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# The Effects of Interracial Interaction on Behavior as a Function of Prejudice and Race

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The Effects of Interracial Interaction on Behavior  
as a Function of Prejudice and Race

by

Jason R. Read

A dissertation submitted in partial fulfillment  
of the requirements for the degree of  
Doctor of Philosophy  
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ABSTRACT

In a series of two experiments, the first involving 121 participants and the second 114, I investigated whether level of racial prejudice is related to performance on a cognitive task and helping behavior in participants who had just interacted with the target of their prejudice. The moderating effect of control was tested and, unlike previous research, the responses of African-American participants were studied too. It was proposed that when people interact with the target of their prejudice, they will experience stress and the aftereffects of stress will lead to a decrement in Stroop task performance and a lower likelihood of helping someone in need. Control was believed to moderate this effect such that those given control would suffer less of a performance decrement and would help more often. Data were analyzed using ANCOVA and logistic regression. Racial prejudice was found to affect European-American but not African-American Stroop performance following the interracial interaction. Control moderated this effect and also influenced whether someone helped a person in need.

## Chapter One: Introduction

Regardless of personal feelings or beliefs, it is often socially unacceptable to express prejudice towards others. Yet prejudice still exists and people often must interact with the targets of their prejudice. Such situations can be uncomfortable and mentally taxing for prejudiced people and for the targets of their prejudice. Some have suggested that intergroup interaction alone is enough to cause people to experience anxiety even when prejudice is not an issue (Blascovich, Mendes, Hunter, Lickel, & Kowai-Bell, 2001; Stephan & Stephan, 1985). Others have suggested that prejudice is an important moderator of the anxiety experienced during such an encounter (Richeson & Shelton, 2003).

In this paper, two experiments are described that examined the aftereffects of intergroup interactions on the cognitive performance and social behavior of prejudiced people who have interacted with the target of their prejudice. These studies were an extension of previous research by Richeson and Shelton (2003). Richeson and Shelton measured European-American participants' degree of prejudice toward African-Americans. Participants then gave several short, videotaped speeches before either an African-American or a European-American confederate. Following the speeches, participants engaged in a Stroop task to assess cognitive performance. The researchers found that participants' degree of prejudice was negatively related to their Stroop performance, but only for those participants who had interacted with an African-American confederate. Prejudice was not related to performance when the participant had



interacted with a European-American confederate. The researchers concluded that the more racially prejudiced European-Americans were, the more stress they experienced during an interracial interaction, resulting in poorer performance on a later cognitive task. Richeson and Shelton explained the decrease in performance as being the result of the aftereffects of stress.

The studies presented here replicated and extended the Richeson and Shelton (2003) study. In the first experiment, African-American participants' responses to interracial interactions as a function of anti-European-American prejudice were examined. In the second experiment, one potential moderator of the effects of stress on performance was examined: control over the stressor. Finally, these studies explored whether the aftereffects of stress extend to social helping behaviors. Prior research has shown that participants who are exposed to stressors exhibit poor interpersonal behavior such as less helping, less sympathy for others, and inappropriate reactions to other's needs (Cohen & Spacapan, 1978; Sherrod & Downs, 1974).

### Prejudice, Discrimination, and Racism

The topic of racial prejudice involves several constructs: prejudice, discrimination, stereotypes, racism, and stigma. These constructs are defined below. Next, to refresh the reader's understanding of racial prejudice, several theorized causes of prejudice are reviewed. Then the topic of modern racism and the challenges of its measurement are discussed in brief.

## *Definitions*

Prejudice is an attitude, positive or negative, that might be felt or expressed toward a group or individual member of a group (Dovidio & Gaertner, 1986). Researchers are typically concerned with negative prejudicial attitudes when they refer to prejudice. Human history is full of examples of prejudice and the resulting discrimination that stems from it. For example, Israelis are often the target of prejudice in the Middle East. Catholics and Protestants have issues with each other in Northern Ireland. European-Americans have been known to express prejudiced attitudes and engage in discrimination towards African-Americans (Smith, 1993). Lately, due largely to the September 11, 2001 terrorist attacks and the war in Iraq, Americans may have found a new target for prejudice, people of Middle Eastern descent. There are also less obvious, yet equally widespread, examples of prejudice. Those who are handicapped, overweight, and homosexual are all targets of prejudice to differing degrees. Undeniably, humankind is fraught with examples of dislike, sometimes even outright hatred towards different groups.

Discrimination can be distinguished from prejudice in that it refers to behavior. Specifically, it is differential behavior, positive or negative, towards a group or individual member of a group. As with prejudice, researchers typically study negative discrimination. Negative discrimination is believed to be motivated by a desire to maintain own-group characteristics and favored position at the expense of outgroups (Jones, 1972, as cited in Dovidio & Gaertner, 1986).

Stereotypes are often discussed in the context of prejudice and discrimination and can be distinguished from these constructs. Stereotypes are cognitive categories that are

used by the social perceiver when processing information about other people (Hamilton & Trolier, 1986). Theories about stereotyping rest on the assumption that people have a limited capacity to attend to information in the environment. Consequently, people develop “tools” to analyze their social environment efficiently (Macrae, Milne, & Bodenhausen, 1994). Stereotypes are one tool that saves time and energy and aids in information processing and categorization. Although helpful, and certainly necessary in order to avoid the paralysis of information overload, stereotypes can lead to erroneous, unfair appraisals of people and tend to be overgeneralized. In short, we do not have the time or resources to direct our full attention to each and every person we encounter. Instead, we are forced to rely on generalities, especially when we have no special reason to attend to the individuality of another. In doing so, we often make faulty assumptions and form unfair attitudes about others about whom we know very little (Hamilton & Trolier, 1986).

“Racism” refers specifically to negative attitudes and behavior towards a particular racial group or individuals of a racial group (Dovidio & Gaertner, 1986). Racism includes stereotypes, prejudice and discrimination. Others have discussed stereotypes, prejudice and discrimination while using a more general term: stigma. A stigma is something about a person that designates the bearer as flawed and therefore as deserving less valued treatment than “normal” people (Biernat & Dovidio, 2000). Prejudice exists against many stigmatized social groups. For example, some are prejudiced and discriminate against the elderly, homosexuals, the overweight, and the handicapped.

The terms “prejudice,” “discrimination,” “racism,” “stereotypes” and “stigma” are sometimes used interchangeably. However, to be clear in definition, I will focus specifically on the effects of racial prejudice toward stigmatized groups (African-Americans) as well as non-stigmatized groups (European-Americans).

### *Causes of Prejudice*

Researchers have been trying to determine what causes prejudice for years in the hopes of understanding and eventually eradicating it. At one time, it was believed that prejudice was the result of a certain personality type.

Prejudice has its roots in the inner conflicts of those with authoritarian personalities – people who cannot accept their own hostility, believe uncritically in the legitimacy of authority, and see their own inadequacies in others. Thus ... prejudice protects these individuals from an awareness of their painful inner conflicts and self-doubts (Adorno, Frenkel-Brunswik, Levinson, & Sanford, 1950, as cited in Smith & Mackie, 2000, p. 157).

Today, most researchers agree that prejudice is not primarily the result of a personality type. Instead, researchers have focused on a number of cognitive, social, and motivational explanations of prejudice. Some that have received the most attention include competition between groups over scarce resources, social learning theory, social identity theory, stereotyping, and social dominance orientation. These explanations are briefly described below.

Competition between groups over scarce resources is explained by the realistic conflict theory (LeVine & Campbell, 1972). This theory proposes that prejudice is the

result of groups struggling to gain access to limited resources or opportunities.

According to this theory, when groups compete for scarce, coveted resources or opportunities, they gradually come to see one another in more negative ways and develop negative attitudes towards each other. This was demonstrated in the classic Robber's Cave study in which young boys were separated into groups and encouraged to compete for prizes. The two groups rapidly developed animosity towards each other simply due to this competition (Sherif, Harvey, White, Hood, & Sherif, 1961).

Social learning theory suggests that people learn to be prejudiced towards certain groups via their interactions with society and for being rewarded for adopting prejudicial attitudes. Children learn to hate the people their parents hate. Playmates exhibit negative attitudes towards certain groups, and children witness and gradually begin to endorse these beliefs. Teachers, purposefully or inadvertently, send messages about social groups to their students, who adopt and imitate the attitudes they witness. The media present messages that influence beliefs. Prejudice can be learned (Bishop, 1976).

Humans have a natural tendency to categorize people into groups (Wilder, 1981). Based on a variety of available factors (skin color, sexual preference, gender, occupation, etc.) humans often see others as either a part of their own ingroup or outgroups. Humans also tend to value their ingroup more than outgroups. Social identity theory posits that people are motivated to view their social groups positively as a way of obtaining positive self-esteem. According to this theory, if you feel good about your social group, relative to others, then you feel good about yourself. This drives people to view their own group as better than others, which can lead to prejudice (Tajfel & Turner, 1979). As a result, members of outgroups may be seen more negatively and consequently as more

objectionable merely due to the categorization of people into outgroups (Judd, Ryan, & Parke, 1991).

A great deal of research has focused on stereotypes as a cause of prejudice. Stereotypes, although useful ways of categorizing and simplifying information in the environment, can lead to automatic negative attitudes towards, and associations with, people of another race (Lepore & Brown, 1997). Stereotypes guide how people attend to, encode, and remember information about groups. Consequently stereotypes may guide poor behavior toward group members as a result of selectively attending to information about them (Hamilton & Rose, 1980; Hamilton & Sherman, 1996). Negative stereotypes may result in unfair negative attitudes and behaviors toward group members.

Recently, some have returned to an individual difference or trait perspective on the origins of prejudice. Sidanius and Pratto (1999) proposed that social dominance orientation may partially explain why prejudice occurs. This theory is that people differ in a trait called social dominance orientation (SDO). This individual difference pertains to how much someone supports group inequalities. For instance, a person high in SDO is more in favor of a hierarchical social structure and against treating all people equally. Conversely, a person low in SDO believes in the equality of others. Depending on his or her SDO, a person might treat outgroups more or less fairly. A person high in SDO might treat outgroup members in a prejudicial and discriminatory manner, whereas a person with low SDO would not (Sidanius & Pratto, 1999).

All of these explanations of prejudice are useful in understanding it. Although I did not seek to determine where prejudice originates, I measured the automatic associations and evaluations that comprise racial stereotypes.

### *Measuring Racial Prejudice*

Of all America's exclusions, none approaches in strength that of the black people by white people, the distinction of a self and an other according to the mysterious quality of race, especially as revealed in the mark of skin color. Nothing looms quite so large, both as an endless source of crises and as the sign of a deep cultural malaise, as does racism (Kovel, 1970, p. 14).

Anti-African-American sentiment in the United States has been slow to change, and racial conflicts still exist. It may no longer be legal to discriminate against others on the basis of race, but prejudice and subtle forms of discrimination are arguably yet to be eliminated. Researchers studying the more subtle form of contemporary prejudice, typically in the form of racist attitudes and private actions, label it modern racism.

Modern racism is a more covert and less easily detected form of prejudice and discriminatory behavior. Due to the illegality and outward societal rejection of racism, those who have racist feelings and beliefs may be more cautious in how they express them. This makes the measurement of prejudice in research difficult. Some people may be motivated to hide prejudicial attitudes if they have them and may even feel guilty about their attitudes (Devine, Monteith, Zuwerink, & Elliot, 1991). Thus, researchers have devised resourceful ways to get around this reluctance and/or denial to openly admit to having prejudiced beliefs. For instance, the Modern Racism Scale, developed by McConahay (1986), asks a series of questions that are designed to be subtle in their attempt to determine people's beliefs about this topic. One item from the Modern Racism Scale is, "Over the past few years, the government and news media have shown

more respect for African-Americans than they deserve” (McConahay, 1986). Another example is the Blatant and Subtle Prejudice Scale developed in Great Britain, where the West Indian social group is sometimes discriminated against (Pettigrew & Meertens, 1995). Some questions from that scale include, “How often have you felt admiration for the West Indians living here?” and “How often have you felt sympathy for the West Indians living here?” Items such as these do not ask about prejudice directly, but instead attempt to measure it indirectly.

