that the results of the Vrij (1997) study showed participants were more likely to report an offender as being more aggressive and likely to engage in criminal acts if he was wearing a black shirt versus a light colored shirt. Could a jury truly be swayed toward a guilty verdict if evidence showed the defendant wearing black clothes at the time of the crime? Lastly, a post-study review of the perpetrator photos showed that color contrast effects may have had an impact on participants' perception of the perpetrators, as the Black perpetrator may appear darker in the red shirt as opposed to the gray shirt, while the White perpetrator may appear to be red-faced in the red shirt as opposed to the gray shirt; recall the earlier mention of findings by Drummond and

Quah (2001), which posited that facial flushing can be indicative of anger. This may have caused participants to respond more harshly to perpetrators in the red condition, and warrants further exploration to determine the extent of the interaction.

The victim's gender, race, and perceived age in the critical trial of this study also presents as a limitation, as those characteristics may have impacted how participants perceived the perpetrator as well. Prior research has indicated that male perpetrators are more likely to be perceived harshly and to be viewed as more aggressive when committing aggressive acts toward females (Basow, Cahill. Phelan, Longshore, & McGillicudy-DeLisi, 2007; Hammock, Richardson, Lamm, Taylor, & Verlaque, 2017; Harris, 1991; Seelau & Seelau, 2005; Sorenson & Taylor, 2005). It has been suggested that this is due to aggressive interactions being filtered through traditional gender stereotypes (i.e., men are viewed as strong and aggressive, while women are viewed as being weak and needing protection) (Hammock, et al., 2017; Seelau & Seelau, 2005). Additionally, aggressive acts committed by men are more likely to be viewed as demanding legal repercussions (Sorenson & Taylor, 2005). Further, research has also shown that when violent interactions occur involving Black male perpetrators and White female victims, participants are more likely to rate the interaction as less acceptable than if it involved a White male perpetrator (Harrison & Esqueda, 2000). Participants in prior research also reported more sympathy for female victims in aggressive interactions when the male perpetrator is Black versus White, and rate the interaction as less serious when it involves a Black male perpetrator (Locke & Richman, 1999). Thus, when participants in the present study were presented with a Black male perpetrator and the White female victim in the critical trial, their responses may have been filtered through traditional gender stereotypes as well as stereotypes of Black males. If the victim had been a Black middle-aged female, would participants have perceived the Black and White

perpetrators differently? Several studies have shown that Black female victims are not provided a comparable level of sympathy as White female victims and are more likely to be blamed for physically aggressive behavior toward them (Harrison & Esqueda, 2000; Locke & Richman, 1999; Willis, Hallinan, & Melby, 1996). Nonetheless, future research examining participant responses to interactions involving victims who appear older, male victims, and victims of other ethnicities may offer deeper insight on the interaction between race, gender, and perpetrator perception. Lastly, the current study featured Black and White males as the perpetrators of the crime in the critical trial, so future studies might find drastically different participant responses to crimes committed by Black and White women. Past research has suggested that female perpetrators are likely to be perceived less negatively than males and receive less detention time; this is especially pronounced when the perpetrator is a White female as opposed to a Black female (Basow, et al., 2007; Demuth & Steffensmeir, 2004; Embry & Lyons, 2012; Griffin & Wooldredge, 2006; Hessick, 2010; Seelau & Seelau, 2005).

The influence of color on perception and decision making processes is a subtle environmental variable that can nonetheless have serious implications. Humans have a tendency to respond to color unconsciously, gravitating to brighter colors associated with happiness and softer tones associated with relaxation (Gorn, Chattopadhyay, Yi, & Dahl, 1997; Labrecque & Milne, 2012; Levy, 1984) and shying away from dark colors reminiscent of sadness, death, and evil (Adams & Osgood, 1973; Jordan & Brodwin, 1975; Sherman & Clore, 2009). The current study connects color and human psychology by examining the influence of color associations on human perception, specifically when presented with members of a different race. Something as minute as shirt color can influence how one perceives another person, but the awareness of stereotypes (though not necessarily believing those stereotypes (Devine, Study 2, 1989) plays a

considerably larger role in perception. The unexpected finding of this study regarding in-group versus out-group relations suggests that while race relations have improved significantly in the United States thanks to socially progressive policies and technological advances that continue to connect cultures, from an evolutionary standpoint human remain reliant on instincts to protect their status quo from perceived outside threats (Brewer, 1999; Brigham, 1971; Castano, Yzerbyt, Bourguignon, & Seron, 2002). This research bears implications for the education and training of public service providers, particularly police officers, as awareness of stereotypes and the complex role of color in person-perception can lead to better community policing and increased satisfaction in the relationship between law enforcement and ethnic minorities. Overall race relations across the country would further benefit from expansive research on the role of color and person-perception, as well as in-group and out-group relations in an evolving world.

