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## An examination of the relation between prejudice and interpersonal sensitivity

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An Examination of the Relation Between Prejudice and Interpersonal Sensitivity

A dissertation presented

by

Susan A. Andrzejewski

to

The Department of Psychology

In partial fulfillment of the requirements for the degree of  
Doctor of Philosophy

in the field of

Psychology

Northeastern University  
Boston, Massachusetts  
May, 2009

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ABSTRACT OF DISSERTATION

Submitted in partial fulfillment of the requirements  
For the degree of Doctor of Philosophy in Psychology  
In the Graduate School of Arts and Sciences of  
Northeastern University, May 2009

## ABSTRACT

Modern prejudicial attitudes and discrimination toward minority group members have been linked to negative behavioral outcomes for both the target groups (Beal, O'Neal, Ong, & Ruscher, 2000) as well as for others who are present in the environment (De Dreu & Weingart, 2003). While social norms and even some laws have made prejudicial attitudes less explicitly apparent in many parts of our society, prejudicial attitudes are still very apparent worldwide. Because these attitudes are somewhat commonplace in everyday society it is only logical for researchers to explore how prejudicial attitudes affect different aspects of inter- and intrapersonal functioning. This dissertation examines how prejudicial attitudes towards Blacks are related to individuals' ability to accurately decode nonverbal cues from others who are both a part of their ingroup, as well as those who are members of an outgroup.

More specifically, this dissertation tests the hypothesis that high prejudiced persons (HPP) underperform low prejudiced persons (LPP) on interpersonal sensitivity tests involving both White targets and Black targets. The decrease in sensitivity performance should be even more apparent when the target of the interpersonal sensitivity task is someone who is a minority group member, or on a Black targets interpersonal sensitivity test, compared to when the target is a member of the ingroup, or on a White targets interpersonal sensitivity test. These hypothesized relationships were tested and explored in order to determine the mechanism(s) accounting for this relation in an effort to try and understand why HPP may experience such a nonverbal decoding deficit compared to LPP on Black targets tests of interpersonal sensitivity.

Study 1 documents the phenomenon that HPP are less accurate than LPP at decoding nonverbal cues and that they are slightly less accurate when decoding members of a minority group they do not like. Three subsequent experiments pursue proximal states (i.e., cognitive/emotional/motivational states aroused in the testing situation that might help or harm performance on sensitivity tasks) as an explanation for the inverse relation between prejudice and accuracy. Study 2 manipulates emotion to determine if negative proximal states (e.g., anger and anxiety) can affect accuracy on interpersonal sensitivity tests. Study 3 examines cognitive load as a possible proximal state that could also affect accuracy. Study 4 examines lack of motivation as a proximal mechanism that could also hurt HPP accuracy. Finally, Study 5 links the naturally occurring proximal states of anger and anxiety to both prejudice level and accuracy – to find out whether these states serve as mediators of the relation between prejudice and accuracy on tests of interpersonal sensitivity when the targets are members of a minority group.

Results suggest that negative proximal states, more specifically anger and cognitive load do hinder performance on Black tests of interpersonal sensitivity and that these negative proximal states are linked to the experience of the highly prejudiced individual while completing an interpersonal sensitivity test involving Black targets. Highly prejudiced individuals also appear to withdraw effort on Black tests of interpersonal sensitivity causing an accuracy deficit. Implications, limitations, and future directions of these results are discussed.

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## An Examination of the Relation Between Prejudice and Interpersonal Sensitivity

### Chapter 1: Introduction

Modern prejudicial attitudes and discrimination toward minority group members have been linked to negative behavioral outcomes for both the target groups (Beal, O'Neal, Ong, & Ruscher, 2000) as well as for others who are present in the environment (De Dreu & Weingart, 2003). While social norms and even some laws have made prejudicial attitudes less explicitly apparent in many parts of our society, prejudicial attitudes are still very apparent worldwide. Because these attitudes are somewhat commonplace in everyday society it is only logical for researchers to explore how prejudicial attitudes affect different aspects of inter- and intrapersonal functioning. This dissertation examines how prejudicial attitudes towards Blacks may affect individuals' ability to accurately decode nonverbal cues from others who are both a part of their ingroup, as well as those who are members of an outgroup.

The relationship between prejudice and nonverbal communication has scarcely been examined in the psychology literature despite a plethora of research on both topics independently. This dissertation tests the hypothesis that high prejudiced persons (HPP) underperform low prejudiced persons (LPP) on interpersonal sensitivity tests.<sup>1</sup> This hypothesized relationship is tested and explored in order to determine the mechanism(s) accounting for this relation in an effort to try and understand why HPP experience such a nonverbal decoding deficit.

Limited research on prejudice and interpersonal sensitivity (Cline, 1955; Hall & Carter, 1999), along with findings on the relation of interpersonal sensitivity to

personality traits such as openness and tolerance (Hall, Andrzejewski, & Yopchick, in press), suggests that HPP will perform more poorly on interpersonal sensitivity tasks than LPP. In addition to being an under-explored area of research in both the prejudice and accuracy domains, there are also real-world implications of this research if HPP are indeed less accurate on interpersonal sensitivity tasks involving minority group members. One can imagine a scenario where a minority group member interviews for a potential job. Once the interview commences the interviewer may not think the candidate is competent, or even seriously interested in the position, based on their mannerisms during the interview. In actuality the candidate may really be conveying that he or she is uninterested in the position, or incompetent; however, another plausible possibility, given the hypothesized relation between prejudice and accuracy, is that the interviewer is a HPP who is experiencing a decoding deficit when being asked to interview a minority group member. The interviewer could be inaccurately picking up on the competency and interest nonverbal cues that the job candidate is displaying, causing the interviewer to make inaccurate inferences about the job candidate and potentially to pass over the minority group candidate for this job.

### *Overview*

This dissertation begins by documenting the phenomenon that HPP are less accurate than LPP at decoding nonverbal cues and that the HPP are even less accurate when decoding members of a minority group they do not like, or hold prejudicial attitudes toward (Study 1). Three subsequent experiments pursue proximal states (i.e., cognitive, emotional, or motivational states aroused in the testing situation that might

help or harm performance on sensitivity tasks) as an explanation for the inverse relation between prejudice and accuracy. Study 2 examines the proximal state of negative emotion (e.g., anger and anxiety) as a detrimental influence on interpersonal sensitivity tasks. Study 3 examines cognitive load as a possible proximal state that could be hurting HPP. Study 4 examines lack of motivation as a proximal mechanism that could also be hurting HPP accuracy. Study 5 ties the findings of Studies 2 and 3 together by linking naturally occurring negative proximal states with both accuracy deficits and prejudice toward Blacks.

See Table 1 for a visual overview of the dissertation studies.

### *General Interpersonal Sensitivity*

Before exploring the little research that has been done on nonverbal communication and prejudice, it is imperative to first develop some background on what exactly is meant by the term nonverbal communication. Nonverbal communication is most commonly thought of as “body language” and the message(s) that the face and body may communicate to others around us. For example, during an interview the interviewer may notice the polished appearance of the job candidate and infer that he or she would be very attentive to detail in their prospective job. Nonverbal communication encompasses both the nonverbal cues that the polished appearance signals to others, as well as the ability of the interviewer to notice these cues and then make an accurate inference about them. A more formal definition of nonverbal communication is communication effected by means other than words (Knapp & Hall, 2009). Nonverbal communication not only involves the more commonly known body language elements such as gestures, eye gaze,

and facial expressions, but also includes characteristics of the environment (i.e., lighting and temperature), interpersonal distance, physical characteristics of the person (i.e., facial structure, appearance, and odor), non-linguistic vocal utterances (e.g., “um” or “uh”), and pauses in speech and vocal intonation (Knapp & Hall, 2009).

It is important to keep in mind that the process of nonverbal communication involves the sending, or encoding of cues, as well as receiving, or decoding, of these cues. In an interaction, while one individual encodes a message, either consciously or unconsciously, another individual may pick up on the cues from this encoded message and try to accurately interpret these cues, or in other words, decode the person’s nonverbal behavior(s). The nonverbal cues that the person displays can have an intended meaning (i.e., are deliberately encoded) or they can be unintentional (i.e., unconsciously displayed). Effective nonverbal communication is dependent on both good encoding and decoding of nonverbal cues.

Interpersonal sensitivity is a term that is commonly associated with nonverbal communication. Interpersonal sensitivity refers to a broad construct that can include both perceiving others accurately and engaging in interpersonally appropriate behavior (Bernieri, 2001). For the purposes of this dissertation, the definition of interpersonal sensitivity is limited to the perception side in order to fully understand the decoding aspect of interpersonal sensitivity in relation to prejudice before talking about the combination of encoding and decoding in relation to prejudice.

The decoding part of interpersonal sensitivity is very important to everyday functioning and behavior. It is difficult to imagine social life without skill in processing

the behavior(s) and appearance of others. Every day, people notice and attend to countless details about others' speech, facial and bodily movements, vocal tone, physical appearance, and dress, among other characteristics. Once people notice these nonverbal cues, they may then draw countless inferences based on this information, even though such information may not provide much valid information about the person, and their interpretation of this information may be inaccurate. Furthermore, psychologists and lay people have long believed that the consequences of one's interpersonal accuracy (or inaccuracy) can be great. Because so much relies on these "snap judgments" it is not surprising that interpersonal sensitivity has captured the attention of organizational researchers (Byron, 2007), clinical psychologists (Firth, Conger, Kuhlenschmidt, & Dorsey, 1986), as well as social and personality psychologists from early in the history of the field (e.g., Allport & Kramer, 1946; Vernon, 1933) and remains an active area of research today (e.g., Ambady & Gray, 2002; Ames & Kammrath, 2004; Hall, Bernieri, & Carney, 2005; Pickett, Gardner, & Knowles, 2004).