Instruments such as the above mentioned scales have met with some success in measuring prejudicial beliefs that may go unexpressed when people are motivated to hide blatant prejudice. However, these forms of measurement are still fairly transparent and can sometimes be unsuccessful in measuring prejudice. A participant might be quite prejudiced yet desire to keep such attitudes secret. Alternatively, a person who considers him or herself not to be prejudiced, but possesses implicitly negative attitudes toward a social group, might determine what the researcher is trying to measure and give the more socially desirable answer, thus denying any prejudiced attitudes and giving the “proper” publicly endorsed reply. To address these issues, other researchers have come up with even more sensitive measurement methods. The Implicit Association Test (IAT) (Greenwald, McGhee, & Schwartz, 1998) has been used to determine level of participant prejudice, whether they want to reveal their prejudice or not (or whether they are entirely aware of their level of prejudice or not).

The IAT is a computerized test that measures underlying associations in a participant’s memory. It is designed to measure response latencies during categorization of concepts of interest. When used to measure racial biases, the test has participants



categorize different racial images or names with pleasant and unpleasant words. Differences in response times are thought to reveal unconscious attitudes towards different racial groups. This test is discussed in greater detail in the measures section of this paper because it was used as the means of measuring participants' level of racial prejudice in the present study.

### Theories of Intergroup Interaction

As previously stated in the section on prejudice, people have a natural tendency to categorize others into groups based on a variety of factors. The factors that influence how people categorize others can differ between settings (Wilder, 1981). Thus in one situation, a person might regard someone with different skin color as being a member of an outgroup (i.e., a group with which one does not identify). For example, if a European- and an African-American person met in an isolated setting, the two might regard each other as members of different groups due to the difference of their skin coloration, which would probably be the most salient difference between the two. However, if the same two individuals met someone from another country, the two might consider each other to be members of an ingroup (i.e., a group with which one identifies as being a member) when compared to the foreigner, due to his or her language and cultural differences, which makes him or her seem even more different from the other two than they seem from each other. Thus, determinations of group membership are dynamic and situationally dependent; the groups with which people identify (ingroups) or do not identify (outgroups) can change between settings depending upon the characteristics of the interactants (Crisp, 2002). In these experiments I focused on the interactions between

two individuals who differ racially (i.e., European- and African-Americans) in a setting that highlighted that difference.

These two experiments focused upon whether racial prejudice moderates the undesirable cognitive and social aftereffects of an interracial interaction. This possibility rests on the assumption that people experience stress while in interracial interactions. There is some evidence that interracial interactions are stressful. It could be that the nonstigmatized group member is the only one who finds such an encounter stressful. On the other hand, a stigmatized group member might find such an encounter equally uncomfortable. Furthermore, it is unclear whether intergroup anxiety is simply the result of members of different groups interacting or whether it is moderated by factors such as the level of prejudice of the interactants.

Will all individuals exhibit the aftereffects of stress when they find themselves interacting with a member of another racial group or will it depend upon their level of racial prejudice? Some research supports the idea that both members experience stress in an intergroup interaction (Stephan & Stephan, 1985). The non-stigmatized group member might feel stress, perhaps out of a sense of guilt or awkwardness. The stigmatized group member might experience stress, possibly out of a sense of shame, anticipated poor treatment, or fear of confirming stereotypes about him or herself. Notably, this study sought to consider both stigmatized and non-stigmatized group members' responses to intergroup interactions.

### *When Both Group Members Experience Stress*

Stephan and Stephan (1985) propose that contact with outgroup members can cause stress for both interactants. This intergroup anxiety may be the result of interaction between people of different races or nationalities, for example, or between people who possess some social stigma and those who are not stigmatized. According to Stephan and Stephan's model of intergroup anxiety, when members of two social groups interact, stress results from the anticipation of negative consequences. Anticipated negative consequences include negative psychological consequences for the self (embarrassment, discomfort, frustration), negative behavioral consequences for the self (exploitation, harm, verbal conflict), negative evaluations by outgroup members (rejection), and negative evaluations by ingroup members (disapproval).

In their model, Stephan and Stephan (1985) also propose three major antecedents to intergroup anxiety: prior intergroup relations with the outgroup, situational factors such as the structure of the encounter and the status of the outgroup, and intergroup cognitions, which include stereotypes, expectations, and prejudice. They suggest that prejudice, leading ingroup members to anticipate negative behaviors from the outgroup, is but one small contributor to intergroup anxiety. They point to research indicating that interacting with disliked group members can result in arousal and, thus, anxiety (Stephan & Stephan, 1985).

### *When Nonstigmatized Group Members Experience Stress*

Imagine talking to someone who is physically handicapped and in a wheelchair. If you are not physically handicapped and have little experience with handicapped

people, you could experience some stress as a result of this encounter. You might not want to offend the handicapped person accidentally. You might find yourself worrying about what to say. You might even suffer some confusion as to whether you should mention the obvious handicap or act as if nothing is amiss. You might also wonder if you should offer to help in some way (e.g., open a door) or if you should let the person take care of him or herself for fear that an offer of help might be insulting. Furthermore, some might experience aversion in the face of another's handicap. Clearly, this situation can be distressing to the nonstigmatized (i.e., nonhandicapped) individual.

Blascovich and colleagues (2001) have shown that when members of two social groups interact, nonstigmatized group members suffer an aversive reaction to stigmatized group members. Using psychophysiological measures that purportedly identify a state of threat (based on patterns of cardiovascular responses), these researchers demonstrated that nonstigmatized participants, interacting with stigmatized others during a word finding task that they performed together (a task similar to the game "Boggle™"), exhibited a threat response. This was not found for those interacting with nonstigmatized others. In two of their three experiments, the stigma was a port-wine stain birthmark. In the third experiment, the stigma was having a low socioeconomic status and being African-American. The researchers concluded that nonstigmatized group members suffer anxiety, distress, and even a fear of danger in the presence of stigmatized others (Blascovich et al., 2001).

Providing further evidence that non-stigmatized group members experience anxiety, Dijker (1987) conducted a mail survey investigating emotional responses of Amsterdammers toward ethnic minorities in their region (Surinamers and Turks). Dijker

found that Amsterdammers reported a combination of anxiety, irritation and concern when they confronted members of either minority group. He described this collection of emotional responses as an action readiness to engage in fight or flight-type behaviors that occurs when majority members come into contact with minority members.

Other researchers have also demonstrated that, when interacting with African-Americans, European-Americans experience stress (Ickes, 1984). This is especially evident among European-Americans who have been found to have an “avoidance orientation” (i.e., prejudice) towards African-Americans. In such an encounter, European-Americans try harder to communicate and to be accommodating and tend to find such encounters more uncomfortable than do African-Americans (Ickes, 1984). Also, as previously mentioned, Richeson and Shelton (2003) found that prejudiced European-Americans who gave a speech to an African-American confederate evidenced poorer performance on a post-interaction Stroop task. These researchers attributed this poor performance to the aftereffects of a stressful social interaction.

#### *When Stigmatized Group Members Experience Stress*

Some studies have also shown that when members of two different social groups interact, the stigmatized group members experience stress as a result of the encounter. A stigmatized group member might fear rejection, feel “on stage,” experience self-loathing, or even overgeneralize to the point of believing that all people view him or her negatively (Hebl, Tickle, & Heatherton, 2000). For example, Blascovich and colleagues found evidence that participants who were led to believe (falsely) that they bore a facial birthmark applied by the experimenter exhibited physiological responses purportedly

indicative of a threat state when they interacted with a confederate (Blascovich, Mendes, Hunter, & Lickel, 2000).

Research on stereotype threat suggests that stigmatized individuals experience stress in situations where their negative group stereotypes might be confirmed. Stereotype threat occurs when stigmatized group members are in a situation in which a negative stereotype of their group becomes salient. For example, women are typically stereotyped as being poor at math. If asked to complete a math test, women may become cognizant of that stereotype. Consequently they experience concern about being judged according to that stereotype, and it inhibits their performance. In other words, stereotype threat predicts that stigmatized group members will experience anxiety when their group membership and stereotype become salient, as would be the case in an interracial interaction (Steele & Aronson, 1995). This phenomenon has been shown to take place in a variety of situations and settings. For example, it has been demonstrated for African-Americans during cognitive testing (Steele & Aronson, 1995), for African-American men playing golf (Stone, Lynch, Sjomeling, & Darley, 1999), and, as stated above, for women taking math tests (O'Brien & Crandall, 2003).

The studies reviewed provide several perspectives on intergroup interaction. Stephan and Stephan (1985) and others (Hebl, Tickle, & Heatherton, 2000) suggest that all intergroup interaction is potentially a source of stress for participants, regardless of whether they are stigmatized or nonstigmatized. Some studies have supported the idea that the nonstigmatized or dominant social group members suffer stress in such encounters (Blascovich et al., 2001; Dijker, 1987; Ickes, 1984; Richeson & Shelton, 2003) while others have shown that the stigmatized group member suffers stress

(Blascovich et al., 2000; Hebl et al., 2000; Steele & Aronson, 1995). However, none of these studies specifically compared the stress experienced by the stigmatized members to that experienced by non-stigmatized members.

## Stress

In this section, stress and stressors are defined. Following this, the aftereffects of stress are discussed. Studies have shown that stress continues to affect a person after the stressor is absent. Stress has been shown to affect cognitive performance as well as some social behaviors. Finally, the moderating property of control is considered as an important variable in the relationship between stress and later behavior.

### *Stress and Stressors Defined*

The perspectives on intergroup interaction have rested on the assumption that members of such interactions experience stress. Consequently, researchers have measured stress responses or aftereffects of stress. Thus, it is important to clarify the term “stress” and discuss the literature regarding the effects of stress on performance.

Stress is that quality of experience, produced through a person-environment transaction that, through either overarousal or underarousal, results in psychological or physiological distress (Aldwin, 1994). Stress can be seen as a process made up of several components. There is the stressor itself which may be thought of by some as initiating the experience of stress. A stressor may be physical/environmental such as trauma, hassles, or life events, and stress is experienced when there is a cognitive appraisal of harm, threat, or concern for others. Other important components of the stress process are the physiological reactions one experiences when the stressor is introduced and the

emotional reactions that one feels as a result, such as anxiety, anger, or sadness (Lazarus, 1991).

Thus the “stress of intergroup interaction” refers to the cognitive appraisal of potential harm, threat, nuisance, and concern for the self or others that might ensue given such interaction. Furthermore, it also refers to those emotional reactions that result from the cognitive appraisal, namely negative affect such as anxiety (Lazarus, 1991).

### *Cognitive Aftereffects of Stress*

Exposure to aversive stimuli has been shown to negatively affect later cognitive task performance. Stressful events, operationalized in a number of ways (noise, electric shock, overcrowding, task load, sex discrimination), have consistently been shown to retard a person’s performance on cognitive tasks performed shortly after the stressor ends. Cohen (1980) reviewed the findings in this area, demonstrating the convergence of an entire body of literature devoted to this topic. When people are subjected to aversive stimuli, in any of a variety of forms, and later asked to perform a cognitive task, such as a Stroop task, anagram task, or word search task, they perform worse than if they had not been previously exposed to the aversive stimuli (see Cohen, 1980, for a review).

The explanations for this post stress cognitive decrement are myriad: exhaustion due to the cognitive process of searching for coping strategies, cognitive fatigue due to attentional load that leads to attentional deficit, learned helplessness, excessive arousal leading to a narrowing of attention that is insufficient for the processing of task-relevant cues, reduced motivation due to frustration and irritation, and the persistence of coping strategies after the stressor ends that are insufficient for new tasks at hand (Cohen, 1980).



The explanations for the aftereffects of stress vary and their empirical support varies as well. Notably, most of the explanatory hypotheses involve costs of having to cope with a stressor in the environment. The cost may be in the form of mental exhaustion from trying to cope, feelings of helplessness from ineffective coping, or the persistence of insufficient coping strategies.