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Table 1. Significance tests for main effects, two-way interactions, and the three-way interaction for perceived dispositional aggressiveness.

| *Effect* | *F* | *p* | $\eta_p^2$ |
|---|---|---|---|
| Perpetrator race | .00 | .98 | .000 |
| Shirt color | .51 | .48 | .003 |
| Participant race | 1.06 | .31 | .007 |
| Perpetrator race × Shirt color | 1.02 | .31 | .007 |
| Perpetrator race × Participant race | .43 | .51 | .003 |
| Shirt color × Participant race | .58 | .45 | .004 |
| Perpetrator race × Shirt color × Participant race | 5.14 | .025 | .034 |

Table 2. Significance tests for main effects, two-way interactions, and the three-way interaction for perceived behavioral violence.

| *Effect* | *F* | *p* | $\eta_p^2$ |
|---|---|---|---|
| Perpetrator race | .64 | .43 | .004 |
| Shirt color | .68 | .41 | .005 |
| Participant race | 2.65 | .11 | .018 |
| Perpetrator race × Shirt color | 1.13 | .29 | .008 |
| Perpetrator race × Participant race | .18 | .67 | .001 |
| Shirt color × Participant race | 4.04 | .046 | .027 |
| Perpetrator race × Shirt color × Participant race | 2.12 | .15 | .014 |

Table 3. Significance tests for main effects, two-way interactions, and the three-way interaction for recommended prison sentence.

| *Effect* | *F* | *p* | $\eta_p^2$ |
|---|---|---|---|
| Perpetrator race | .89 | .35 | .006 |
| Shirt color | 4.53 | .035 | .030 |
| Participant race | .04 | .84 | .000 |
| Perpetrator race × Shirt color | .03 | .87 | .000 |
| Perpetrator race × Participant race | 6.88 | .010 | .044 |
| Shirt color × Participant race | .09 | .77 | .001 |
| Perpetrator race × Shirt color × Participant race | .02 | .88 | .000 |

Figure 1. Race and color manipulations.

Figure 2. The 3-way interaction between color condition, perpetrator race, and participant race on perceived aggressiveness.