Authors have generally considered interpersonal sensitivity to be a valuable skill for individuals to have (e.g., Hall & Andrzejewski, 2008; Izard, 1971; Nowicki & Duke, 1994; Rosenthal, Hall, DiMatteo, Rogers, & Archer, 1979). Interpersonal sensitivity is a desirable skill to have, as it is positively associated with many positive traits and outcomes while being inversely related to many negative psychosocial variables (Hall et al., in press).

*Prejudice and Interpersonal Sensitivity*

Other research on the negative correlates of interpersonal sensitivity gives us an idea of what the relationship between prejudice and accuracy may look like. A meta-analysis of psychosocial correlates of interpersonal sensitivity shows that interpersonal sensitivity is significantly negatively correlated with several negative attributes such as neuroticism, shyness, depression, and other self-rated negative traits (Hall et al., in press). While research specifically on the relation between prejudice and interpersonal sensitivity is mostly lacking, there has been research on constructs similar to prejudice that led me to believe there would be an inverse relation between prejudice and sensitivity such that those who are less prejudiced would be more skilled at interpersonal sensitivity. These characteristics include more tolerance (Borman, 1979, Cline, 1955; Rosenthal et al., 1979), less hostility toward others (Funder & Harris, 1986; Larkin, Martin, & McClain, 2002), less dogmatism (Ickes, Buysee, Pham, Rivers, Erickson, Hancock, Kelleher, & Gesn, 2000; Rosenthal et al., 1979), and more openness or open-mindedness (Christiansen, Wolcott-Burnam, Janovics, Burns & Quirk, 2005; Cline, 1955; Matsumoto, LeRoux, Wilson-Cohn, Raroque, Kooken, Ekman, Yrizarry, Loewinger, Uchida, Yee, Amo, & Goh, 2000; Realo, Allik, Nõlvak, Valk, Ruus, Schmidt, & Eilola, 2003).

However, prejudice, specifically, has only been given little attention in regards to its relation to interpersonal sensitivity (Cline, 1955; Hall & Carter, 1999). Even the few studies that did examine prejudice and sensitivity did not use measures that are commonly used by stereotype and prejudice researchers today. Cline (1955) examined

MMPI prejudice and its relation to interpersonal sensitivity of judging personality. Hall and Carter (1999) were the first researchers to actually measure general interpersonal sensitivity in relation to prejudice; however, they only examined benevolent sexism as a measure of prejudice. While the MMPI prejudice scale and benevolent sexism can be conceptually linked to prejudice, they do not cover the breadth of prejudicial attitudes that are typically discussed in the prejudice and stereotyping literature today and indeed benevolent sexism, because it measures an excessively idealized view of women, lacks the negativity commonly assumed to be part of the experience of prejudice.

Previous studies on prejudice and accuracy also focused exclusively on explicit measures, or more consciously or blatantly reported forms, of prejudice. Today, prejudice researchers are much more aware of the negative implications that implicit, or unconscious, prejudice may have. Implicit measures have never been used in examining the relation between interpersonal sensitivity and outgroup attitudes.

A review of the previous literature in this area led me to conclude that there was a research gap, in both the interpersonal sensitivity and prejudices literatures, examining the relation between prejudice and interpersonal sensitivity. The small number of studies that have addressed the relation between prejudice and accuracy did not necessarily cover the different prejudice measures and interpersonal sensitivity measures that are used in both fields. Therefore, a more comprehensive examination of the relation between prejudice and interpersonal sensitivity is necessary to further theories of interracial interpersonal interaction and interpersonal sensitivity.

*Explicit Versus Implicit Measures of Prejudice*

Most of the literature on interpersonal sensitivity has examined explicit measures of prejudice. Explicit measures of prejudice assess participants' prejudice level by blatantly asking them how they feel toward certain minority groups. Because explicit measures of prejudice can easily be monitored by the participant (e.g., if I am a student living in Boston, I may respond in a non-prejudicial manner because I assume that is how most of my peers would respond even though I may actually hold prejudicial attitudes toward others) other, less reactive, measures of prejudice should also be examined. Implicit prejudice measures attempt to correct for this bias by tapping into a participant's implicit, or unconscious, associations with particular groups. Through reaction time measures, researchers are able to assess whether or not people are implicitly prejudiced by asking them to respond to positive and negative words that individuals may have associated with particular minority groups (Greenwald, McGhee, & Schwartz, 1998).

The Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998) is one such measure of participants' negative associations with different minority groups. The IAT consists of stimuli representing both the ingroup and the outgroup and positive and negative words. The IAT uses reaction time measurements in order to assess negative associations with these groups using a scoring algorithm (Greenwald, Nosek, and Banaji, 2003). The IAT is not without its share of controversies and issues, however. Some criticize the IAT for containing systematic error variance (Mierke & Klauer, 2003), for being dependent on the stimulus materials (Bluemke & Friese, 2006), and for participants being able to "fake" their responses (Steffens, 2004). However, the IAT does have

predictive validity for many different behaviors ranging from exclusion of minority group members to verbal slurs and economic discrimination towards minority group members (Rudman & Ashmore, 2007). The IAT has never before been examined in relation to interpersonal sensitivity; therefore this dissertation attempts to fill this research gap by including both explicit and implicit measures of prejudice. The IAT is a measure of negatively biased associations with outgroup members and not a measure of prejudicial beliefs; however, the remainder of this study refers to the IAT bias effect as “implicit prejudice” for syntactical simplicity.

While this dissertation includes both implicit and explicit measures of prejudice in each of the studies, separate predictions are not made for the two types of prejudice. Differences in the results based on the two types of prejudice will be explored, as the comparison between the two forms of prejudice in the interpersonal sensitivity literature is a novel research topic.

While there has been little research on the relation between general interpersonal sensitivity and prejudice, there has been a more substantial body of research on the relationship between prejudicial attitudes and one specific type of interpersonal sensitivity, Jewish identification, which involves having participants discriminate whether or not a photograph is of someone who is Jewish or non-Jewish (L. F. Carter, 1948; Dorfman, Keeve, & Saslow, 1971; Elliott & Wittenberg, 1955; Himmelfarb, 1966; Lindzey & Rogolsky, 1950; Lund & Berg, 1946; Pulos & Spilka, 1961; Quany, Keats, & Harkins, 1975; Scodel & Austrin, 1957; Sprinthall, Lambert, & Sturm, 1971). Allport and Kramer (1946) were the first researchers to examine this relation and they discovered that

those who were better able to discern whether a photograph was of a Jewish or a non-Jewish face tended to be *more* anti-Semitic than those who performed more poorly on this face identification task. Considering that ability to detect social group membership is a kind of interpersonal sensitivity (Bernieri, 2001), this result lies in direct contrast to the work alluded to above that suggests that the ability to accurately decode states, traits, or other qualities in another person from minimal nonverbal cues is often correlated with positive personality traits and attitudes.

Over the next 30 years, researchers continued to study this question, producing more studies on anti-Semitic attitudes and Jewish face identification (L. F. Carter, 1948, Dorfman, Keeve, & Saslow, 1971; Elliott & Wittenberg, 1951; Himmelfarb, 1966; Lindzey & Rogolsky, 1950; Lund & Berg, 1946; Pulos & Spilka, 1961; Quany, Keats, & Harkins, 1975; Scodel & Austrin, 1957; Sprinthall, Lambert, & Sturm, 1971). However, the results varied on whether or not interpersonal sensitivity was associated with prejudice and the literature consisted of a large discussion on whether or not the correlations were influenced by bias, or the tendency for anti-Semitic respondents to almost always judge that a photograph was of a Jewish individual. Recent research suggests that the relationship between prejudice and the specific type of interpersonal sensitivity regarding Jewish identification is in line with previous research showing that interpersonal sensitivity is correlated with more positive traits (Andrzejewski, Hall, & Salib, 2009).

In sum, the ability to detect whether or not someone is a member of a particular minority group was at one time in social psychological research seen as a characteristic of

racially intolerant individuals, suggesting that some domains of interpersonal sensitivity are not generally associated with positive psychosocial characteristics. However, the current research suggests that the ability to accurately identify Jews is not a characteristic of HPP, confirming previous research that interpersonal sensitivity is generally a healthy skill for individuals to have. Therefore, it is likely that if other areas of interpersonal sensitivity and other prejudicial attitudes were examined, an inverse relationship between the two constructs would be found, where the more interpersonally sensitive individual is also less prejudiced.

*How This Dissertation Examines the Relation between Interpersonal Sensitivity and Prejudice*

A review of previous literature shows that there have only been two studies on the relation between prejudice and sensitivity to various kinds of content or accuracy for judging personality measures (Cline, 1955; Hall & Carter, 1999). The more typical type of interpersonal sensitivity decoding task (decoding affect) has rarely been examined in the literature and implicit measures of prejudice have never been examined in relation to interpersonal sensitivity. In addition, no one has attempted to discover the mechanism accounting for the inverse relationship that has previously been found between prejudice (or similar constructs suggesting biased attitudes, such as closed mindedness, etc.) and interpersonal sensitivity. In order to fill these lacunae, the inverse relationship between different types of prejudice and more general sensitivity must be confirmed (as opposed to the minority group identification type of interpersonal sensitivity examined previously; Andrzejewski et al., 2009). Therefore, a meta-analysis of eleven new studies examining

the relationship between prejudice and a test of recognizing emotions in the face constitute Study 1 of the dissertation.<sup>2,3</sup> Affect decoding has been examined relatively little in the current research on interpersonal sensitivity and prejudice, it seemed to be a perfect candidate for this set of studies. Affect decoding was chosen as the measure of interpersonal sensitivity because it is also a very ubiquitous skill. On a daily basis, people regularly attempt to decode the emotional states of their spouses, colleagues, neighbors, friends, and other individuals in order to facilitate interpersonal relationships.

The first study aims to confirm the inverse relationship between both implicit and explicit measures of prejudice and sensitivity for both Black and White targets (“targets” referring to the people whose emotional expressions are judged). The remainder of the studies describe efforts to determine the proximal mechanism accounting for the inverse relationship between prejudice and interpersonal sensitivity.