Additionally, Muraven and Baumeister (2000) have proposed that these findings are the result of the depletion of an, as yet undetermined, limited self-control resource. These researchers believe that any task requiring self-control will result in its depletion, leaving the person temporarily unable to exercise self-control to the fullest extent. They suggest that, in this way, self-control is like a muscle that can become fatigued and must rest before being able to perform further. This explanation might explain post-stress decrements on a task such as the Stroop after experiencing an uncomfortable interracial interaction. Such an interaction might require self-control as a person struggles to conceal feelings of discomfort or aversion during an encounter. If this depletes a self-control resource, then Stroop task performance afterward might suffer, because the Stroop task theoretically involves the suppression of an automatic response (word reading) in order to perform a less automated activity (color identification). Thus, the self-control necessary to suppress word reading, in favor of color naming, might suffer due to the reduction of a self-control resource.

Unfortunately, it is not certain which of these perspectives truly explains the mechanisms underlying the aftereffects of stress. Additionally, it is likely that there is a biological explanation of the aftereffects of stress rather than a metaphorical one such as those previously covered, one involving the interplay of chemicals such as adrenaline and

cortisol. However, a simple explanation such as “the interplay of chemicals” is insufficient, and a more complex biological explanation is beyond the scope of this study because there is no single “stress” chemical, nor a simple brain mechanism that explains how stress affects cognition (D. Diamond, personal communication, July 1, 2004). Consequently I will not attempt to give a biological explanation for the aftereffects of stress, although such an explanation may exist.

#### *Aftereffects of Stress on Social Behavior*

Diminished ability to perform a cognitive task is not the only side effect of experiencing aversive stimuli. Some researchers have found that another of the effects of stress is the inhibition of some social behaviors. For instance, Sherrod and Downs (1974) studied the effects of stress on altruistic behavior. Participants were asked to perform a proofreading task and a task that involved attending to and recording a series of numbers and making note of the number of times “2” occurred. They had to do this while listening either to a relaxing seashore soundtrack or a distracting recording of jazz combined with a reading of Aristotle. After the tasks, a confederate requested help on another task as a favor. Participants’ altruistic behavior was measured as the number of task problems worked and how long they spent working on them. Participants who experienced the stressful condition worked on fewer problems and spent less time helping.

Similar findings were reported by Cohen and Spacapan (1978). They asked participants in a shopping mall to perform tasks that involved listing and pricing particular items in stores. Participants’ level of stress was controlled by manipulating the

difficulty of the tasks and by having the tasks done either during a slow period in the mall or while it was very crowded. After completing the tasks, the participants were stopped by a confederate who claimed to have lost a contact lens and asked for help finding it on the floor. Whether the participant helped and, if so, how long, were the dependent variables. Participants performing the more difficult tasks during a crowded time in the mall were the least helpful to the confederate. Those performing the easier task during the least crowded time were the most helpful. The authors attributed the first result to attentional-fatigue as a result of stress. These studies demonstrate that stress can inhibit some later prosocial behaviors.

#### *Moderating Effects of Control*

One potential moderator of the detrimental effects of stress is control (Glass & Singer, 1972; Sherrod, 1974; Sherrod & Downs, 1974). It has been demonstrated that people who believe that they are able to control a stressor in some way (either able to terminate the stressor or even control its initiation) experience less stress from it. In studies that have examined this variable, participants who believed that they could control a stressor's termination or initiation experienced less of a decrement in performance or helping behavior as a result. Most researchers agree that the perception of control (even if it is just knowing when the stressor will begin or end) is sufficient to reduce the stress experienced from aversive stimuli (Cohen, 1980).

Glass and Singer (1972) exposed participants to loud noise and then asked them to do a task. Participants who were led to believe that they could end the noise should they desire it experienced less of a performance decrement even though no participants

actually chose to stop the noise. Similarly, Sherrod (1974) placed participants in rooms of varying crowdedness and asked them to solve a difficult puzzle. Participants who believed that they could leave the room and work somewhere else persisted on the puzzle longer than those who did not have the option but were equally crowded (Sherrod, 1974).

Experiencing an uncontrollable stressor (as contrasted with a controllable stressor) is often proposed to involve greater effort because people consider the former to be more aversive (Reim, Glass, & Singer, 1971). A more aversive stressor is harder to adapt to and consequently may be more cognitively taxing, requiring greater cognitive resources or perhaps different coping strategies from the person experiencing it. Apparently, it is the mere belief that a stressor can be avoided or escaped that lessens the negative effects of stressful stimuli, even if the person experiencing the stimuli makes no actual effort to avoid or escape them (Mills & Krantz, 1979). It has also been proposed that exposure to an uncontrollable stressor produces a feeling of helplessness which may interfere with later functioning. Those who believe they have control over a stressor might not view a situation as one in which they are helpless, so they avoid any interference in later functioning (Glass, Singer, Leonard, Krantz, Cohen, & Cummings, 1972). Alternatively, Lazarus and Folkman (1984) argue that when a person perceives that he or she has greater control over a stressor, that person engages in more problem-focused coping as opposed to the emotion-focused coping of one who experiences an uncontrollable stressor. These researchers argue that problem-focused coping is more effective at reducing anxiety from a stressor. The explanations for the moderating effects of control, much like the explanations for the aftereffects of stress, vary and are yet to be definitely established.

## Hypotheses

As mentioned earlier, these experiments are a replication and extension of Richeson and Shelton's (2003) research examining the moderating role of racial prejudice on the cognitive and social aftereffects experienced as a result of interracial interactions. Richeson and Shelton's results left a number of questions unanswered.

Richeson and Shelton (2003) conducted their study under the assumption that intergroup interaction between European-Americans and African-Americans is more stressful to European-Americans because of their dominant/nonstigmatized status than to African-Americans (due to their less dominant/stigmatized status). They found that more highly prejudiced European-Americans who spoke to African-Americans exhibited a performance decrement on the Stroop task. I sought to replicate this result.

However, Richeson and Shelton (2003) did not examine the responses of African-American participants in interracial interactions. Because research shows that stigmatized group members also experience stress during intergroup interactions, I tested these findings by including African-American participants in one of the experiments. I expected to find the same negative relationship for African-Americans between anti-European-American prejudice and Stroop task performance, but only when African-American participants were interacting with European-Americans. As Stephan and Stephan (1985) have hypothesized, intergroup interaction may be a source of stress for all members of the interaction, regardless of stigmatized status.

Research on the aftereffects of stress has revealed that control over a stressor will usually lessen its deleterious effects. With that in mind, I tested whether control over the interaction lessens later task impairment. I hypothesized that participants who were

given control over the interracial interaction would exhibit less of a decrement in their post stimulus task performance than participants who were given no control over such an interaction.

Whether or not an interracial interaction can lead to an inhibition of subsequent helping behaviors also was explored. It was hypothesized that participants who interacted with the target of their prejudice would later exhibit a reduction in helping behaviors when given the opportunity to aid someone in need.

## Chapter Two: Experiment 1

The first experiment utilized a three factor design and addressed the first, second, and fourth hypotheses. The between subjects independent variables in this experiment were participant race (African-American or European-American), confederate race (African-American or European-American), and racial prejudice against either African-Americans or European-Americans. Participant and confederate race were categorical variables and racial prejudice was a continuous variable. This experiment included two dependent variables: performance on a Stroop task and whether or not a participant engaged in helping behavior.

### Method

#### *Participants*

One hundred fifteen undergraduate students participated in this experiment. Only participants who reported that they were African-American or European-American were used. The average participant age was 23.1 years, and age ranged from 18 to 51. Participants volunteered in exchange for extra credit in undergraduate psychology, biology and chemistry courses at Armstrong Atlantic State University in Savannah, Georgia. According to self-report, all participants had normal or corrected-to-normal color vision, and all were native English or bilingual speakers with English as their primary spoken language. Data from participants who did not meet the above criteria were omitted from the analyses. Six participants' data were discarded due to excessive

errors (greater than 10% errors) while performing the Stroop test. This is a standard cutoff for inclusion/exclusion of data when using the Stroop test (Chen, 2003). It was evident from the responses of those omitted that they misunderstood the instructions for the Stroop test because they missed all incongruent trials. Also, one participant's data was discarded because her IAT score was an extreme outlier (see *Tests for Normality* below). This resulted in the N of 115 from an initial N of 122.

Eighty-five percent of this sample was female, and a chi-square test of independence revealed that gender proportions did not significantly differ across the experimental conditions for participant race,  $\chi^2(1, N = 115) = .90, ns$ , or confederate race,  $\chi^2(1, N = 115) = .12, ns$ . Also, a two-way (participant race by confederate race) ANOVA revealed that there was not a significant age difference among the four possible race group combinations in the study,  $F(1, 109) = 0.88, ns$ . However, African-American participants were older than European-American participants overall,  $F(1, 109) = 24.54, p < .05$  (see Table 1).

		<i>European-American Participants</i>	<i>African-American Participants</i>	<i>Overall</i>
European-American Confederate	Age (years)	M=19.8, SD=3.5	M=27.0, SD=9.4	M=23.6, SD=8.0
	Males (n)	5	3	8
	Females (n)	23	27	50
African-American Confederate	Age (Years)	M=20.2, SD=2.7	M=25.1, SD=7.5	M=22.7, SD=6.2
	Males (n)	5	4	9
	Females (n)	23	25	48
Overall	Age (Years)	M=20.0, SD=3.1	M=26.1, SD=8.5	
	Males (n)	10	7	
	Females (n)	46	52	

**Table 1 Age and Gender of Participants in Experiment 1**



No participant reported having prior knowledge about the study. Nine participants indicated that they had heard of the Stroop test in their undergraduate psychology classes and no participants indicated any prior knowledge of the implicit association test.

### *Materials*

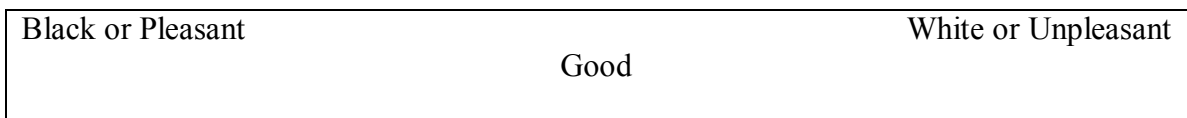
*IAT.* The Implicit Association Test (IAT) was designed as a means of indirectly measuring strengths of associations between concepts (Greenwald & Nosek, 2001). The IAT determines the relative strengths of these implicit/unconscious associations. It can measure individual differences in attitudes that self-report measures are sometimes too insensitive to measure.

When participants take the IAT, they are instructed to sort stimuli that represent four concepts using a computer keyboard with marked response keys. The IAT is based on the assumption that if two concepts have a strong cognitive association and they are to be sorted together, the sorting will be easier, and hence faster than when they are less strongly associated (Greenwald & Nosek, 2001).

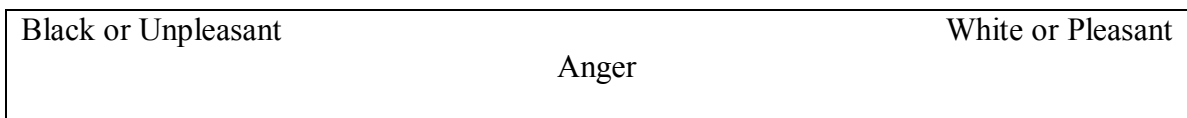
For example, in the version of the IAT that was used, participants were presented, over the course of seven different trial blocks, with stimuli that represent European-American names, African-American names, pleasant words, and unpleasant words. Depending upon the trial block, participants might be instructed to sort all European-American names or pleasant terms by pressing a certain key on the keyboard and all African-American names or unpleasant terms by pressing a different key. If a participant's associations tend to match the categorization scheme presented (i.e., he or

she has strong associations between European-Americans and pleasant words as well as between African-Americans and unpleasant words) then the task should be easy and response latencies short. However, when instructed to do the opposite (i.e., sort European-American names with unpleasant words and African-American names with pleasant words), that same participant should find the task more difficult and response latencies should be comparatively longer. This measure of automatic associations has been used to assess unconscious bias for or against different concepts including racial groups (Greenwald & Banaji, 1995; Greenwald et al., 1998, Greenwald & Nosek, 2001; Richeson & Shelton, 2003).