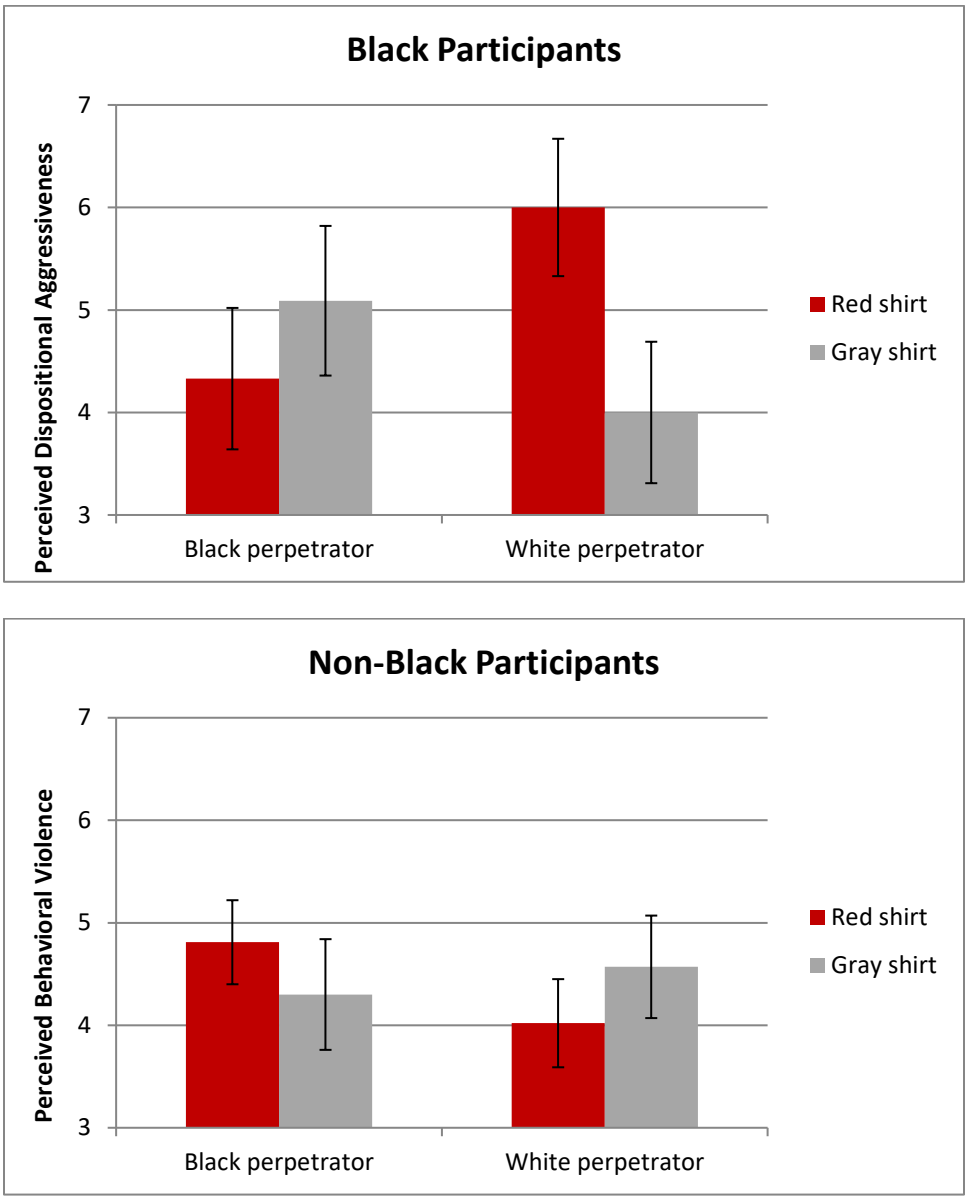


Figure 3. The 2-way interaction between color and participant race on perceived violence.

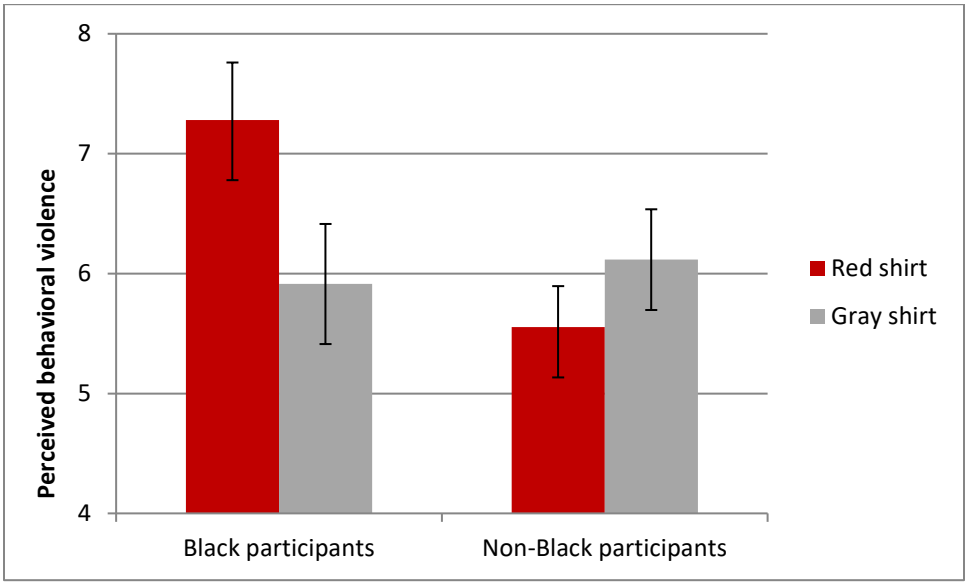


Figure 4. The main effect of color on recommended prison sentence.