This dissertation focuses on racism (in Studies 2-5) as opposed to other kinds of prejudice such as sexism or homophobia in order to focus the research on one specific minority group in order to better understand the mechanism underlying the relationship between prejudice and accuracy. Targeting Blacks as the minority group of interest also allowed participants to complete a standardized affect decoding task with Black targets as well as an identically designed task that used White targets. The Diagnostic Analysis of Nonverbal Accuracy African American Adult form (DANVA2-AAAF; Nowicki, Glanville, & Demertzis, 1998) is a standardized interpersonal sensitivity measure that uses 32 Black faces depicting the emotions “happy,” “sad,” “angry,” and “fearful” while the DANVA2-AF (Nowicki & Duke, 1994, Nowicki & Carton, 1993) looks at these same

emotions in 24 analogous photographs of White targets. The DANVA2-AF is hereafter referred to as the White targets test and the DANVA2-AAAF is hereafter referred to as the Black targets test.

It should be noted that standardized tests of interpersonal sensitivity are typically non-equivalent in difficulty levels (i.e., some tests are more difficult than others). In fact, previous research has found that accuracy levels for Caucasian perceivers on the Black targets test are usually lower than the accuracy levels on the White targets test (Nowicki, Glanville, & Demertzis, 1998). The purpose of this dissertation was not to directly compare accuracy on the Black targets test to accuracy on the White targets test, but rather to see how prejudice and different proximal states differentially affect accuracy on both tests.

#### *Theoretical Mechanisms Behind the Prejudice and Interpersonal Sensitivity Relation*

There could be two types of mechanisms underlying the inverse relation between prejudice and interpersonal sensitivity: the mechanisms may be either proximal or distal. Proximal mechanisms refer to specific states that the decoders may be in at the time they are trying to decode their target. Possible proximal, or state, mechanisms behind the relationship would include factors such as motivation while completing the task at hand and cognitive load. Both of these states may affect participants' performance on the interpersonal sensitivity tasks such that participants who are not trying as hard on the task may not perform as well, and participants who are under cognitive load may not perform as well (Phillips, Tunstall, & Channon, 2007). HPP may withdraw effort when they are completing tasks based on members of the group they do not like and because they are

withdrawing effort, they may experience a decrease in performance. The cognitive load hypothesis is that the HPP are experiencing taxed cognitive resources while completing the sensitivity task. They may know they do not like the group they need to make judgments about; however, they may also know they should be “color blind” in the task and not allow race to influence their performance. This discrepancy may produce enough cognitive deficit to hinder interpersonal sensitivity performance. These proximal states may be associated with how prejudiced an individual is and therefore may partially account for the inverse relationship between prejudice and accuracy because they are hypothesized to be experienced by HPP while completing the task, but not by LPP.

At the same time there may be more distal mechanisms (e.g., personality traits) accounting for the inverse relation between prejudice and sensitivity. Distal mechanisms refer to more enduring, or trait, attributes of an individual. Perhaps some personality trait such as openness, conscientiousness, tolerance, hostility, self-monitoring, extraversion, or neuroticism may be associated with both prejudice and sensitivity in a way that would account for the relationship between prejudice and accuracy. If distal mechanisms produce the relation between prejudice and interpersonal sensitivity then there might be no direct causal link between prejudice and interpersonal sensitivity; the distal trait would be correlated with the higher level of prejudice and the distal trait would also be correlated with higher interpersonal sensitivity. However, there could be another pattern of causation such that the distal trait is correlated with prejudice but is not correlated with interpersonal sensitivity, rather prejudice is causing the decrease in interpersonal sensitivity performance. Yet another possibility is that both proximal and distal factors

contribute to the relationship between prejudice and sensitivity and the extent to which each determines the relationship would need to be examined. Distal mechanisms are not considered in this dissertation.

## Chapter 2: Study 1 – Meta-Analysis

Study 1 is a meta-analysis of eleven new studies conducted by the author of this dissertation on the relation between prejudice (towards a variety of minority groups) and measures of interpersonal sensitivity. Included in these eleven studies are effect sizes from the remaining four studies in this dissertation. The meta-analysis was conducted as a preliminary investigation into the relation between prejudice and accuracy and was then updated at the completion of data collection for this dissertation. This review of prejudice and accuracy covers studies in non-clinical adult populations and covers prejudicial attitudes towards Jews, Hispanics, Arabs, Blacks, and homosexuals.

The limited research on prejudice and accuracy, along with findings on the relation of interpersonal sensitivity to personality traits such as openness and tolerance (Hall et al., in press), led me to believe that HPP will perform more poorly than LPP on decoding tasks. It was also predicted that this inverse relation would be stronger for interpersonal sensitivity tasks that involved judgments of members of a minority group (specifically, Black targets), as opposed to tasks involving White American targets because perceivers may have to deal with additional proximal influences (e.g., anxiety) that hinder decoding accuracy on tasks involving minority group members. Since this study was the first of its kind, prejudice was operationalized as prejudice towards a variety of outgroup members, as opposed to one specific outgroup. Previous research has suggested that being prejudiced can be considered to be a general trait even if one's greatest hostility may be towards a particular group (Bierly, 1985).

The study present the overall meta-analysis, and the details of each of the previously unpublished studies can be found in Appendix A.

## Method

### *Statistical Methodology*

The Pearson correlation ( $r$ ) between the prejudice measure and the interpersonal sensitivity measure was the effect size indicator. The correlations were transformed into the Fisher- $z$  metric before analysis, and were summarized across studies in terms of both the unweighted and weighted (by sample size) mean correlations. Fixed effects models were calculated, as well as heterogeneity statistics. Also presented is the “file drawer  $N$ ” or number of null results (averaging  $r = 0.00$ ) required to bring significant combined  $p$ -values into non-significance by a one-tail test (Rosenthal, 1991). All statistics were computed with the aid of Comprehensive Meta-Analysis Software (Bornstein, Hedges, Higgins, & Rothstein, 2005).

### *Maintenance of Independence*

In several of the studies, participants were given more than one measure of prejudice as shown in Tables 2 and 3. When both explicit and implicit measures of prejudice were given in the same study, these were always analyzed separately, meaning that independence was maintained within each analysis. When more than one explicit (or more than one implicit) prejudice measure was given (e.g., one regarding Blacks, another regarding homosexuals), these were averaged and then correlated with the accuracy score on the White or Black stimuli tests in order to produce one effect size for each test. White and Black targets tests were meta-analyzed separately, ensuring independence within an

analysis. For completeness, the correlations for individual prejudice measures are shown in Tables 2 and 3 but, as noted above, what was entered into the meta-analysis was the correlation of the averaged prejudice measures with accuracy within a given study.

### *Methodological Overview of the New Studies*

While the specifics of the eleven new studies are discussed in Appendix A and have some minor differences, for the most part the methodology was very similar across all of them. Participants were asked in either a group or individual setting to complete the DANVA2-AF, DANVA2-AAAF, or both of these interpersonal sensitivity measures. The DANVA2-AF and DANVA2-AAAF tests are standardized sensitivity measures that use 24 (White) or 32<sup>5</sup> (Black) facial photographs depicting the emotions “happy,” “sad,” “angry,” or “fearful.” The tests are hereafter referred to as the White targets test and Black targets test, respectively. The participants completed the Black targets test and the White targets test at their own pace. Participants were also asked to fill out an explicit measure of prejudice, an implicit measure of prejudice, or both an explicit and implicit measure of prejudice, toward Jews, Hispanics, Arabs, Blacks, and/or homosexuals. Participants also filled out a basic demographics questionnaire that asked, among other things, about their contact with different minority group members. All of the studies report the results removing African-American participants from the analyses.

### Results

Table 2 shows the correlations between explicit prejudice measures and accuracy (as measured by various tests of interpersonal sensitivity), while Table 3 shows the correlations between implicit prejudice measures and accuracy. There are 9 studies

presented in the meta-analysis of correlations between explicit prejudice and accuracy (Table 2) and 9 studies presented in the meta-analysis of correlations between implicit prejudice and accuracy (Table 3). The correlations are further divided based on whether they were conducted on primarily White stimuli (DANVA2-AF) or whether they were conducted on a Black stimuli test set (DANVA2-AAAF). The DANVA2-AF was considered to be a primarily White stimulus set because it only contains only one African American target out of 24 total targets. In the studies that included the amount of self-reported contact with Blacks the relation between prejudice and accuracy for judging Black targets controlling for the amount of self-reported contact is also reported.<sup>6</sup>

The results are reported in meta-analytic form in Table 4. All of the entries were independent within a given analysis but not between analyses (i.e., Black versus White and implicit versus explicit). The overall results showed an inverse relation between explicit prejudice and accuracy for White targets (weighted mean  $r = -0.12$ , combined  $Z = -3.44$ ,  $p < .001$ ; Stouffer method, Rosenthal, 1991) and a somewhat stronger inverse relation for Black targets (weighted mean  $r = -0.21$ , combined  $Z = -4.84$ ,  $p < .001$ ) whereby the more prejudiced participants were less accurate than the less prejudiced participants when the target was White and even less accurate when the target was Black. However, the contrast between Black and White targets was not significant when I avoided non-independence by only using the Black target effect sizes correlated with prejudice towards Blacks from Studies 5, 7, Dissertation Study 2, and Dissertation 5 (contrast  $F = 1.46$ ,  $p = .14$ ). In other words, the contrast compares the Black effect sizes from Study 5, Study 7, Dissertation Study 2, Dissertation Study 3, Dissertation Study 4,

and Dissertation Study 5 to the White effect sizes from Study 6, Dissertation Study 3, and Dissertation Study 4.<sup>7</sup> Dissertation Studies 3 and 4 are on both lists because the tests were presented in a between subjects design, therefore, the effect sizes are independent from one another. Another method to deal with the non-independence introduced by having the same participants complete both the Black and White targets tests in Studies 5, 7, Dissertation Study 2, and Dissertation Study 5 is to compute a correlated coefficient contrast which compares the effect sizes for both tests while taking into account how correlated the Black test is with the White test (Meng, Rosenthal, & Rubin, 1992). The correlated coefficient contrast computed for Studies 5, 7, Dissertation Study 2, and Dissertation Study 5 was marginally significant (combined correlated contrast  $Z = 1.80$ ,  $p = .07$ ; White weighted  $r = -0.09$ ,  $p = .06$ ; Black weighted  $r = -0.20$ ,  $p < .001$ ), suggesting that the inverse relation between prejudice and accuracy is somewhat stronger for the Black targets tests than the White targets tests.