In order to clarify further, consider the following figures<sup>1</sup>. In one trial block of the experiment, participants saw a screen that required sorting African-American names and pleasant words into the same category. In this case, the word “Good” should be categorized in the left group representing “Black or Pleasant” words because “Good” is a pleasant word.



If participants tend to associate their concept of African-Americans with more negative concepts, then when asked to group the word “Good” with the category on the left, the participants will exhibit greater response latency than if the categories were arranged as in the following figure.



<sup>1</sup> To experience the IAT, go to <https://implicit.harvard.edu/implicit/>.

In this case, participants with negative attitudes towards African-Americans would probably exhibit shorter response latency in sorting the word “Anger” with the category on the left because they associate the concept of African-Americans with more negative concepts.

In order to determine a participant’s IAT score, average response latencies are computed for four of the seven sorting blocks (the first three are practice blocks). The response latencies are then combined into two averages that are subtracted from one another as a means of determining the relative implicit attitudes towards European- and African-Americans (Greenwald & Banaji, 1995; Greenwald et al., 1998, Greenwald & Nosek, 2001).

Greenwald and Nosek (2001) addressed a number of psychometric issues related to the IAT. The internal validity of the IAT seems to be sufficient as long as the items used in it are relatively familiar to participants. The authors provide a list of commonly used words for the IAT, which I utilized in these experiments (e.g., European-American names: Todd, Hank, and Peggy. African-American names: Malik, Darnell, and Temeka. Pleasant words: happy, laughter, and peace. Unpleasant words: hurt, nasty, and failure). Also, order of presentation must be counterbalanced to eliminate order effects. That is, the arrangement of the group labels must vary between participants. Consequently, in this study, the arrangement of group labels was counterbalanced in order to eliminate order effects. This resulted in four different IATs, one for each possible combination of the group labels. Furthermore, handedness appears to have no influence on IAT results. Test-retest reliabilities have averaged above  $r = .60$  and internal consistencies of IAT measures have averaged  $\alpha > .80$ . The IAT has correlated positively with self-reported

measures of attitudes towards various groups ( $r = .25$ ) (Greenwald & Nosek, 2001). Also, there have been behavioral correlations found with different versions of the IAT. For example, one study found that IAT-determined gender stereotypes were associated with prejudice against female job applicants when explicit measures failed to find such a relationship (Rudman & Glick, 2001).

*Stroop Task.* The Stroop task is an exercise demonstrating interference between conflicting cognitive processes (Stroop, 1935). Color names are briefly shown to participants on a computer screen. For example, the words “blue”, “red”, or “green” might be displayed. The letters that make up the words have colored ink. For instance, the word “red” might be displayed in blue ink. Participants are asked to look at the words that are displayed and identify either the word or the color of the ink used in the word. Depending on the instructions given, a participant who sees the word “red” in blue ink might be required to press a key on a computer keyboard that corresponds with either red (if the instructions require indicating the word shown) or blue (if the instructions require indicating the color of the ink shown).

Stroop (1935) found that identifying the word shown is relatively unaffected by the color of the ink used. However, he found that indicating the color of the ink used takes participants significantly longer when the word shown is incongruent with the color of the ink than when it is congruent. In other words, if participants are shown a color word in green ink and asked to indicate what color the ink is, they take significantly longer to indicate “green” if the color word is something other than green than when it is green. Stroop theorized that this effect takes place because reading words is an automatic process, but identifying colors is not. Hence, when a word in an incongruent ink color is

shown, a participant cannot help but automatically read the word first. If the participant is asked to indicate the color of the ink, the automatic reading of the word will interfere with identification of the ink color. The Stroop task is often used as a way of demonstrating or measuring interference with attentional processes.

The Stroop task was chosen for this study because it had been used frequently in the past for studies of the aftereffects of stress (Broadbent, 1979; Glass & Singer, 1972; Richeson & Shelton, 2003). Cohen's (1980) review of this literature points out that the Stroop task has been a reliable measure of the poststimulation effect of stress on cognitive performance.

### *Procedure*

Participants were run individually. The primary investigator (a European-American male) served as the experimenter for all participants. The study was described to participants as being a research project investigating the influence of one cognitive task on a subsequent task when there was a delay between the two. These instructions are much like those used in Richeson and Shelton's (2003) original study. Informed consent was obtained and participants completed a demographics questionnaire (see Appendix A). Next, participants were led to believe that the first task they were to do was a word categorization task. However, the task was actually the IAT (which resembles a word categorization task). The IAT was administered by computer and the experimenter left the room while the participants completed it.

Once participants finished the IAT, the experimenter returned to the room and informed them that during the delay between cognitive tasks they were to help create

some stimulus materials for a future experiment. The experimenter further explained that the other study was to involve the measurement of people's attitudes about some current event topics. Then he told them that another experimenter would be asking them a couple of questions and videotaping their responses so that she could use their answers as a guide when writing items for the questionnaire on those topics.

Participants were led to an adjoining room and the experimenter departed. In the adjoining room, a confederate was waiting (see Appendix B). The confederate was either African-American or European-American and pretended to be another experimenter. The confederates were carefully chosen such that their race was not potentially ambiguous to participants. In other words, African-American confederates were chosen who had dark skin and European-American confederates were chosen who had no potential of being confused with a person of another racial group (e.g., Hispanic or Middle-Eastern descent). To be certain of this, participants were asked to identify the race of the confederate at study's end. This was done during piloting and was continued throughout the experiment.

The confederates consisted of seven female undergraduate psychology students. Three were European-American and four were African-American. In order to be certain that the confederates knew how to behave during the speeches, the experimenter trained them prior to data collection. During training, they were instructed simply to ask the predetermined questions and not react with approval or disapproval to anything a participant might say. Confederates practiced asking the questions and responding appropriately while a person (either the experimenter or another confederate-in-training) answered their questions. This was performed prior to data collection until the

experimenter was satisfied that the confederates understood their role and could perform it acceptably.

After participants signed a video consent form, the confederate explained that the participants were to respond to some questions and that their responses would be recorded on video. Participants were asked to introduce themselves for one minute and then give a commentary about two different topics for two minutes each. The order of topic presentation was counterbalanced. The two topics were college fraternity systems and racial profiling in relation to the September 11<sup>th</sup> terrorist attacks. In order to be certain that the confederates behaved appropriately (i.e., no facial or verbal reactions), the confederate sat in a predetermined location during the speeches. The location specified allowed the experimenter to watch the confederate's expressions through a one-way mirror. If a confederate reacted inappropriately to a participant's comments or behavior during the speeches, that participant's data were to be discarded. However, this never occurred during either experiment.

After the speeches were finished, the confederate escorted the participants back into the first room where the experimenter was waiting (his having just returned there from the room behind the one-way mirror). Once there, participants were directed to take the Stroop task on the same computer on which they took the IAT. The experimenter left the room during the Stroop task. The participants were directed to get the experimenter when the task was completed.

After the Stroop task was completed and the experimenter returned to the room, the participants were led to believe that the experiment was over. The experimenter gave the participants a manipulation check form to fill out (see Appendix F), then a partial

debriefing form that described the experiment as a study about how the mind categorizes objects in the world (see Appendix C), and then asked whether the participants would like to sign up for a more complete debriefing after the study was finished and all data were collected.

Next the participants were thanked for their participation and told that they could leave. As the participants opened the door to exit the room, the experimenter knocked over a container full of paperclips, pencils, and pens, exclaimed “Oh no!” and began picking up the items. If the participants asked the experimenter if he would like some help, the experimenter would say “yes” and thank them. After the participants departed, the experimenter recorded whether they helped.

Note that the participants were not immediately informed that the study was about racial prejudice. That knowledge could have resulted in the participants experiencing some distress at having been “secretly” measured for racial prejudice without their knowledge or consent. Instead, the participants were told that it was a study of “how the mind categorizes objects in the world.” By waiting until all data collection was completed to debrief participants, several potential problems were alleviated. The elapsed time between data collection and full debriefing should have “softened the blow” of finding out that their level of racial prejudice was measured without their full knowledge. Additionally, it was hoped that finding that out by email would result in more of a feeling of anonymity in the participants. Also, by waiting until the study’s end to debrief participants about all deceptions in the study (i.e., it was on racial prejudice and the dropped items scenario was not real), it was impossible for participants to inform other potential participants of the point of the study. This was important because prior



knowledge of the study would have contaminated the data collected from other participants.

## Results

### *Overview of Tests of Hypotheses*

The following hypotheses were addressed by the first experiment:

Hypothesis 1: European-American participants will exhibit a significant correlation between racial prejudice and Stroop performance after interacting with an African-American confederate, but not after interacting with another European-American confederate. This hypothesis was supported.

Hypothesis 2: African-American participants will exhibit a significant correlation between racial prejudice and Stroop performance after interacting with a European-American confederate, but not after interacting with another African-American confederate. This hypothesis was not supported.

Hypothesis 4: Participants will exhibit a significant correlation between racial prejudice and helping behavior after interacting with the target of their prejudice, but not after interacting with someone of their same ethnicity. This hypothesis was not supported.

### *Manipulation Checks*

The majority (95%) of the participants correctly identified the race of the confederate that interviewed them. Of those who made errors in identifying the confederate, all appeared to have misunderstood the questions and were instead describing the experimenter. Hence no data were discarded based on this manipulation check. Also, when instructed to describe the questions they were asked during the interview, all participants successfully described the topics of conversation (i.e., describe self, racial profiling after Sept. 11, and fraternities/sororities). Therefore it appeared that

all participants were aware of the race of the confederate and paid attention to the questions they were asked during the interviews.

### *Tests for Normality*

IAT and Stroop data were tested to determine whether they conformed to a normal distribution. SPSS was used to calculate the descriptive statistics for these variables. The IAT data were negatively skewed (-.772) and leptokurtic (2.496). The Stroop data were positively skewed (.69) and leptokurtic (.138). Zero values for skewness and kurtosis are indicative of a normal curve. Greater absolute deviation from 0 is indicative of greater deviation from a normal distribution. A Kolmogorov-Smirnov (K-S) normality test revealed that neither the IAT,  $D(116) = 0.87$ , *ns*, nor the Stroop data,  $D(116) = 1.01$ , *ns*, differed significantly from normal.

A boxplot revealed that one IAT data point was an extreme outlier. After deleting that data point, the distribution was improved. The IAT data were less negatively skewed (-.157) and less leptokurtic (.049). The Stroop data were almost unchanged with a skewness of .60 and a kurtosis of .13. Another K-S test revealed that the IAT,  $D(115) = .60$ , *ns*, and Stroop data,  $D(115) = 1.06$ , *ns*, remained normally distributed.

Although the K-S test did not reveal a difference between data sets with and without the extreme outlier, the improved skewness and kurtosis of the IAT data set without the extreme outlier convinced me to use that data set for all analyses.

### *Analysis of Covariance (ANCOVA)*

In order to address the first and second hypotheses, a 2 (participant race: African-American and European-American) x 2 (confederate race: African-American and

European-American) ANCOVA was conducted on Stroop performance with IAT included as a covariate. ANCOVA was used to analyze the data because it was necessary to test for the potentially moderating effect of IAT, which is a continuous variable. When data are being analyzed that contain both continuous and categorical independent variables and a continuous dependent variable, ANCOVA is often used for the analysis. When a significant interaction between a continuous and categorical variable occurs, this is indicative of moderation (Pedhazur, 1997). In that case, further tests must be carried out to investigate the relationships among the variables of interest (see *Testing for Moderation* below).

*Main Effects.* The main effect of participant race on Stroop performance was not significant,  $F(1, 108) = 1.56, ns, \eta^2 = .01$ . Also, the main effect of confederate race on Stroop performance was not significant,  $F(1, 108) = 1.72, ns, \eta^2 = .02$ . Finally, the main effect of IAT on Stroop performance was not significant,  $F(1, 108) = .27, ns, \eta^2 = .00$ . This lack of results was expected. There was no hypothesized direct relationship between any of the independent variables and performance on the Stroop Test.