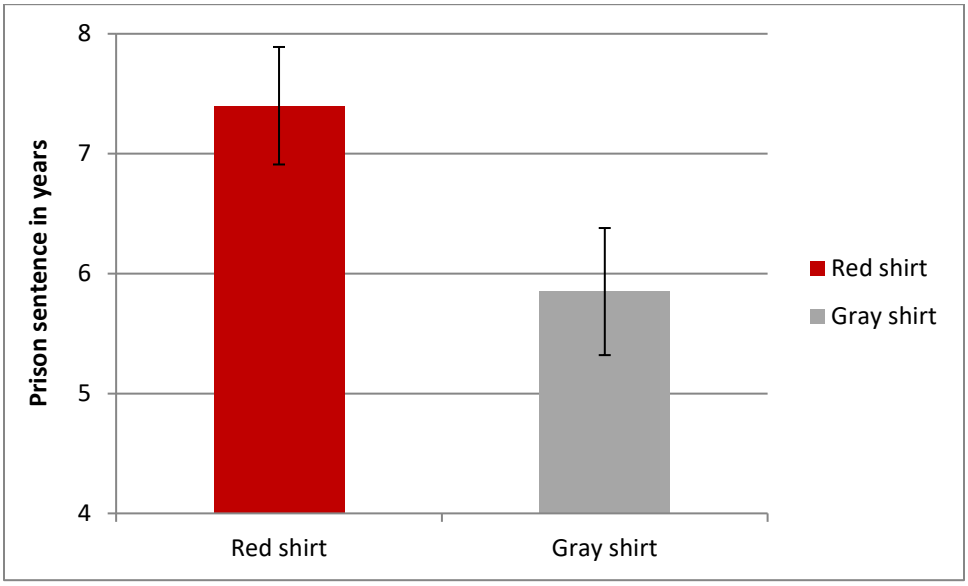
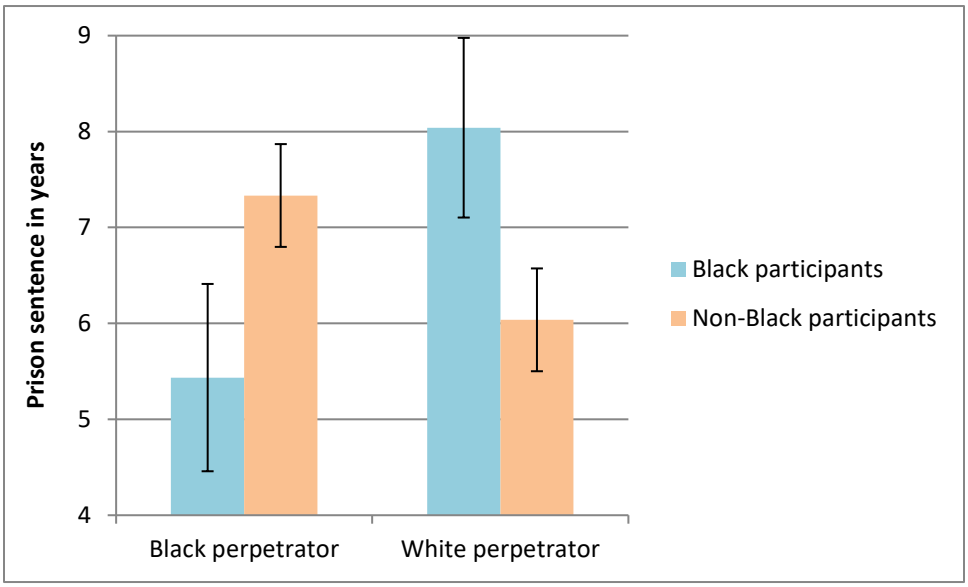


Figure 5. The 2-way interaction between perpetrator race and participant race on recommended prison sentence.



Appendix A.

Information Letter

This form describes a research study that Courtney Merchant, candidate for Master of Science in Applied Clinical Psychology at the University of South Carolina Aiken, is conducting. The purpose of this research study is to investigate attitudes toward criminal punishment, such as what constitutes an appropriate prison sentence across a wide array of crimes.

This study involves viewing descriptions of hypothetical crimes, along with photographs of the victim and perpetrator. You will be asked some questions about your perceptions of the victim and perpetrator, and you will indicate a recommended prison sentence for each crime scenario. You will also be asked to answer some questions about yourself, including your age, sex, ethnicity, etc., though you are free to decline answering any of these. We estimate that approximately 200 subjects will take part in this study. This should take 30 minutes or less to complete.

Your participation in this survey is completely voluntary. You are free not to participate or to withdraw at any time, for whatever reason without penalty. Furthermore, your responses to this survey will be anonymous. No identifying information will be collected.

There are no expected risks to you for participating in this study. There are also no expected benefits for you either.

You will receive .5 points of extra credit to be used toward an eligible psychology course for participating in this study. This study is not the only way you may receive extra course credit. Your psychology professors may offer an alternative assignment for extra credit in place of participation in psychology studies. To pursue this alternative, notify the instructor and work out the details with him or her.

For more information or questions about this research you may call Courtney Merchant at (803) 601-9287. If you have questions or concerns about your rights as a research subject, you may contact the University of South Carolina's Office of Research Compliance (803) 777-7095.

Appendix B. Visual depiction of the critical trial used in the experiment. Perpetrator photograph varied between the 4 conditions. Victim photograph was the same for all participants.

“John broke into Sandy’s home in the middle of the night. He stole Sandy’s television, computer, and stereo, which he later pawned to purchase drugs.”

"John"

"Sandy"

Question 1: How aggressive is John?

Question 2: How prone to violence is John?

Question 3: How likely is it that John has committed a violent crime in the past?

Question 4: How likely is it that John will commit a violent crime in the future?

*Questions 1-4 response options range from 1 (not at all) to 9 (very much). Responses from questions 1 and 2 were averaged to form an index of dispositional aggression. Questions 3 and 4 were averaged to form an index of behavioral aggression.*

Question 5: How many years in prison do you sentence John to serve?

*Response options range from 1 to 20 years in increments of one.*

Appendix C. Demographic variables

1. What is your age?
2. What is your sex?
3. What is your ethnicity? (Circle all that apply)

   Caucasian/White

   African-American/Black

   Asian/Pacific Islander

   Native American

   Hispanic/Latino

   Mixed race (please specify):

   Other (please specify):
4. Are you red/green color blind?