The relation was also negative between implicit prejudice and accuracy for Black targets (fixed weighted mean  $r = -0.08$ , combined  $Z = -2.02$ ,  $p < .05$ ) whereby the more implicitly prejudiced participants were also less accurate; however, this relation was not statistically significant for White targets (fixed weighted mean  $r = -0.04$ , combined  $Z = -0.99$ , *ns*). Correlated coefficient contrasts that controlled for non-independence in Studies 2, 3, 5, 7, Dissertation Study 2 and Dissertation Study 5 by taking into account how correlated the Black and White tests were with each other revealed no statistically significant differences between the effect sizes for Black targets and White targets though

the effect was slightly larger for the Black targets (combined correlated contrast  $Z = .49$ , *ns*; White weighted  $r = -0.05$ , *ns*; Black weighted  $r = -0.09$ , *ns*).

The file-drawer  $N$  statistics are also presented in Table 4 and suggest that the statistically significant relation between explicit prejudice and accuracy could not easily be diminished by the null results of a few studies. The heterogeneity statistics are also presented in Table 4 and because none of them were statistically significant no further investigation of potential moderators was undertaken. It should also be noted that partialing out contact with Blacks did not significantly change the prejudice-accuracy relation in the studies that included measures of contact.<sup>8</sup> This means that the prejudice effect is not the result of lower exposure to Blacks on the part of the participants.

Examination of Tables 2 and 3 shows that the prejudice-accuracy phenomenon is not constrained to a specific outgroup prejudice being inversely related to a decoding deficit in targets associated with that specific prejudice. Instead prejudice, in general, appears to be related to a decoding deficit in both ingroup and outgroup targets. This relation holds true when the prejudice is unrelated to the outgroup target and when various prejudice measures were averaged together to create a composite, or general, measure of prejudice.

### Discussion

This meta-analysis found a statistically significant inverse relation between majority persons' interpersonal sensitivity and prejudice such that those who were most accurate at nonverbal decoding tasks were also the ones who were the least prejudiced towards outgroup members. This relation also increased somewhat in size when the

prejudiced person was asked to decode nonverbal information displayed by an outgroup (in this case, Black) target. The HPP seem to experience a general decoding deficit compared to their less prejudiced counterparts that is not specifically related to members of the outgroup(s) he/she does not like, and somewhat surprisingly, this deficit even occurs when the explicitly prejudiced person is decoding White targets.

The results of this meta-analysis fit with other research showing that interpersonal sensitivity is negatively correlated with other negative personality attributes such as neuroticism, depression, and other self-rated negative traits (Hall et al., in press). Other research has also found negative correlations between interpersonal sensitivity and other personality attributes that some may consider conceptually similar to prejudice, such as intolerance, as discussed in Chapter 1.

Now that the relation between prejudice and sensitivity for both Black and White targets has been confirmed, researchers should focus on determining the mechanism driving this inverse relationship, for both explicit and implicit measures of prejudice. As discussed in the overview, the mechanism(s) may be distal, proximal, some combination of the two, or different depending on whether the targets of the task are minority group members or not.

One important question raised by the results of this meta-analysis is why are the relations between prejudice and accuracy stronger for explicit measures of prejudice compared to implicit measures of prejudice? There are several speculations one can make about this relation. Previous research has theorized that explicit prejudice better predicts more explicit (i.e., consciously controlled) behaviors (Dovidio, Kawakami, & Gaertner,

2002). Decoding emotions could possibly be considered a very explicit type of task because the participants know what the task entails and make conscious decisions about their answers. Tracy and Robins (2008) found that deliberating over one's answers improved accuracy at decoding some emotions in the face, and Patterson and Stockbridge (1998) found that deliberating improved accuracy on an interpersonal accuracy task if participants were not simultaneously under cognitive load. Therefore, it might make sense that explicit prejudice would better predict performance on the decoding task than an implicit measure. However, this can only be speculation at the present time.

While the relation between explicit prejudice and accuracy is stronger, it is important to note that the effects for both the implicit-accuracy relation and the explicit-accuracy relation are statistically significant and in the same direction. Regardless of the type of prejudice examined, prejudicial attitudes of at least two different types are related to a decoding deficit on interpersonal sensitivity decoding tasks.

The effect sizes concerning the relation between prejudice and accuracy from the remainder of the Studies in this dissertation were incorporated into the overall meta-analysis and therefore are not reported within the text of the remaining studies (i.e., Studies 2, 3, and 4). Additionally, the meta-analytic results from Study 1 revealed that in order to attain good power to find such small effects, which are common in interpersonal sensitivity research (See Hall, Andrzejewski & Yopchick, in press), the sample sizes would need to be much larger than those employed in the studies.<sup>9</sup> Therefore, I do not expect the effect sizes for the relation between prejudice and accuracy to be significant in all of my dissertation studies.

This meta-analysis revealed that there is indeed an inverse relation between prejudice and sensitivity and that this relationship is slightly stronger when the targets of the interpersonal sensitivity task are Black and perceivers are limited to non-Black participants. Now that this relation has been documented across a number of different prejudice measures, the remainder of this dissertation focuses on why HPP are less sensitive than their less prejudiced counterparts.

### Chapter 3: Study 2 – Emotion Induction

Previous research has suggested that emotion manipulations can produce various processing effects. The encoding, recognition, and retrieval of information have all been shown to be influenced by emotion (Isen, 1984; Schwarz & Bless, 1991). Because encoding, recognition, and retrieval of information are all processes that could be applied to the accurate decoding of nonverbal cues, it is logical to hypothesize that emotion manipulations would also influence nonverbal accuracy through interfering with (or facilitating) the encoding, recognition, and retrieval of information necessary to make accurate nonverbal cue judgments.

There has not been much research on how various emotions can affect nonverbal accuracy; however, there has been some research suggesting that an influence does exist. Sad mood can decrease nonverbal accuracy, both when the mood is experimentally manipulated and when it is associated with lower naturally occurring sad mood as measured by lower scores on the Beck Depression Inventory (Ambady & Gray, 2002; Chepenik, Cornew, & Farah, 2007). Hänggi (2004) also found that stress can decrease accuracy on interpersonal sensitivity tasks and Schroeder (1995; Shroeder & Ketrow, 1997) found that socially anxious participants had more difficulty processing on an interpersonal sensitivity test than their less anxious counterparts.

Study 2 induces the proximal states of anger and anxiety through autobiographical recall in order to ascertain their effects on accuracy. Anxiety was chosen as one of the manipulated proximal states because previous research has demonstrated anxiety's detrimental affect on accuracy and its relation to interracial interaction (Littleford,

O'Dougherty Wright, Sayoc-Parial, 2005). While previous research has not linked anger to interpersonal sensitivity, there has been other research on the detrimental influence of negative mood states such as sadness on accuracy (Ambady & Gray, 2002) and anger is a proximal state that is commonly associated with prejudice (Hugenberg & Bodenhausen, 2003).

### *Study Predictions*

It was predicted that the induced proximal states of anger and anxiety would decrease accuracy in both HPP and LPP when participants were completing both the Black and White targets test. However, the negative emotions may have a bigger impact on the Black targets test than the White targets test. This difference in the impact of negative emotion on the White targets test compared to the Black targets test could be predicted because the negative proximal states could act as a cognitive load, which when combined with the (presumed) slight load of being asked to decode Black targets, would be enough to hinder performance on the Black targets test. The load of experiencing the negative emotions may not be great enough to produce an accuracy deficit on the White task. However, the additional load of experiencing anger added to the already existing load of participants completing the Black targets test may be enough to produce an accuracy deficit. No one has researched negative emotion's impact on Black targets tests of interpersonal sensitivity; therefore, all predictions are tentative.

The proximal state manipulation was not predicted to interact with either implicit or explicit prejudice. There was no predicted interaction between proximal states and prejudice because the manipulated proximal states of anger and/or anxiety were not race-

related and therefore the manipulations should have the same impact on both HPP and LPP. If participants were asked to think about anger or anxiety in terms of an interracial interaction, then the interaction of prejudice and mood prediction would have been predicted because such recollections would be expected to have a more negative effect on HPP than LPP.

## Method

### *Participants*

Participants consisted of 132 (48 men, 7 unreported) Northeastern University undergraduate students who received partial credit in an introductory psychology course in exchange for their participation in the study. For this sample the ethnic percentages were 66.4% White, 3.6% African-American, 9.5% Hispanic, 3.6% Middle Eastern, 8.0% Asian, 0.7% Multicultural, and 2.9% “Other.” All African-American participants were excluded from the analyses.

### *Materials*

*Black Targets Test and White Targets Tests.* The Black targets test and White targets test used in the Studies from the meta-analysis in Study 1 were completed in this experiment as well. See Chapter 2 for a full description of the tests.

*Implicit Association Test.* The Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998) assesses participants’ negative associations with Blacks, referred to as implicit prejudice in this dissertation. The IAT was conducted with Media Lab and DirectRT software (Jarvis, 2006) and was administered individually on a personal computer. The IAT was scored using the revised algorithm presented in

Greenwald, Nosek, and Banaji (2003). Higher scores mean that the participant has more negative associations with Blacks, compared to Whites, as determined by calculating response latencies on tasks that asked participants to match different pictures (race White or race Black) with positive and negative words.

*Attitudes Toward Blacks Scale.* Black explicit prejudice was measured with the Attitudes Toward Blacks Scale (Brigham, 1993) on which participants rated the extent they agree with statements such as “If a Black person were put in charge of me, I would not mind taking advice and direction from him or her” (reverse scored) and “I enjoy a funny racial joke even if some people might find it offensive.” (See Appendix B.)