*Interaction.* As hypothesized, the 3-way interaction between participant race, confederate race, and IAT on Stroop performance was significant,  $F(3, 108) = 2.70, p < .05, \eta^2 = .07$ . The presence of an interaction between continuous and categorical variables is indicative of moderation and necessitated the computation of separate linear regressions for each of the four possible combinations of participant and confederate race.

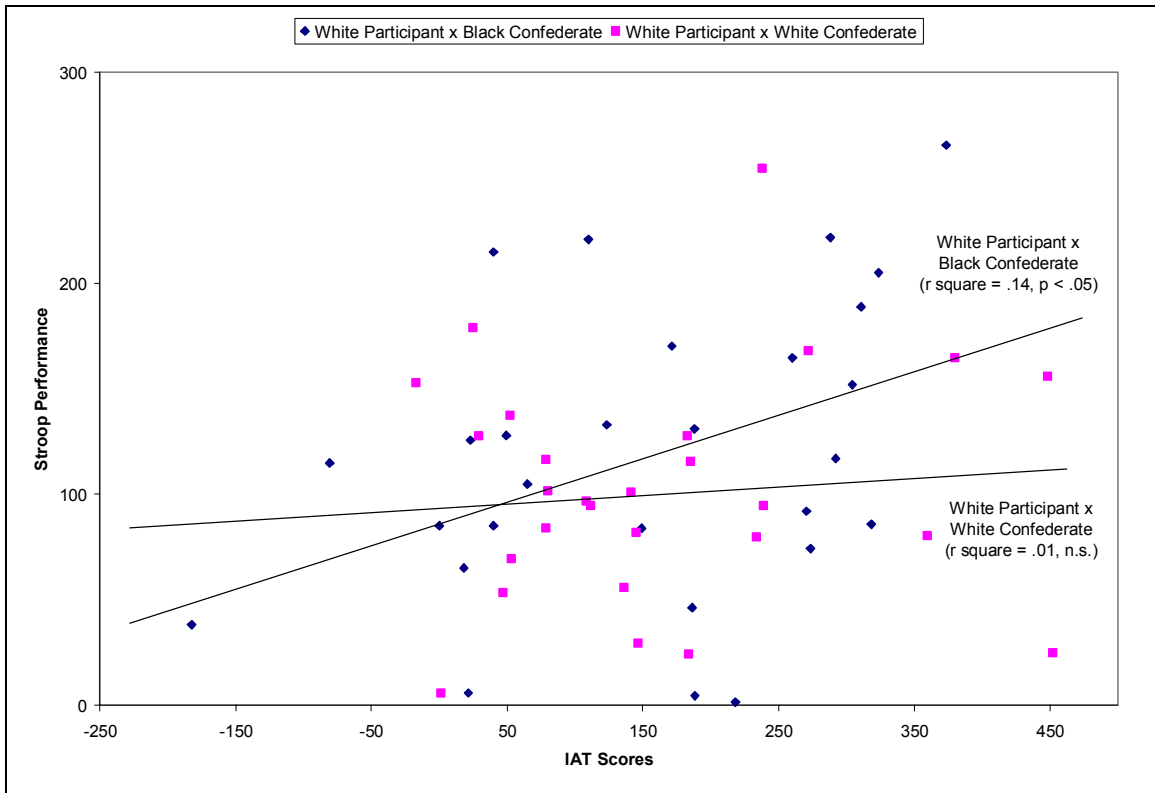
### *Testing for Moderation*

The data were split into four groups (African-American participant x African-American confederate, African-American participant x European-American confederate, European-American participant x European-American confederate, and European-American participant x African-American confederate). Then, four separate regression analyses were conducted, one for each grouping. Consequently, Stroop performance was regressed on IAT four times. This resulted in four regression equations, only one of which was statistically significant.

The African-American participant x African-American confederate unstandardized regression equation,  $\text{Stroop} = 99.10 - 0.11(\text{IAT})$ , was not significant,  $F(1,27) = 1.84$ , *ns*,  $r^2 = .06$ . Neither was the African-American participant x European-American confederate unstandardized regression equation significant,  $\text{Stroop} = 126.24 - 0.02(\text{IAT})$ ,  $F(1, 28) = 0.08$ , *ns*,  $r^2 = .00^2$ . Furthermore, the European-American participant x European-American confederate unstandardized regression equation was not significant,  $\text{Stroop} = 91.47 + 0.04(\text{IAT})$ ,  $F(1, 26) = .25$ , *ns*,  $r^2 = .01$ . However, the European-American participant x African-American confederate unstandardized regression equation was statistically significant,  $\text{Stroop} = 90.02 + 0.19(\text{IAT})$ ,  $F(1, 26) = 4.14$ ,  $p < .05$ ,  $r^2 = .14$  (see Figure 1).

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<sup>2</sup> Testing for a curve in the regression line also resulted in non-significant results for African-American participants interacting with a White confederate.



**Figure 1. IAT x Stroop Performance for White Participants**

These results support the first hypothesis that European-American participants would exhibit a significant relationship between IAT and Stroop performance when they had recently interacted with an African-American confederate and that no such relationship would result after interacting with a European-American confederate. However, these results failed to confirm the second hypothesis which proposed that African-American participants would exhibit a similar relationship when interacting with a European-American confederate as opposed to an African-American confederate.

### *Logistic Regression*

In order to address the fourth hypothesis (regarding helping behavior), a 2 (participant race: African-American and European-American) x 2 (confederate race: African-American and European-American) x IAT logistic regression was conducted on

the helping dependent variable. Logistic regression was used to analyze the data instead of linear regression because the helping dependent variable was dichotomous. Linear regression assumes that the dependent variable is continuous and normally distributed and was therefore inappropriate for analyzing the helping variable.

A logistic regression was computed that regressed helping on participant race, confederate race, IAT, and the interaction of those three independent variables. The overall likelihood ratio statistic for the model was not statistically significant,  $G(4, N=115) = 6.07, ns$ . Thus the data failed to confirm the fourth hypothesis. However, although the omnibus test for significance indicated that there were no significant results that were generalizable to the population, one can still examine the coefficients to uncover possible trends for this particular sample (see Table 2).

	b	SE	z	p	e <sup>b</sup>	CI (odds)
IAT	-0.00	.00	2.53	.11	0.998	0.995 – 1.001
Participant Race	-1.02	.46	4.86	<b>.03*</b>	0.361	0.143 – 0.910
Confederate Race	-0.29	.39	0.54	.46	0.752	0.346 – 1.632
IAT x Participant Race x Confederate Race	0.00	.00	0.80	.37	1.003	0.997 – 1.009
Constant	0.62					

**Table 2 Logistic Regression Results for Experiment 1**

In this sample, participant race was predictive of helping. African-American participants were assigned a value of one and European-American participants were assigned a value of zero. Thus, the negative coefficient for participant race indicates that African-American participants were less likely than European-American participants to help the experimenter when he dropped the office supplies. The odds of a participant

helping the experimenter were 0.36 times greater when participants were European-American. However, it is important to remember that these results may not generalize to the population because the omnibus test was not significant.

Another such analysis regressing helping on participant race, confederate race, and IAT, but not an interaction term, was computed. The overall likelihood ratio statistic for this test was not statistically significant either,  $G(3, N=115) = 5.26, ns$ . Further analysis of the sample level results revealed a pattern of significance similar to the logistic regression that included the interaction term.

As one would expect, examination of the diagonal cells in the classification table (see Table 3) indicates a relatively poor match between observed outcomes and those predicted by the model. When the diagonal cells are large compared with the off-diagonal cells, this indicates a good match (Wright, 1995). When they are not, as in this case, it indicates a poor match. However, the overall percentage of cases (PAC) correctly classified by the model was 58.8%  $[(45 + 22)/(45 + 18 + 29 + 22)]$ .

	Predicted		
<u>Actual</u>	<u>No Help</u>	<u>Help</u>	
No Help	45	18	63
Help	29	22	51

**Table 3 Classification Table for Experiment 1**

## Chapter Three: Experiment 2

The second experiment was also a three factor design and addressed the third and fourth hypotheses. The independent variables in this experiment were confederate race (African-American or European-American), control (“given no control” and “given control”), and participants’ levels of implicit racial prejudice. Confederate race and control were categorical variables and racial prejudice was a continuous variable. This experiment had the same two dependent variables as Experiment 1: performance on a Stroop task and whether a participant engaged in helping behavior.

### Method

#### *Participants*

One hundred seven undergraduate students participated in this experiment. Participants from the first experiment were not allowed to participate in Experiment 2. Only European-Americans were eligible because they were the topic of the study. The average age was 22.8 years, and age ranged from 18 to 43. Participants volunteered in exchange for extra credit in undergraduate psychology, biology and chemistry courses at Armstrong Atlantic State University in Savannah, Georgia. According to self-report, all participants had normal or corrected-to-normal color vision, and all were native English or bilingual speakers with English as their primary spoken language. Data from participants who did not meet the above criteria were omitted from the analyses. Data from nine participants were discarded due to the reasons specified below. Five



participants' data were discarded due to excessive errors (greater than 10% errors) while performing the Stroop test. Another participant's data was omitted from the analyses because he reported having an anxiety disorder. Considering that this experiment theorizes that the results may be based on aftereffects of stress, there was concern that a participant with an anxiety disorder might exhibit a stress-related response regardless of the experimental treatment. One participant's data was omitted because she refused to be videotaped during the experiment. Finally, two participants' data were discarded because their IAT scores were extreme outliers (see *Tests for Normality* below). This resulted in an N of 107 for all analyses from an initial N of 116.

Eighty percent of this sample was female, and a chi-square test of independence revealed that gender proportions did not significantly differ across the experimental conditions for confederate race,  $\chi^2(1, N = 107) = .29, ns$ , or control,  $\chi^2(1, N = 107) = .19, ns$ . Also, a two-way (confederate race by control) ANOVA revealed no significant differences in age across the four conditions,  $F(1, 102) = 1.38, ns$  (see Table 4).

		<i>European-American Confederate</i>	<i>African-American Confederate</i>	<i>Overall</i>
"Given No Control"	Age (years)	23.6	22.2	22.9
	Males (n)	4	7	11
	Females (n)	21	19	40
"Given Control"	Age (years)	21.9	23.0	22.4
	Males (n)	5	5	10
	Females (n)	22	24	46
Overall	Age (years)	22.7	22.6	
	Males (n)	9	12	
	Females (n)	43	43	

**Table 4 Age and Gender of Participants in Experiment 2**

No participant reported having prior knowledge about the study. Eight participants indicated that they had heard of the Stroop test in their undergraduate

psychology classes, and no participants indicated any prior knowledge of the implicit association test.

### *Materials*

Experiment 2 used measures identical to those in Experiment 1. All participants completed the IAT and the Stroop task during the experiment.

### *Procedure*

The procedure for this study was very similar to that of Experiment 1, with two notable exceptions. As in Experiment 1, upon arrival at the lab for the experiment, the participants received an informed consent, filled out a demographics questionnaire, and then completed the IAT just as in Experiment 1. However, in Experiment 2, depending upon the experimental condition, the participants were either directed to the next room to give a speech to a confederate impersonating an experimenter or they were asked whether they were willing to do so (see Appendix B). In the latter case, when the participants agreed, they were informed by the confederate that they could cease the activity at any time should they desire to do so. This difference in how the participants were treated regarding the speech task created two conditions, a condition in which the participants appeared to have little or no control over whether they were to give the speech and a condition in which they appeared to have greater control over whether to give the speech and how long it would last.

The procedures following the control manipulation were identical to those in Experiment 1. The participants followed the speech by completing the Stroop task, receiving the manipulation check and fake debriefing, and being presented with the

dropped office supply scenario. The only other factor in this experiment that differed from Experiment 1 was the participants. Experiment 2 used only European-American participants in order to keep the number of independent variables manageable.

## Results

### *Overview of the Tests of Hypotheses*

The following hypotheses were addressed by the second experiment:

Hypothesis 3: Control will moderate the relationship between racial prejudice and Stroop performance such that those who have greater control over their stressor will exhibit less of a decrement in their post stimulus task performance. This hypothesis was supported.