*Mood Induction Task.* Participants were asked to write about a neutral (describe your dorm room), anger provoking, or anxiety provoking event for five minutes total, and were then asked to complete either the Black targets test or White targets test. This mood induction task has been validated and used in other research designs (Brewer, Doughtie, & Lubin, 1980; Westermann, Spies, Stahl, & Hesse, 1996).

### *Procedure*

Participants were asked to complete one of the mood induction tasks (neutral, anxious, or angry), the Black targets test, the White targets test, the African-American IAT, the Attitudes Toward Blacks Scale, and a brief demographics survey (see Appendix C). Participants completed the experiment individually in a small computer lab on a standard desktop computer using Media Lab and Direct RT (Jarvis, 2006) software.

## Results

The effects of emotion and racial attitudes were examined separately for the Black and White targets tests and separately for implicit and explicit prejudice. Results for implicit prejudice are presented first, followed by the results for explicit prejudice. All African-American participants were removed from the analyses.<sup>10</sup>

In accord with expectations, participants reported being significantly more angry in the angry condition ( $M = 5.50$ ) than participants in the neutral condition ( $M = 1.00$ ),  $t(84) = 17.75, p < .001$ . Participants also reported being significantly more anxious in the anxious condition ( $M = 1.76$ ) than participants in the neutral condition ( $M = 1.00, t(80) = 3.15, p < .01$ .

### *Black Targets Test*

A one-way analysis of variance (ANOVA) of mood state (angry, anxious, neutral) on Black targets test accuracy was first conducted. An omnibus  $F$  test suggests that there was a significant effect of emotional state,  $F(2, 126) = 3.71, p < .05$ . A planned contrast revealed that anger significantly reduced accuracy relative to the neutral condition,  $F(1, 129) = 7.27, p < .01$ , and while anxiety also decreased accuracy, the mean was not significantly lower than for participants in the neutral condition,  $F(1, 129) = 2.58, ns$  (means are reported in terms of percentage accuracy; angry  $M = 66.6$ , anxious  $M = 68.2$ , neutral  $M = 70.6$ ). Then, a 2X3 ANOVA (implicit prejudice: LPP vs. HPP X mood: angry, anxious, neutral) was conducted on the accuracy scores on the Black targets test. There was a main effect of mood state, as observed in the one-way ANOVA,  $F(2, 126) = 3.62, p < .05$ . As predicted, there was no interaction of manipulated mood with implicit

prejudice,  $F(2, 126) = .55, ns$ . A 2X3 ANOVA (explicit prejudice: LPP vs. HPP x mood: angry, anxious, neutral) was conducted on the accuracy scores on the Black targets test as well. The main effect of mood state was again observed,  $F(2, 126) = 3.41, p < .05$ , and there was no interaction of manipulated mood with explicit prejudice,  $F(2, 126) = .13, ns$ . Both implicit and explicit prejudices were median split in order to analyze interaction effects.<sup>11</sup> See Table 5 for a display of the means.

#### *White Targets Test*

A one-way ANOVA of mood state (angry, anxious, neutral) on White targets test accuracy was first conducted. An omnibus  $F$  test was not significant,  $F(2, 129) = 2.17, p = .12$ . However, anxiety did produce a marginal increase in accuracy on the White test compared to the neutral condition,  $F(1, 129) = 3.55, p < .10$ . See Table 6 for a display of the means. Then, a 2X3 ANOVA (implicit prejudice: HPP vs. LPP X mood: angry, anxious, neutral) was conducted on White targets test accuracy scores.<sup>12</sup> There was no main effect of mood state,  $F(2, 126) = 2.14, ns$ , and there was no interaction between implicit prejudice and mood state,  $F(2, 136) = .11, ns$ . A 2X3 ANOVA (explicit prejudice: LPP vs. HPP x mood: angry, anxious, neutral) was conducted on the accuracy scores on the White targets test as well. The main effect of mood state was again not significant,  $F(2, 126) = 2.08, ns$ , and there was no interaction of manipulated mood with explicit prejudice,  $F(2, 126) = 1.33, ns$ .

#### Discussion

The results of Study 2 suggest that the negative emotion proximal state of anger had a negative impact on accurate emotion recognition on a Black targets test of

interpersonal sensitivity. The proximal state manipulation did not interact with either implicit or explicit prejudice as predicted. There was no predicted interaction between proximal states and prejudice because the manipulated proximal states of anger and/or anxiety were not race-related and therefore the manipulations should have had the same impact on both HPP and LPP. If participants were asked to think about anger or anxiety in terms of an interracial interaction, then the interaction of prejudice and mood prediction would have been predicted because such recollections would be expected to have a more negative effect on HPP than LPP.

Although anxiety did produce an unexpected increase in accuracy on the White targets test, in this study I was more interested in exploring whether anxiety and/or anger could decrease accuracy on the Black targets test and therefore, the increase in accuracy on the White targets test is not considered to be central to the hypotheses being explored in this dissertation. There was no interaction between the emotion manipulation and prejudice on the White targets test.

Study 2 provides evidence that anger is a proximal state that has the capability to hinder performance when judging Black targets. This negative emotion manipulation did not have an impact the White targets test. However, this is not to say that a manipulation of anger could never be large enough to produce an accuracy deficit on the White targets test. The participants completing the Black targets test may have been more cognitively loaded to begin with because the Black targets test can be thought of as being more novel, and thus perhaps more cognitively taxing than the White targets test. Therefore, the additional load of anger added to the cognitive load of being asked to complete a

Black targets test was enough to decrease accuracy. However, the anger manipulation alone was not enough to produce an accuracy deficit on the White targets test. This is not surprising because everyone (e.g., both HPP and LPP) should be somewhat cognitively loaded when they are completing the Black targets test, both because of its novelty and because research shows that interracial interactions are anxiety provoking for everyone (Blascovich, Mendes, Hunter, Lickel, & Kowai-Bell, 2001; Devine & Vasquez, 1998) and that anxiety can be construed as a type of cognitive load, impairing performance, especially if these individuals have relatively high levels of racial bias (Richeson, Baird, Gordon, Heatherton, Wyland, Trawalter, & Shelton, 2003, Richeson & Shelton, 2003). Therefore, on the Black targets test, the negative emotion serves as an additional source of load that inhibits accuracy, but the emotion alone, without the additional cognitive load of the novelty is *not* enough of a load to hinder performance on the White targets test. If anger does serve as a cognitive load then just cognitive load should have the same impact on the Black and White targets tests.

If HPP are experiencing anger more than the LPP does while completing the Black targets test, it could possibly account for why HPP perform more poorly on Black target tests than their lower prejudiced counterparts as described in Study 1. However, further evidence into how anger may be affecting performance, as well as linking anger to the experience of HPP while completing Black targets test of interpersonal sensitivity needs to be further explored.

As stated in the overview, previous research has suggested that emotion manipulations can produce various processing effects and this study also gives support to

the notion that negative emotion can negatively impact performance on a Black targets test of interpersonal sensitivity. Part of my argument as for why anger decreased performance on the Black targets test but not on the White targets test is that the proximal states of anger and anxiety acted as a cognitive load, which when combined with the (presumed) slight load of being asked to decode Black targets, was enough to hinder performance on the Black interpersonal sensitivity task. The load of experiencing the negative emotions was not great enough to produce an accuracy deficit on the White task. However, the additional load of experiencing anger added to the already existing load of participants completing the Black targets test was enough to produce an accuracy deficit. This interpretation would be more directly supported if a cognitive load task administered while completing an interpersonal sensitivity test also decreased performance on a Black targets test, but not a White targets test. Again, the load of being asked to complete an interpersonal sensitivity task on Black faces combined with additional cognitive load should hinder performance, whereas the cognitive load alone (i.e., the White targets test) should not hinder performance. Study 3 experimentally explores these questions.

#### Chapter 4: Study 3 - Cognitive Load

Study 3 expands on Study 2 by further examining what proximal state the HPP may be experiencing while completing the Black targets test, therefore hindering their performance. More specifically, this study examines the impact of cognitive load on performance on interpersonal sensitivity tasks involving either Black or White targets. Assuming interpersonal sensitivity judgments require attentional capacity or working memory (Mah, Arnold, & Grafman, 2004) in addition to other mechanisms, then additional taxing of these resources may result in a decrease in performance. Participants under load should do worse than participants under less load.

There has been some research on cognitive load's impact on interpersonal sensitivity tasks; however, the results have been inconsistent. Phillips et al. (2007) found that cognitive load hindered performance on certain interpersonal sensitivity tasks but not others. More specifically, they found that cognitive load hinders performance on the Profile of Nonverbal Sensitivity (PONS), which is a standardized interpersonal sensitivity test that requires perceivers to make judgments about affective states or situations that a female target is acting out in videoclips (Rosenthal et al., 1979). However, cognitive load did not influence performance on the Interpersonal Perception Test (IPT; Costanzo & Archer, 1989) which is a standardized interpersonal sensitivity test that asks perceivers to make both situational inferences about either deception, kinship, intimacy, competition, or status from videotape clips, though performance on the load task was impaired, meaning they could not fully attend to both the cognitive load task and the IPT at the same time. Patterson and Stockbridge (1998) used the IPT and found that cognitive load

differentially affected perceivers' accuracy depending on whether they were given instructions to make judgments based on their first impressions compared to instructions to pay attention to the nonverbal cues. More specifically, Patterson and Stockbridge (1998) found that cognitive load helped participants when they were given the first impression strategy but that it hurt them when they were told to use the nonverbal cue strategy which was operationalized as carefully looking for any specific cues (i.e., facial expressions, posture, and gaze patterns) in order to make their accuracy judgments. This makes sense if the nonverbal cues strategy is conceptualized as being more cognitively taxing than the first impressions strategy. Phillips and colleagues (2008) also completed another study that revealed that cognitive load decreased performance on an emotion recognition decoding task when there were many different labels to choose from, but did not impact performance when participants were asked to decide whether or not two faces were representing the same emotion (i.e., a much easier task). While researchers have found different effects across different interpersonal sensitivity tests, no one has examined whether cognitive load affects performance on either the White targets DANVA or the Black targets DANVA.

In addition, some literature has suggested that the experience of being in a negative mood state and trying to regulate that mood can be considered to be cognitively taxing (Gray, 2001; Ikeda, Iwanaga, & Swiwa, 1996; Richards & Gross, 2000). This research suggests that cognitive load and negative mood states should similarly act upon interpersonal sensitivity tests and thus further supports the interpretation of the results of Study 2.

This experiment manipulates cognitive load to examine its influence on decoding performance on tests involving both White and Black targets. In addition to furthering our knowledge of how cognitive load affects emotion decoding tasks, this study will be the first to examine the effect of load on minority target decoding.

### *Study Predictions*

The previous literature on cognitive load's impact on accuracy has been mixed. However, no one has looked at the influence of cognitive load on the DANVA. Judgments of basic emotions are likely to be quite automatic, at least when they have been examined on White targets (Tracy & Robins, 2008). Therefore, load should not have much of an effect on White targets tests of basic emotions judgments, such as the DANVA. However, the IPT and the PONS are likely to be much less automatic than the DANVA because perceivers do not have an automatic (i.e., evolutionarily preprogrammed) understanding of how people act when processing the cues involved in those two tests which may explain the mixed results discussed in the overview of this study. The fact that the DANVA shows only basic emotions could potentially make the test more automatic, which would suggest that cognitive load would not hinder performance on the White test, as argued by Tracy and Robbins (2008). In addition, none of the previous research on cognitive load examined the impact of load on tests involving outgroup members. Therefore, the following predictions were tentative. It was predicted that cognitive load would act in the same way as manipulated anger did in Study 2, producing an accuracy deficit on the Black targets test but not on the White targets test.

## Method

### *Participants*

Participants consisted of 184 (75 men, 6 unreported) Northeastern University undergraduate students who received partial credit in an introductory psychology course in exchange for their participation in the study. For this sample the ethnic percentages were 71.2% White, 3.8% African-American, 6.0% Hispanic, 1.1% Middle Eastern, 9.8% Asian, 3.8% Multicultural, and 1.1% “Other.” All African-American participants were excluded from the analyses.

### *Materials*

Participants completed either the Black or White targets tests in the load or no-load conditions, the IAT, the Attitudes Toward Blacks Scale, and a background questionnaire. Cognitive load was operationalized by the manipulation of either the 2-back (high load) or no-back (low load) visual n-back task.

*Black Targets Test and White Targets Tests.* The Black targets test and White targets test used in the studies from the meta-analysis in Study 1 and the experiment in Study 2 were completed in this experiment as well. See Chapter 2 for a full description of the tests.

*African American Implicit Association Test and Attitudes Toward Blacks Scale.* The same versions of the African-American IAT and the Attitudes Toward Blacks Scale that were described in the Methods section of Study 2 (Chapter 3) were used in this study as well.

*Background questionnaire.* Participants filled out a basic demographic survey that asked about age, ethnicity, gender, and religious affiliation.

*Cognitive load manipulation.* The cognitive load manipulation was a visual n-back task. This cognitive load manipulation did not exactly replicate what Phillips et al. (2007) did when examining the relation between cognitive load and accuracy on an interpersonal sensitivity test, but was very similar. They used an auditory version of the load task and the present study used a visual load task in order to keep the channel of information consistent with the interpersonal sensitivity tests for ease of presentation. This same-channel procedure allowed the cognitive load task and the sensitivity tests to be implemented on the equipment present in the lab. The no-back, or no cognitive load, task was meant to be a cognitively simple task to perform while the 2-back task was meant to be a more cognitively taxing, or difficult, task for the participants to complete.

In the no-back condition, the participants were presented with a string of letters that were presented one letter at a time on the computer screen interspersed with the slides from either the Black targets DANVA or the White targets DANVA. Embedded in this string of letters was the target letter “X.” The target letter was presented 25% of the time in both the no-back and 2-back conditions. At the beginning of the task participants were instructed that the target letter for this task was the letter “X” and that every time the target letter was presented before a DANVA slide they should respond “yes” to the question “Did you see the target letter?” when it was asked after the DANVA slide by striking a key on a standard keyboard. The response items for the DANVA (i.e., happy, sad, angry, and fearful) were presented on the same slide as the DANVA photograph and

participants had to provide a response before moving on with the experiment. Therefore the order of presentation for the no-back condition was follows: (1) participants were told that the target letter is “X,” (2) the participants then saw a screen with one letter presented on the screen for two seconds, (3) the participants then saw a screen with one of the DANVA photographs and the response options presented on it, (4) the participants were then asked if the letter they saw before the previous DANVA slide was the target letter (in the no-back condition, the letter “X”). The participants repeated this series of steps until they completed the entire DANVA test (24 slides for the White targets test and 31 slides for the Black targets test).

In the cognitive load condition, or 2-back condition, the participants again saw a string of letters that were presented one letter at a time interspersed with slides from either the Black targets test or the White targets test. However, in the 2-back task the target letter was the letter that was presented two letter trials before the current letter presented on the screen. This task required the participants to pay attention to the order of the letters presented individually in order to correctly determine whether or not they saw the “target” letter which again was the letter that matched the letter that was presented two letter trials before the current letter slide they were on. The order of presentation for the 2-back condition was as follows: (1) the participants were instructed that the target letter in this task was the letter that matched the letter that was presented two letter trials previously, (2) the participants were then presented with a screen with a single letter in the string on it, followed by a slide from either the White targets test or the Black targets test, (3) the participants were then presented with a screen that asks if the letter that they

just saw before the DANVA slide was the same letter that was presented two letter screens previously. If the participants thought that they saw the “target” letter then they responded “yes” to the question “Where you just presented with the target letter” by striking a key on a standard keyboard. See Table 6 for a visual presentation of the letter strings used in the no-back and 2-back conditions. In both of the cognitive load conditions the participants completed the task while simultaneously completing either the Black targets test or the White targets test.

### *Procedure*

Participants completed the experiment individually in a small computer lab on a standard desktop computer using Media Lab and Direct RT (Jarvis, 2006) software. The cognitive load task combined with the interpersonal sensitivity tests (Black targets test or White targets test) was presented first, followed by IAT, the Attitudes Toward Blacks Scale, and a demographics questionnaire.

## Results

### *Accuracy on Cognitive Load Task*

In order to have a better understanding of the data, each of the cognitive load tasks (the 2-back and the no-back) were scored for accuracy.

The means on the cognitive load tasks were converted to percentage correct in order to account for the different numbers of items on the Black and White tests. Results revealed a main effect of accuracy such that participants were more accurate on the load task when they were in the 2-back condition than when they were in the no-back condition,  $F(1, 175) = 21.02, p < .01$  (no-back  $M = 76.0$ , 2-back  $M = 91.0$ ). This result

suggested that the participants in the no-back condition may have failed to follow instructions on the load task; therefore, the participants who scored below 90% accuracy on either load condition were removed from the analyses of nonverbal decoding accuracy in order to make sure the our results were not derived from a failure of the participants to follow instructions.

Removing participants who did not score at least 90% accurate on their cognitive load task dropped the sample size to 115 participants, from 177 non-Black participants. The percentage correct means for the new sample were: no-back  $M = 96.3$  and 2-back  $M = 95.3$ .

The effects of cognitive load and racial attitudes were examined separately for the Black and White targets tests and separately for implicit and explicit prejudice measures. Results for implicit prejudice are presented first, followed by the results for explicit prejudice. All African-American participants were removed from the analyses.

#### *Black Targets Test*

A 2X2 ANOVA (implicit prejudice: HPP vs. LPP X cognitive load: no-back vs. 2-back) was conducted on accuracy on the Black targets test. There was a significant main effect of cognitive load on accuracy,  $F(1, 52) = 4.08, p < .05$ , such that participants who completed the more cognitively taxing manipulation, the 2-back test, did significantly worse than participants who were in the no-back condition (2-back  $M = 69.8$ , no-back  $M = 73.1$ ). There was no interaction of load with implicit prejudice,  $F(1, 52) = .02, ns$ . A 2X2 ANOVA (explicit prejudice: HPP vs. LPP X cognitive load: no-back vs. 2-back) was conducted on accuracy on the Black targets test. There was again a

significant main effect of cognitive load on accuracy,  $F(1, 53) = 4.58, p < .05$ . There was also no interaction of load with explicit prejudice,  $F(1, 53) = .49, ns$ . See Table 7 for the means.

#### *White Targets Test*

A 2X2 ANOVA (implicit prejudice: HPP vs. LPP X cognitive load: no-back vs. 2-back) was conducted on accuracy on the White targets test. There was no effect of cognitive load,  $F(1, 54) = 1.99, ns$  ( $M$  2-back = 20.31,  $M$  no-back = 19.54). There were no interactions of load with implicit prejudice  $F(1,54) = 1.56, ns$ . A 2X2 ANOVA (explicit prejudice: HPP vs. LPP X cognitive load: no-back vs. 2-back) was conducted on accuracy on the White targets test. There was again no significant main effect of cognitive load on accuracy,  $F(1, 54) = 2.01, ns$ . There was also no interaction of load with explicit prejudice,  $F(1, 54) = .00, ns$ .

#### Discussion

In this experiment, cognitive load had no influence on performance on the White targets test. However, load significantly decreased performance on the Black targets test. Overall, the proximal states of cognitive load (Study 3) and anger (Study 2) detrimentally influenced accuracy on a Black targets test, but not on a White targets test.<sup>13</sup>

Study 2 suggests that anger can produce an accuracy deficit on Black targets tests and Study 3 suggests cognitive load can produce an accuracy deficit on Black targets tests. These studies do not directly link negative emotion to the experience of cognitive load, or the experience of either cognitive load or negative emotions to what HPP experience when they are asked to complete a Black targets test. However, the fact that

the results of Studies 2 and 3 came out very similarly is encouraging that both proximal states are tapping into a common construct. In other words, experiencing negative affect could, essentially, be a cognitive load.