Hypothesis 4: Participants will exhibit a significant correlation between racial prejudice and helping behavior after interacting with the target of their prejudice, but not after interacting with someone of their same ethnicity. This hypothesis was not supported.

### *Manipulation Checks*

As in Experiment 1, the majority (98%) of the participants correctly identified the race of the confederate who interviewed them. Of those who made errors in identifying the confederate, all appeared to have misunderstood the questions and were instead describing the experimenter. Hence no data were discarded based on this manipulation check. Also, when instructed to describe the questions they were asked during the interview, all participants successfully described the topics of conversation. Consequently it appeared that all participants were aware of the race of the confederate and paid attention to the questions they were asked during the interviews.

A chi-square analysis was performed to establish whether participants perceived a difference between the “given no control” and “given control” conditions in this

experiment. Participants did perceive a difference,  $\chi^2(1, N = 107) = .748, p < .05$ .

Participants in the “given control” condition were more likely to indicate on the post-experiment manipulation check form that they felt like they had a choice about whether they wanted to do the interview (see Table 5). Note that many participants in the “given no control” condition reported that they had a choice about whether they wanted to do the interview. It is possible that this was due to the use of a video consent form prior to the interview and to the earlier informed consent.

<u>Perceptions of Control</u>	<u>Control Condition</u>	
	<u>Given No Control</u>	<u>Given Control</u>
No Choice	<b>18</b> 35.3%	7 12.7%
Had a Choice	33 64.7%	<b>48</b> 87.3%

**Table 5 Perceptions of Choice/Control across Conditions**

*Tests for Normality*

IAT and Stroop data were tested to determine whether they conformed to a normal distribution. SPSS was used to calculate the descriptive statistics for these variables. The IAT data were positively skewed (.342) and leptokurtic (3.052). The Stroop data were also positively skewed (.582) and leptokurtic (.734). A K-S test revealed that the IAT data,  $D(109) = 1.36, p = .05$ , differed significantly from normal. However, the Stroop data,  $D(109) = 0.94, ns$ , did not differ significantly from normal.

A boxplot revealed that two IAT data points were extreme outliers. After deleting those data points, the distribution was improved. The IAT data were still positively

skewed (.809) but less leptokurtic (.814). The Stroop data were slightly worsened with a skewness of .62 and a kurtosis of .80. However, a second K-S test revealed that the IAT,  $D(107) = 1.24$ , *ns*, and Stroop data,  $D(107) = 0.99$ , *ns*, were both normally distributed.

#### *Analysis of Covariance (ANCOVA)*

In order to address the third hypothesis, a 2 (control: “given no control” and “given control”) x 2 (confederate race: African-American and European-American) ANCOVA was conducted on Stroop performance with IAT included in the analysis as a covariate.

*Main Effects.* There was neither a significant main effect of confederate race on Stroop performance,  $F(1, 100) = 0.56$ , *ns*,  $\eta^2 = .01$ , nor a significant main effect of IAT on Stroop performance,  $F(1, 100) = 0.18$ , *ns*,  $\eta^2 = .00$ . These results were expected. There was no hypothesized direct relationship between these independent variables and performance on the Stroop test. However, there was a significant main effect of control on Stroop performance,  $F(1, 100) = 4.43$ ,  $p < .05$ ,  $\eta^2 = .04$ . Participants in the “given control” condition performed worse on the Stroop task ( $M = 117.49$ ,  $SE = 9.63$ ) than those in the “given no control” condition ( $M = 109.36$ ,  $SE = 10.05$ ). These results were unexpected. The 3-way interaction, described next, helps explain this main effect for control and qualifies the other findings.

*Interaction Effect.* As hypothesized, there was a significant 3-way interaction among control, confederate race, and IAT on Stroop performance,  $F(3, 100) = 2.87$ ,  $p < .05$ ,  $\eta^2 = .08$ . The presence of an interaction between continuous and categorical

variables was indicative of moderation and necessitated the computation of separate linear regressions for each of the possible combinations of control and confederate race.<sup>3</sup>

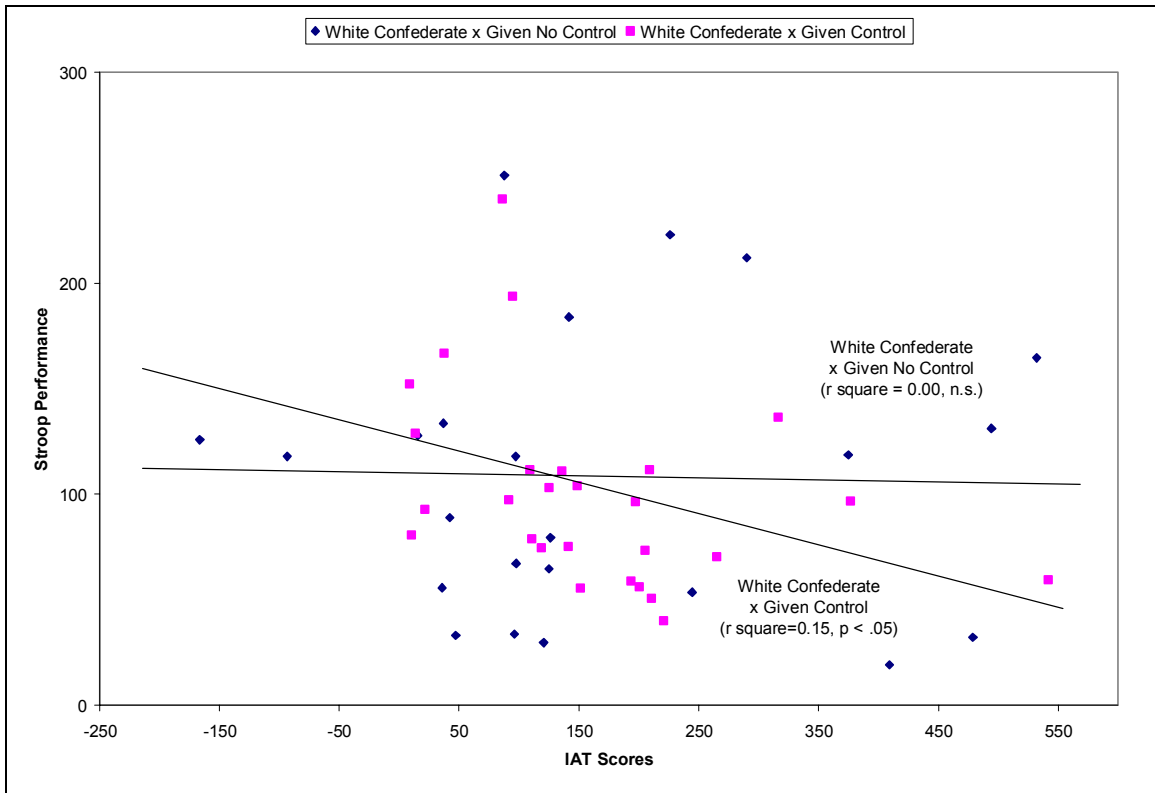
### *Testing for Moderation*

The data were split into four groups (“given no control” x European-American confederate, “given control” x European-American confederate, “given no control” x African-American confederate, and “given control” x African-American confederate). Four separate regression analyses were conducted, one for each group. Consequently, Stroop performance was regressed on IAT four times. This resulted in two regression analyses that were statistically significant.

The “given no control” x European-American confederate unstandardized regression equation,  $\text{Stroop} = 106.92 - 0.02(\text{IAT})$ , was not significant,  $F(1,23) = 0.05$ , *ns*,  $r^2 = .00$ . In contrast, the “given control” x European-American confederate unstandardized regression equation,  $\text{Stroop} = 124.39 - 0.15(\text{IAT})$ , was statistically significant,  $F(1, 25) = 4.26$ ,  $p < .05$ ,  $r^2 = .15$  (see Figure 2). These results were not expected. For those participants, racial prejudice and Stroop performance were negatively related. That is, the greater their racial prejudice, the less Stroop interference they exhibited.

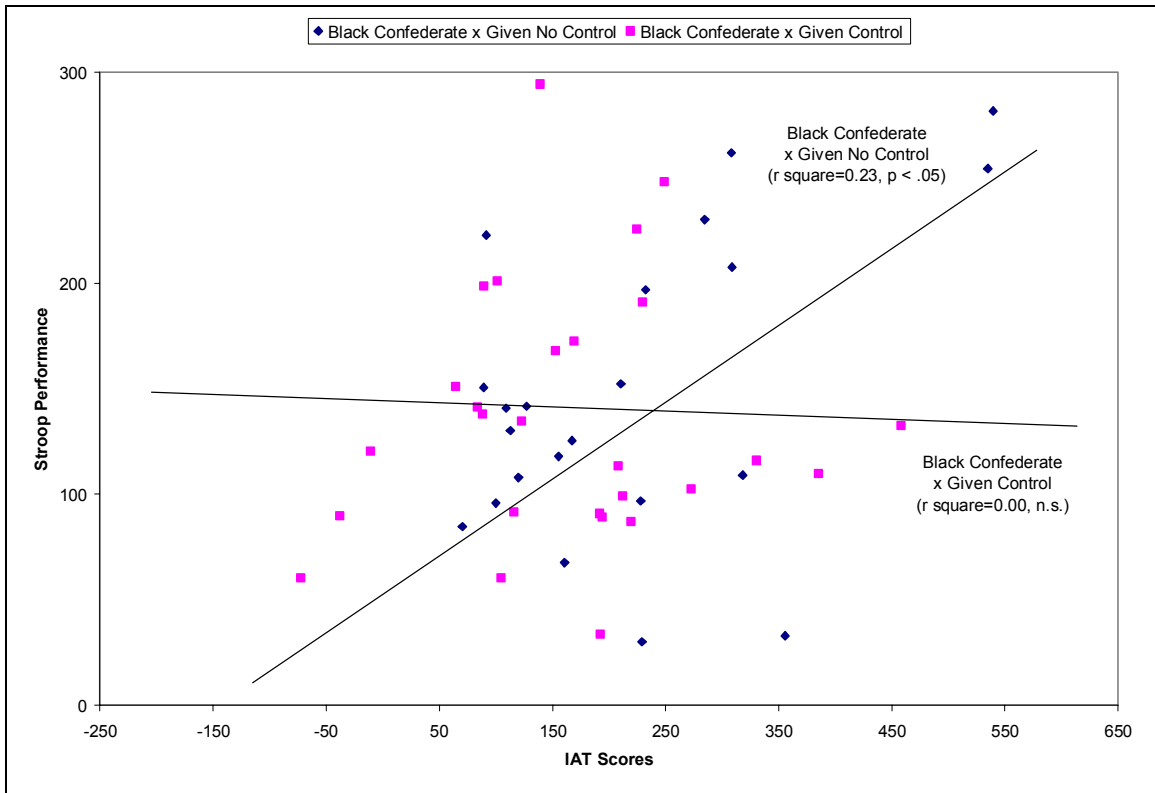
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<sup>3</sup> An ANCOVA using confederate race, IAT, and the participants’ *self report* of perceived choice on Stroop performance was not significant,  $F(3, 99) = 2.39$ , *ns*. However scatterplots of IAT and Stroop based on confederate race and participants’ *self report* of perceived choice, despite not being statistically significant, were quite similar to scatterplots based on confederate race and control.



**Figure 2. IAT x Stroop Performance for White Confederate Conditions**

Furthermore, the “given no control” x African-American confederate unstandardized regression equation,  $\text{Stroop} = 51.58 + 0.33(\text{IAT})$ , was statistically significant,  $F(1, 24) = 7.01, p < .05, r^2 = .23$ . However, the “given control” x African-American confederate unstandardized regression equation,  $\text{Stroop} = 143.54 - 0.03(\text{IAT})$ , was not statistically significant,  $F(1, 27) = 0.05, ns, r^2 = .00$  (see Figure 3).



**Figure 3. IAT x Stroop Performance for Black Confederate Conditions**

These results support hypothesis three which proposed that European-American participants would exhibit a significant relationship between IAT and Stroop performance when they had recently interacted with an African-American confederate but that that relationship would weaken or disappear entirely if the participants believed that they could control the interaction.