Cognitive load did not interact with either implicit or explicit prejudice as predicted. As in Study 2, there was no predicted interaction between cognitive load and prejudice because the manipulated proximal state of cognitive load was not race-related and therefore the manipulation should have had the same impact on both HPP and LPP. If participants were induced with race-related cognitive load, then the interaction of prejudice and cognitive load may have been predicted. There was no interaction between cognitive load and prejudice on the White targets test.

Studies 2 and 3 examined the proximal states of negative emotion and cognitive load as possible states the HPP could be experiencing while completing the Black targets test that could account for their decrease in accuracy. Study 4 explores motivation as another possible proximal state that could negatively impact HPPs' performance on the Black targets test.

## Chapter 5: Study 4 – Motivation

Study 4 examines the role that motivation may play in HPPs' decreased performance compared to LPP on interpersonal sensitivity tasks. The current literature on motivation and interpersonal sensitivity has been mixed. Some theorizing on motivation's role in interpersonal sensitivity in the areas of gender and social power holds that trying harder can only help your performance (Ickes, Gesn, & Graham, 2000; Snodgrass, 1985, 1992). However, a meta-analysis on the topic found no evidence that trying harder on nonverbal sensitivity tasks actually helps people (Hall, Blanch, Horgan, Murphy, Rosip, & Schmid Mast, in press). The authors used various methods of manipulating motivation, specifically monetary incentive, ego motive, telling the participants to try harder on the task, letting them know that accuracy would be tested, as well as gender-relevant motivation, such as telling the participant that the interpersonal sensitivity task was relevant to their particular gender. Across eleven studies, there was no impact of motivation on nonverbal sensitivity tests. Even though these studies suggest that trying harder does not help participants' scores on such tests, they do not rule out the possibility that trying less hard on interpersonal sensitivity tasks could hinder performance. Horgan and Smith (2006) found that certain manipulations have the ability to make people do less well on interpersonal sensitivity tests, presumably because they were trying less hard on the tasks.

Taking this knowledge into account, is it possible that the HPP are less motivated than LPP to do well on a Black targets interpersonal sensitivity test because it involves a

group they do not like? The HPP may either consciously, or unconsciously, withdraw effort on Black targets tests.

Although the Hall, Blanch et al. (in press) meta-analysis concluded that there was no overall effect of motivation on nonverbal sensitivity, one could argue that in the studies they reviewed (which always involved White targets tests), the researchers were trying to motivate participants whose baseline level of motivation was higher than that of HPP when they complete an interpersonal sensitivity test that includes targets of a minority group. Thus, the lack of motivational effects in previous research may be due to the fact that participants were already trying hard and adding motivation brought no additional benefit. Study 4 was based on the hypothesis that HPP may be withdrawing effort on the Black targets task and, if this is so, then motivating them to want to perform well might improve their performance. In other words, at already low levels of motivation (such as hypothesized in HPP) you might be able to increase performance on sensitivity tasks by motivating the participants; however, motivation should not increase performance in participants who are already trying their best.

#### *Study Predictions*

It was predicted that LPP would not be affected by the motivation manipulation as they should already be generally motivated to do well on both Black targets and White targets tests. However, it was predicted that HPP would improve on the Black targets tests when they were presented with an external motivation to do well. If HPP did not do better when they were motivated to do so then one could argue that their low performance on the Black interpersonal sensitivity test was not simply due to withdrawal

of effort, or not trying. There was no predicted motivation effect for the LPP on the Black targets test, because they were presumably not lacking in motivation.

Study 4 differs from Studies 2 and 3 because in Study 4 there is a predicted interaction effect between prejudice and motivation. Previous research suggests that motivation should have no impact when participants are at an assumedly adequate level of motivation, such as when both LPP and HPP are completing the White targets test and when LPP are completing the Black targets test. However, if low motivation accounts for HPPs' typically lower performance on the Black targets test, then the motivation manipulation should have an impact on their performance on this test.

## Method

### *Participants*

Participants consisted of 88 (40 men) Northeastern University undergraduate students who received partial credit in an introductory psychology course in exchange for their participation in the study. For this sample the ethnic percentages were 75.0% White, 1.1% African-American, 5.7% Hispanic, 2.3% Middle Eastern, 11.4% Asian, 2.3% Multicultural, and 2.3% "Other." All African-American participants were excluded from the analyses.

### *Materials*

Participants completed either the Black or White targets tests, the IAT, the Attitudes Toward Blacks Scale, and the background questionnaire that were used in Studies 2 and 3.

*Black Targets Test and White Targets Tests.* The Black targets test and White targets test used in the studies from the meta-analysis in Study 1 and the experiments in Studies 2 and 3 were completed in this experiment as well. See Chapter 2 for a full description of the tests.

*Monetary Incentive Manipulation.* In the “motivated” condition participants were given the standard instructions for either the Black or White DANVA and told they would receive \$25 in cash at the end of the experiment if they scored above 95 percent accuracy on the specific test they were assigned (Black targets test or White targets test). In the control condition, participants were told to complete one of the DANVA tasks with the standard instructions and no monetary incentive.

#### *Procedure*

Participants were randomly assigned to the motivation condition and to one of the two DANVA tests (Black targets or White targets). Participants received their instructions from a trained experimenter and also read them on the computer screen. Then participants completed the assigned test, followed by the IAT, the Attitudes Toward Blacks Scale, and finally a short demographics questionnaire.

*Response time measurements.* Direct RT is a software program designed to capture response time measurements and was programmed to keep track of how long participants spent on each of the DANVA items. It was hypothesized that if the money manipulation did increase participants’ effort on the interpersonal sensitivity tasks, then the participants would increase the time spent on each of the DANVA items.

## Results

*Motivation Manipulation Check*

Previous research has found a lack of correspondence between actual measures of performance and self-reported effort. For example, Karau and Williams (1993) reported a significant social loafing effect, but found that self-report withdrawal of effort measurements were not significantly different from zero. Therefore, one could argue that self-reported effort, or withdrawal of effort, may not necessarily map onto non-self-report measurements of effort. It is unknown whether or not participants have the ability to self-report on their motivation, or effort, while completing the interpersonal sensitivity task, therefore response time measurements were used in order to assess effort on the task. In order to ensure that the money motivation manipulation did indeed increase the amount of time participants spent on the DANVA items, the average response latencies were analyzed. There was a main effect of motivation for both the White and Black tests,  $F(1, 42) = 14.50, p < .001$  and  $F(1, 37) = 7.12, p < .05$ , respectively, such that participants in the motivated condition spent longer answering the items, compared to their counterparts in the no-money condition (White no money  $M = 2903$  ms, White money  $M = 4257$  ms; Black no money  $M = 3708$  ms, Black money  $M = 5559$  ms). Thus, the monetary incentive appeared to increase motivation for all participants in the motivated money condition as anticipated, if response latency is considered to be an indicator of increased effort on the sensitivity test. The effects of motivation and racial attitudes were examined separately for the Black and White targets tests and separately for implicit and explicit attitude measures.

### *Black Targets Test*

*Implicit attitudes (IAT).* In a motivation condition (motivated vs. control) X implicit attitudes (LPP vs. HPP, by median split) ANOVA, there was no main effect of motivation,  $F(1, 37) = 1.86, ns$ . However, there was a significant interaction between implicit attitudes and motivation,  $F(1, 37) = 4.28, p < .05$ , showing that the predicted motivation effect was indeed present for the negative implicit attitudes group (See Table 8). HPP presented with an external motivator to do well performed significantly better ( $M = 22.00$ ) than HPP not presented with an external motivator to do well on the Black targets test ( $M = 19.56$ ),  $t(28) = 3.46, p < .01$ , suggesting that HPP withdraw effort when no such external motivator is present.

*Explicit Attitudes.* In a motivation condition (motivated vs. control) X explicit attitudes (LPP vs. HPP, by median split) ANOVA, there was a main effect of motivation,  $F(1, 37) = 5.07, p < .05$ , such that the participants in the motivated condition did better than the participants in the non-motivated condition (Motivated  $M = 70.4$ , Non-motivated  $M = 65.6$ ). There was no interaction of explicit prejudice and motivation,  $F(1, 37) = .37, ns$ .

### *White Targets Test*

As predicted, the manipulation of motivation had no effect on accuracy on the White targets test, for either LPP or HPP. In analogous ANOVAs to the ones conducted on the Black targets test, there were no significant main effects or interactions, all  $F_s < 1.00$ .

## Discussion

While previous literature has shown that motivation has no significant effect on accuracy in judging nonverbal cues, the results from this study suggest that when motivation is relatively low to begin with (as hypothesized to be the case for HPP when taking the Black targets test), and external motivation is provided, motivation does increase accuracy. This suggests that nonverbal decoding of Black targets by HPP is a specific context where external motivation can increase nonverbal accuracy due to the prejudiced participants' withdrawal of effort unless an external motivator is present. While the data cannot prove that the prejudiced individuals were unmotivated to begin with, the results are consistent with this hypothesis.

It should be noted that the interaction between prejudice and motivation only held true for the IAT and not the explicit measure of prejudice. Research has shown myriad ways explicit and implicit prejudice predict different psychological constructs (Dovidio, Kawakami et al., 2002), and more specifically researchers have found that implicit prejudice measures predict more implicit behaviors (e.g., word completion tasks), while explicit prejudice measures predict more explicit behaviors (e.g., juridic decisions; Dovidio, Kawakami, Johnson, Johnson, & Howard, 1997). While no one has researched, and classified, whether or not the DANVA is more of an implicit than explicit measure, one could argue that it falls somewhere in the middle of the continuum between implicit and explicit.<sup>14</sup> Previous research has shown that participants have a rather weak level of insight into their nonverbal decoding skill level (Hall, Andrzejewski, & Yopchick, in press), suggesting that individuals do not have an explicit knowledge of their skill level.