*Logistic Regression*

In order to address the fourth hypothesis, a control (“given no control” and “given control”) x confederate race (African-American and European-American) x IAT logistic regression was conducted with helping as the dependent variable. A logistic regression was computed that regressed helping on control, confederate race, IAT, and the



interaction of those three independent variables. The logistic regression equation was not statistically significant,  $G(4, N=107) = 8.96, ns$ .

A second logistic regression regressing helping on control, confederate race, and IAT, but no interaction term, was computed. The regression equation was statistically significant,  $G(3, N=107) = 8.63, p < .05$ . The coefficient for control differed from zero when taking into account the effects of IAT and confederate race. Consequently it can be concluded that, when IAT and confederate race were statistically controlled, participants who were given more control over the interaction were more likely to help the experimenter. The odds ratio for control estimates that the odds of helping were 2.82 times greater for participants who were given more control over the interaction (see Table 6).

	b	SE	z	p	e <sup>b</sup>	CI (odds)
IAT	-0.00	.00	0.86	.35	1.00	0.996-1.002
Control	1.04	.41	6.43	<b>.01*</b>	2.82	1.246-6.400
Confederate Race	-0.27	.41	0.43	.51	0.77	0.341-1.728
Constant	-0.39					

**Table 6 Logistic Regression Results for Experiment 2**

Confidence intervals for odds ratios indicate that with 95% confidence, one can infer that, in the population, the odds of European-Americans helping are between 1.25 and 6.4 times greater if they could control a recent interpersonal interaction. In order to determine predicted probabilities, a third logistic regression was computed regressing helping on control and no other variables. This logistic regression was significant as well,  $G(1, N=107) = 7.27, p < .05$  (see Table 7).

	b	SE	z	p	e <sup>b</sup>	CI (odds)
Control	1.07	.41	6.99	<b>.01*</b>	2.92	1.28-6.62
Constant	-0.78					

**Table 7 Logistic Regression Results for Experiment 2 (Control Only)**

In order to compute the predicted probabilities of helping,  $\hat{g}$  was computed from the equation,  $\hat{g} = -0.78 + 1.07(\text{control})$ . Thus, to determine the probability of helping for those who are given no control over their interaction, the equation  $\hat{g} = -0.78 + 1.07(0) = -0.78$  is used. The predicted probability of helping for such a participant is  $e^{-0.78}/(1 + e^{-0.78}) = 31.4\%$ . Conversely, to determine the probability of helping for those who are given control over their interaction the equation  $\hat{g} = -0.78 + 1.07(1) = 0.29$  is used and from this value the predicted probability of helping is determined to be  $e^{0.29}/(1 + e^{0.29}) = 57.2\%$ . Hence, participants who are given no control over an interracial interaction are significantly less likely to help (31.4% chance of helping) than those who are given control over an interracial interaction (57.2% chance of helping). Note that these probabilities are a prediction and do not necessarily exactly reflect the actual percentages gathered in this study. Rather, they are a generalization of the likely probabilities of these results actually occurring in the population.

Examination of the diagonal cells in the classification table (see Table 8) reveal a pattern that indicates a relatively good match between observed outcomes and those predicted by the model. Recall that when the diagonal cells are large compared with the off-diagonal cells this indicates a good match (Wright, 1995). Thus it appears that the model predicts helping better than mere chance alone. The overall percentage of cases correctly classified by the model (PAC) is 63.6%.

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<u>Actual</u>	Predicted	
	<u>No Help</u>	<u>Help</u>
No Help	<b>38</b>	21
Help	18	<b>30</b>

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**Table 8 Classification Table for Experiment 2**

## Chapter Four: General Discussion

This research project included two experiments that were designed to replicate the original research of Richeson and Shelton (2003) and extend it by also studying African-Americans and two additional relevant variables (control and helping). Richeson and Shelton studied the aftereffects of intergroup interactions on the cognitive performance of racially prejudiced people who have interacted with the target of their prejudice. These researchers found that the more racially prejudiced a European-American was, the worse that person performed on a later cognitive task (presumably due to the stress they experienced during the interracial interaction). However, in their experiments, Richeson and Shelton only measured the responses of European-American participants, not African-Americans. It was unknown whether African-Americans would respond in a similar fashion. Also unknown were the potentially moderating effects of control over this type of stressor. Finally, it was unclear whether Richeson and Shelton's findings extended to other types of behavior such as helping.

The first experiment successfully replicated the results of Richeson and Shelton's (2003) research. European-American participants exhibited a statistically significant correlation between racial prejudice and Stroop performance after interacting with an African-American confederate. They did not exhibit this relationship after interacting with a European-American confederate. The more racially prejudiced European-American participants were against African-Americans (as measured by the IAT), the worse they performed on a Stroop task that immediately followed an interaction with an

African-American confederate. The successful replication of Richeson and Shelton's (2003) research gives us increased confidence that their results are valid and not due to chance alone.

In contrast, the first experiment failed to confirm the hypothesized results for African-American participants. African-Americans did not exhibit the same relationship between racial prejudice against European-Americans and Stroop performance after interacting with a European-American confederate. This might be due to limitations of the IAT, to lower levels of stress experienced by African Americans, or possibly to the difference in age between the African-American and European-American participants in this sample. These possibilities are considered next.

The IAT is a controversial measure. Some researchers believe that it is an excellent way to measure the implicit biases that people possess (Greenwald & Banaji, 1995; Greenwald et al., 1998, Greenwald & Nosek, 2001). Given its resistance to "faking," the IAT is often touted as a way to measure prejudice despite a participant's desire to look good for such a measure. However, some researchers protest that the IAT does not measure prejudice but instead measures the concepts and norms created by society's negative portrayal of minority groups rather than an individual's implicit biases, (Olson & Fazio, 2004) and as such explicit measures of prejudice are more valid. Of importance to note, Richeson and Shelton included an explicit measure in their original research. It was significantly related to Stroop performance in European-American participants. However the IAT was more predictive of Stroop performance and the explicit measure did not contribute significantly to the prediction of Stroop performance when the IAT was included in a regression analysis. Hence it was left out of the present

studies. However, it is possible that a more explicit measure of racial prejudice would have been better for measuring the racial biases of African-Americans in this study (for reasons that will be detailed in the next paragraph).

At present, the IAT does not appear to be well suited to measurement of racial prejudice in African-Americans, which may explain why no relationships between the IAT and performance were found among African-Americans. African-American participants appear to be split in their IAT responses (Banaji, Greenwald, & Rosier, 1997). A large proportion of African-Americans who take the IAT demonstrate an anti-European-American bias, but many others score as anti-African-American<sup>4</sup>. One explanation for this finding is that some African-Americans are biased against their own group while others are biased against European-Americans. But another possibility exists. The IAT determines bias by comparing the difference in anti-White and anti-Black responses. Thus, a participant whose bias toward European- and African-American people is equal (i.e., either both pro or both anti) would score a zero on the IAT. This score would be inaccurate because a score of zero is interpreted as meaning that the person has no bias toward or against either racial group, though in this example it would mean no such thing. Given this possibility, perhaps the use of a more explicit measure of racial prejudice would also eliminate this problem in future experiments on the racial biases of African-Americans.

A second explanation for the absence of significant results for African-Americans is that African-Americans might not experience the same degree of stress as European-Americans during an interracial interaction. The present findings, along with Richeson

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<sup>4</sup> In experiment one, African-American IAT scores ranged from -387.32 to 479.00 with  $M = -6.71$  and  $SD = 175.61$

and Shelton's research, may illustrate a phenomenon exclusive to majority group members in society (as Richeson and Shelton originally suggested). Minority group members in American society probably interact regularly with majority members. As such, they may become unconcerned with or desensitized to these interactions and not experience stress as a result of them. Frequent interaction might cause prejudiced individuals to respond differently from those who do not interact frequently with the object of their prejudices.

One way to test this is to consider how much social contact African-American participants have had with European-Americans. Amount of contact with the interactant might moderate the relationship between racial prejudice and Stroop performance. For example, Minard (1952) found that African-Americans and European-Americans who worked together in a coal mine were able to develop working relationships that were relatively strain-free. Stephan and Stephan (1985) hypothesize that amount of contact between groups might regulate the amount of intergroup anxiety interactants experience. Consequently, those African-American participants who have had many social experiences with European-Americans might maintain their level of racial prejudice, but become desensitized to any stress that accompanies it. Thus those who have had more contact with the target of their prejudice might not experience the same amount of stress from an interaction because they are used to it and know what to expect. This desensitization might result in no deleterious cognitive aftereffects, regardless of one's racial prejudice.

A third explanation for the absence of significant results for African-Americans is that age might have been an influencing factor. In this sample, African-American

participants were significantly older ( $M = 26.1$  years) than European-American participants ( $M = 20.0$  years). One explanation might be that older participants have had more opportunity to interact with people of other racial groups. This might cause them to be less sensitive to the stresses that accompany interracial interactions (as in the explanation just given above).

Experiment 1 also failed to support the hypotheses concerning helping behaviors. Whether a participant chose to help the experimenter when he “accidentally” dropped a large container of office supplies appeared to be unaffected by the race of the confederate, the race of the participant, the participant’s racial prejudice, or the interaction of the three variables. Interestingly, for the sample under consideration, only the race of the participant had a significant effect on helping behavior. That is, African-American participants were less likely to stop and help the experimenter than were European-American participants. Given that the experimenter was always a European-American, racial prejudice might actually have had some influence over the decision to help or not even though this was not detected through the use of the IAT to measure racial bias.

Alternatively, African-Americans might have made the decision not to help due to a fear of interpersonal rejection by a European-American. Shelton and Richeson (2005) demonstrated that, although both African-Americans and Caucasian-Americans would like to have more contact with one another, each group also tends to believe that the other does not desire to have contact with them. Interestingly, it was also demonstrated that each group tended to attribute their own reluctance to interact to fear of rejection, but the other group’s reluctance to interact to lack of interest. This belief on the part of African-



American participants could explain their decreased likelihood to offer help to the European-American experimenter when the situation presented itself. It is also possible that they wished not to appear submissive to a European-American by helping. Fear of negative evaluation by outgroup members has been suggested as one source of intergroup anxiety (Stephan and Stephan, 1985). Although interesting, this result cannot generalize to the population at large due to the lack of significance in the omnibus test for significance, and so it must be interpreted with caution. Finally, few effects on helping may have been observed because of the insensitivity of this helping elicitation procedure.

Another avenue to explore in future research involves the use of both the helping behavior measure and the Stroop task as dependent measures in one experiment. Recall that the measure of helping behavior always took place at the end of the experiment after a participant had done a Stroop task. Helping may have been partially affected by the Stroop task that preceded it. That is to say, some participants may have believed that they performed poorly on the Stroop task. The discouragement and/or frustration caused by performing this challenging task might have caused some participants to experience additional stress and not help because of the combination of stress from the Stroop and the interaction rather than just because of the stress of an interracial interaction. In future research, the helping task could be examined without having a participant complete a Stroop task first.

One limitation of both experiments was the race of the experimenter. Recall that the experimenter who appeared to need help at the end of the study was always a European-American. In the future, it would be good to counterbalance both African-American and European-American experimenters to avoid this potential confound. It is

possible that the decision to help or not help the experimenter might have been affected more by the interaction of the races of the experimenter and participant than the stressful aftereffects of the previous social interaction with the confederate.

In the second experiment, racial prejudice was related to Stroop performance only for European-Americans who were given little or no control over the interaction with an African-American. However, those who did have control over the interaction failed to exhibit a relationship between prejudice and Stroop performance. These results supported the third hypothesis. When European-American participants could control the stressor, they did not suffer the deleterious aftereffects of stress.

The data from the second experiment failed to support the hypotheses regarding the simple effect of prejudice, control, and confederate race on helping. However, there was a main effect of control on helping behaviors. Those participants who could control the interaction were more likely to help the experimenter when he dropped the office supplies at the conclusion of the experiment. Although I did not specifically predict this result, it is consistent with previous findings reported in the stress literature. Specifically, Cohen's (1980) review of the literature on stress' aftereffects list several studies that have found these same types of results with participants experiencing stress and then being offered the opportunity to help someone in need. Those who could control their stressor were less likely to exhibit aftereffects from it.

### *Applications*

The present research suggests a number of applications to real-world phenomenon. It appears that European-Americans who harbor prejudice against African-Americans suffer cognitively after interacting with them. This implies that the

productivity of European-Americans suffers when one is forced to work in a racially mixed workplace. Further, a European-American's level of post interaction stress may eventually lessen after repeated interactions with an African-American. If so, then cognitive decrements might eventually fade entirely. However, repeated interactions might instead exacerbate the experience of stress in European-Americans, resulting in even greater cognitive decrements over time. The present studies cannot directly speak to these applications, but do hint at the need for more long term investigations of this phenomenon.

An unfortunate implication of this research is performance may be enhanced by workplace segregation. If the stressful aftereffects of an interracial interaction do not lessen with repeated contact, then separation of racial groups at work (or in school) might be the easiest way to avoid further trouble. However, segregation may only increase this problem. People would have even less of an opportunity to interact with others that differ from themselves racially and culturally. This would likely lead to even greater stress when members of different racial groups inevitably interact. This does not seem like the right response to this problem.

Alternatively, the finding that perceived control over an interracial interaction alleviates its stressful aftereffects opens up another alternative to segregation. Efforts by supervisors (or teachers) to give employees (or students) the impression that they have greater control over their workplace interactions might be beneficial. Choices about work team assignments or cubicle partners might give employees an increased perception of personal control. Also, supervisors might be more sensitive to requests for changes in

work assignments by employees. An increased feeling of control should reduce the negative aftereffects of stressful interracial interactions.

### *Conclusion*

Richeson and Shelton (2003) fittingly titled their work, “When Prejudice Does Not Pay.” The present research supports their conclusion, but with some caveats. European-Americans do appear to experience a greater loss in cognitive performance after an interracial interaction the greater their prejudice against the interactant. However, when they have control over the initiation and termination of the exchange, that loss in performance does not appear to occur. Also, African-Americans may not exhibit this effect at all. But limitations in this study make that conclusion far from certain.

The moderating effect of control and lack of findings for African-Americans do not suggest that people need not concern themselves with their own racial biases. Instead it demonstrates the need for further research on this topic. Few today would disagree that racial prejudice is a bad thing. But usually the argument against it centers on the harm to the target. This line of research exhibits yet another compelling reason to be concerned about racial prejudice. It can have negative consequences for the prejudiced person too.

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## Appendices

*Appendix A: Demographics Questionnaire*

1. What is your age? \_\_\_\_\_
2. What is your gender?
  - Male
  - Female
3. What is your race/ethnicity?
  - African-American
  - White, non-Hispanic
  - Hispanic/Latina
  - Asian/Pacific Islander
  - Native American/Alaskan
  - Other \_\_\_\_\_
4. What year of college are you in?
  - Freshman
  - Sophomore
  - Junior
  - Senior
5. What is your major? \_\_\_\_\_
6. Is your first language English?
  - Yes
  - No
7. Do you have normal color vision?
  - Yes
  - No

## *Appendix B: Confederate Script for Videotaping Session*

Confederate instructions: As the confederate, you must take great care to treat each and every participant identically. If you were to accidentally treat one person different from another, this could cause me to get unusual or erroneous results from this study. When you interact with participants, you need to maintain a neutral facial expression during the encounter. Try not to smile or frown at them. While they answer your questions, it is important that you not react to whatever they say. If they say something funny or even offensive, you must maintain a professional, nonreactive demeanor. Don't be rude to them; just behave in as neutral a fashion as you can. The experimenter will be watching you through the one way mirror throughout this entire process. This is so that he can double-check your responses throughout the interplay. Be certain to keep facing in the direction of the mirror the whole time so that he might monitor your reactions. If you react inappropriately during the speech task, the experimenter may decide to discard the data from that particular participant and coach you a bit about how to react to future participants. Thank you for helping with this experiment.

---

This is for the "given no control" condition in experiment 2.

Hello. I'm \_\_\_\_\_. Please take a seat there. I need information on several current event issues. I am going to ask you a few questions. Your responses will be videotaped to be certain I don't miss any information you provide. This whole process will take about 5 minutes. Please sign this video consent so we can get started. OK, let's begin.

1. Please take 1 minute to tell me about yourself. Describe things such as where you are from, your hobbies, your major, etc. Just keep talking for about 1 minute. I'll tell you when your minute is finished. Go ahead and start now.
2. Now I am going to ask you to comment on two relatively controversial issues for about 2 minutes each. Just give me your opinion about the topics and try to keep talking for about 2 minutes each time so that I get plenty of information. I'll tell you when your 2 minutes are up. You may start now.
  - a. College fraternity systems
  - b. Racial profiling in light of the September 11<sup>th</sup> attacks.

Thank you. I'll take you back to the first room to finish the experiment.

---

This is for the "given control" condition in experiment 2.

"Hello. I'm \_\_\_\_\_. Please take a seat there. I need information on several current event issues. I am going to ask you a few questions. Your responses will be videotaped to be certain I don't miss any information you provide. This whole process will take about 5 minutes. But this is completely optional. You don't have to do it if you don't want to. I would appreciate it if you did do it. It isn't anything difficult. But if you choose not to do this then it is totally ok. If you become uncomfortable at any point while answering these questions, you can quit. Just tell me that you'd rather not do the speeches any more and we'll stop. OK? Would you please sign this video consent form first? OK, let's begin ... (continue from #1 above).

### *Appendix C: Partial Debriefing*

This has been an experiment about how the mind categorizes objects in the world. We are interested in how humans mentally sort objects that they encounter from day to day. That is why we had you do the two computerized tasks. One had you sort words into different groups. The other had you identify the colors of words and XXXXs. In order to make sure that your performance on the first task didn't interfere with your performance on the second task, we had to make you wait for a short time between the two tasks. No further details of the study can be disclosed until data collection is finished. If we gave out too much information before the study was completed, there is a strong chance that future participants might hear about details of the study and that could alter our results.

Please do not discuss any part of this experiment with other people. If you feel the need to discuss this study any further, you may contact the experimenter at 912-228-1969. Also, if you would like a more thorough debriefing after we complete this experiment (in about 2 months), send an email to [jread2@mail.usf.edu](mailto:jread2@mail.usf.edu) requesting this information and a full debriefing will be emailed to you in a few months.

Thank you,

Jason R. Read, M.A.

*Appendix D: Dropped Office Supplies Script*

“That’s the end of the experiment, thanks for participating in it. Here is the debriefing sheet. It summarizes the study you were just in. I need to ask that you please don’t discuss any details of this study with anyone else. The debriefing is only a partial debriefing. It isn’t complete because we are still collecting data for the study for the next couple of months and I can’t give out full information until it is done. But if you’d like more information after we finish the study, you can fill out your email or home address on this form now and I’ll send a more thorough debriefing to you when we are done.”

*Experimenter waits for participant to fill out address or not.*

“Thanks again.”

*Experimenter turns partially away from the participant and begins to shuffle papers. He waits until the participant gets close to the exit door and begins to open it, but hasn’t quite exited the room yet. Experimenter knocks over container full of paperclips, pencils, and pens.*

“Oh no!”

*Experimenter bends over and begins to pick up the spilt office supplies without making eye contact with the participant in the doorway.*

*If participant offers to help, experimenter says “Thank you” and keeps picking up the supplies. The experimenter thanks the participant for helping and allows him/her to leave.*

*If participant does not offer to help, but proceeds to leave, the experimenter simply lets the participant leave without any further actions.*



## *Appendix E: Real Debriefing*

After completing a psychological experiment recently, you indicated that you would be interested in a more complete debriefing later on. That is the point of this form.

*First of all, thank you very much for participating in this study. Research could not be conducted with out the participation of helpful people such as you.*

This has been an experiment about the anxiety that people sometimes experience when they talk to another person. Research has shown that when people interact with others, they sometimes experience anxiety. Additionally, other research has found that when a person experiences stress, that stress can linger for a while and affect their performance on tasks that they do later on. We want to see if the stress of talking to unfamiliar others will cause enough anxiety in people to make them perform poorly on a mental type task that they do a little later. Also, we want to see if that stress might affect your willingness to engage in a helping type behavior. That's why the experimenter seemed to accidentally drop a box of office supplies as you left the lab. It was to see if you would help pick them up.

So that is why we had you talk to a stranger while being video taped. We want to see if that interaction causes people to experience a little bit of anxiety and, if so, if they will do worse on the color naming task that follows and if they will help others less.

Another part of this study focuses on the attitudes that we have towards people of another race. The first computerized task (and one of the questionnaires you filled out in one of your classes) was designed to measure your attitudes towards people of another race. You see, even people who think they aren't really prejudiced against other people sometimes have negative attitudes towards others. Different things we have experienced in our past might lead us to have some negative beliefs about other racial groups. So even the most open-minded of people sometimes have attitudes of which they aren't even totally aware. We wanted to see if people with negative attitudes towards the race of the person they spoke with would experience even more anxiety as a result of that interaction.

The results from this study will help us to understand some of the things people experience when they interact with other people. It should also give us some clues as to how anxiety from interpersonal interaction might affect later performance.

We're sorry for having to deceive you as a part of this study. It was unavoidable. If people know ahead of time what we are studying, it can seriously change the results of the study. We hope you don't feel insulted or put down in any way as a result of all this. If you do, or if you just want to talk about this experiment some more, please let the experimenter know.

Thanks again,

Jason R. Read, M.A.

[jread2@mail.usf.edu](mailto:jread2@mail.usf.edu)

Industrial/Organizational Psychology, University of South Florida

*Appendix F: Manipulation Check Questionnaire*

1. Before showing up here today, had you heard any details about this experiment from other people who had been in it?
  - No
  - Yes, explain: \_\_\_\_\_
2. Have you ever previously done either of the computerized tasks that I had you do in this experiment?
  - No
  - Yes, which ones: \_\_\_\_\_
3. Did you think you were being watched while you did either of the computerized tasks?
  - No
  - Yes, explain: \_\_\_\_\_
4. Did you know the person that videotaped you?
  - No
  - Yes, explain: \_\_\_\_\_
5. Please briefly describe the person that you gave the speeches to so that I know you paid attention to him/her:
  - What was the person's gender? \_\_\_\_\_
  - What was the person's approximate age? \_\_\_\_\_
  - What was the person's apparent race/ethnicity? \_\_\_\_\_
  - What was the person's approximate height? \_\_\_\_\_
  - What was the person's approximate weight? \_\_\_\_\_
6. What did he/she ask you to talk about? \_\_\_\_\_
7. Did you think that you were being watched by anyone else while giving the speeches?
  - No
  - Yes
8. Did being interviewed make you feel nervous or stressed in any way?
  - No
  - Yes, explain: \_\_\_\_\_
9. Did the *person* videotaping you make you feel nervous or stressed in any way?
  - No
  - Yes, explain: \_\_\_\_\_
10. Did you feel like you had a choice about whether you had to do the videotaped interview?
  - No, explain: \_\_\_\_\_
  - Yes, explain: \_\_\_\_\_

### About the Author

Jason Read received a B.A. in Psychology from the University of South Florida in 1999 and a M.A. in Industrial and Organizational Psychology from USF in 2003. He started teaching classes while in the doctoral program, and continued on as an instructor of both Cognitive Psychology and Research Methodology at USF until he finished the Ph.D. program in 2005 with a major in I/O Psychology and a minor in Computer Programming.

While in the Ph.D. program, Mr. Read was active in several research projects including a study of critical thinking skills in work teams for the Institute of Human Performance, Decision Making, and Cybernetics and a study of motorcycle safety for the Center for Urban Transportation Research. Furthermore, while pursuing the Ph.D., Mr. Read completed an internship with Publix Supermarkets, Inc. in Lakeland, Florida and served as a consultant for Susan F. Schulz & Associates, Inc. in Boca Raton, Florida.