Therefore, we might expect the implicit measure of bias to predict nonverbal accuracy scores better than the explicit measure of bias. In addition, participants do not know what a politically correct “right” answer might be for the Black targets and therefore their responses cannot be controlled in order to try and give a “correct” answer. This line of reasoning suggests that on a continuum from implicit to explicit, the DANVA tests may represent more implicit constructs, and therefore, should have been better predicted by the IAT than the Attitudes Toward Blacks Scale. However, the meta-analysis in Study 1 suggests that there is a stronger relation between explicit prejudice and accuracy and indeed the present study found this stronger relation with explicit prejudice and accuracy to exist. In Study 1 some reasons were given for why a test such as the DANVA could be considered to fall on the more explicit end of the continuum. The present results do not settle the question of how implicit or explicit the skill tested by the DANVA is.

These findings have multiple implications for theorizing on the automaticity of emotion recognition, and theories involving motivation and interpersonal sensitivity. Some researchers argue that emotion recognition is a process that is inherently automatic and cannot be disrupted (Tracy & Robbins, 2008) by proximal states such as cognitive load or emotional state. However, the results from Studies 2, 3, and 4 suggest that the influence of such proximal states on nonverbal decoding is dependent on the race of the target. The results also suggest that interpersonal sensitivity is not only a domain where accuracy is determined by accurate knowledge of cues or the ability to accurately infer what a nonverbal cue is indicating (Rosip & Hall, 2004), but that baseline levels of effort, or motivation to do well, also affect accuracy under certain circumstances. This falls in

line with other research on interpersonal sensitivity that implicates withdrawal of effort as negatively impacting accuracy (Horgan & Smith, 2006).

### *Limitations*

The external motivation manipulation used in this study could be construed as an artificial motivator that does not naturally occur in everyday interracial interactions. Future research should examine more subtle forms of motivation (e.g., motivation to decode a Black target who is a potential employer or supervisor) in order to discern whether more naturally occurring forms of motivation can also increase accuracy in high prejudiced individuals when they are asked to decode Black targets.

Previous research has shown an inverse relation between prejudice and decoding such that the more prejudiced individual does worse on decoding interpersonal sensitivity tests involving both Black and White targets. The present study suggests that low motivation may be one factor contributing to this deficit, because providing an incentive increased their accuracy to match that of participants with less negative associations with Blacks. However, low motivation may not be the only factor contributing to interpersonal sensitivity deficits in people with more prejudicial attitudes. Therefore, additional factors remain to be identified that can account for these more generalized interpersonal sensitivity deficits.

Studies 2, 3, and 4 all suggest that various proximal states that could play a role in the inverse relation between prejudice and accuracy. Study 4 confirmed that HPP do perform worse on a Black targets test than their less prejudiced counterparts and linked withdrawal of effort to the HPP. Studies 2 and 3 showed that if you create anger and/or

cognitive load in a non-race-related way that it will hurt performance on a Black targets test. Previous literature has linked anger (Hugenberg & Bodenhausen, 2003), anxiety (Littleford et al., 2005), and cognitive load (Richeson et al., 2003) to interracial interactions; however, no one has linked the experience of either of these proximal states to HPP while they are completing a Black targets test of interpersonal sensitivity. Study 5 aims to provide a link between naturally occurring negative proximal states and prejudice, as well as decreased accuracy on the Black targets tests.

## Chapter 6: Study 5 – Affect Expression

Study 1 shows that, over 11 studies, there is a significant negative relation between prejudice and accuracy. Studies 2 and 3 link the proximal states of anger and cognitive load to decreased accuracy on Black targets tests of decoding ability only; however, these studies do not link the proximal states of anger, anxiety, and cognitive load to the experiences of HPPs that might arise as a consequence of completing Black target tests. If one of the negative proximal states analyzed in the previous studies was the mediating factor in the relation between prejudice and accuracy, then HPP should experience the negative proximal state(s) more strongly than LPP while completing the Black targets test. Therefore, the influence of these negative proximal states on LPP is not discussed further. Seeing that both prejudice and negative proximal states lead to a decrease in performance on the Black targets tests, the results suggest that there may be a link between prejudice and these negative proximal states (e.g., anger, anxiety, cognitive load) while decoding outgroup members. However, this final assumption needs to be tested in order to demonstrate the link between these experienced negative proximal states and prejudice. Study 5 aims to demonstrate this link.

Even though Study 2 did not find an influence of anxiety on Black targets test accuracy, Study 5 includes measurements of both anxiety and anger in an attempt to determine if anxiety does in fact play a role in Black target test accuracy that was not captured in Study 2.

Previous literature has linked the experience of anger (Hugenberg & Bodenhausen, 2003), anxiety (Littleford et al., 2005), and cognitive load (Richeson et al.,

2003) to interracial interactions; however, there has not been much research suggesting that these negative proximal states could be aroused simply by being asked to decode a Black target. The assumption that these negative proximal states (anger, anxiety, and cognitive load) can be aroused in HPP by being asked to decode a Black target needs to be tested in order to try and account for the inverse relation between prejudice and accuracy documented in Study 1.

### *Overview*

None of the previous studies in this body of research asked participants how they were feeling while they were completing either the Black or White targets test. Study 5 attempts to determine if the proximal states investigated in Studies 2 and 3 occur in HPP as they complete the Black targets test. Study 5 utilizes a within subjects design in order to ascertain whether there are significant differences in the levels of these proximal states as HPP complete the Black targets test and the White targets test that could result in the inverse relation between prejudice and accuracy.

As discussed in Chapter 5, one cannot always rely on self-reports of proximal states; therefore, Study 5 also included trained observers' ratings of the nonverbal behaviors of the participants as they completed the Black and White targets tests. Participants were unobtrusively videotaped by a hidden camera as they completed both the Black and White targets tests. Once the participants consented for analysis of their hidden videotape footage, trained coders made ratings of the participants' nonverbal expressions as they completed each of the tests.

Study 5 had participants complete both the White and Black targets tests, measured implicit and explicit racial attitudes, measured self-rated proximal states while completing the tests, and measured nonverbal expressions indicative of proximal states based on unobtrusive videotaping of the participants as they completed both tests.

### *Study Predictions*

It was predicted that either, or both, the self-rated reports of proximal states and the other-rated reports of participants' proximal states would reveal that HPP experience an increased level of these negative proximal states compared to LPP. It was also predicted that either, or both, the self-rated reports of proximal states and the other-rated reports of participants' proximal states would mediate the relation between prejudice and accuracy such that prejudice would be positively related to a negative proximal state, such as anger or anxiety, and this negative proximal state would also be associated with a decrease in accuracy on the Black targets test.

### Method

Participants consisted of 62 (11 men, 5 unreported) Northeastern University undergraduate students who received partial credit in an introductory psychology course in exchange for their participation in the study. For this sample the ethnic percentages were 69.4% White, 11.3% African-America, 4.8% Hispanic, 11.3% Asian, 1.6% Multicultural, and 1.6% "Other." All African-American participants were excluded from the analyses.

### *Materials*

Participants completed the same Black and White targets tests, IAT, Attitudes Toward Blacks Scale, and background questionnaire that were used in Dissertation Studies 2-4.

*Proximal State Rating.* The same rating sheet was completed by the participants after they completed both the Black and White test and was also filled in by the trained coders for the nonverbal expressions the participant displayed while completing the Black targets test and the White targets test. The self-rated proximal state reports are referred to as “self-rated” and the proximal state reported by the nonverbal coders are referred to as “other-rated” throughout the duration of this chapter. In total, each participant had 4 sets of the proximal state rating questions completed in this study; a self-rating after the White targets test, a self-rating after the Black targets test, an other-rating after the White targets test, and an other-rating after the Black targets test. Examples of items on this measure are “How irritated did the participant appear?” and “How challenged did the participant appear?” The items were modified for the self ratings: “How irritated did you feel?” and “How challenged did you feel?” See Appendix D for a full list of items.

### *Procedure*

Participants completed the study individually on a personal computer in a small laboratory room using Media Lab and Direct RT software (Jarvis, 2002). Participants were greeted by an experimenter who informed them that the experiment would be completed on an individual computer and that the experimenter would remain in the

room but that she would be seated at a desk that did not face the participant so she could not see any of their responses. The experimenter remained in the room to limit the possibility that participants would do something embarrassing while being recorded by the hidden camera. The experimenter sat facing away from the participant to increase a sense of anonymity for participants when responding to sensitive issues involving prejudice and race.

Participants first completed either the White or the Black targets test, followed by their proximal state self-ratings, the other version of the interpersonal sensitivity test, and another proximal state self-rating sheet. The presentation of the DANVA tests was counterbalanced in order to avoid order effects. Then participants completed the IAT, the Attitudes Toward Blacks Scale, and a demographics questionnaire. There was a hidden camera in the lab to record the nonverbal behavior of the participants as they completed both the Black and the White versions of the DANVA. At the end of the study the participants were informed that there was a hidden camera in the room and asked for their consent for the videotape to be viewed and coded by trained coders. One person denied permission to use the videotape footage.

Two research assistants were trained to make global ratings of nonverbal behavior on a practice set of tapes with the author of this dissertation. Conditions were randomized so that the coders were blind to which test the participant was taking as the coders coded the tapes. The two coders established reliability ( $r = .75$ ) on a subset of tapes and then each coded all of the tapes so each videoclip was viewed, and rated, by both coders.<sup>15,16</sup> The coded data were averaged across the two coders.

## Results

All analyses presented relate to the self-rated and other-rated proximal states of anger and anxiety. The remaining self-rated and other-rated items were analyzed, but did not produce statistically significant results that produced an interpretable pattern. In addition, the main focus of Study 5 was to link the proximal states of anger and anxiety to HPP while completing the Black targets test; therefore, the other proximal ratings were not as central to the main theme of this set of studies.

### *Self- and Other-Rated-Proximal States*

Analyses were done separately for the self- and other-rated proximal states because of the smaller  $N$  for other-ratings due to technological malfunctions. Technological malfunctions included the tape participants seating themselves out of the camera's view, the camera running out of videotape, and research assistant error. These errors resulted in a total sample size of 25 for the other-rated proximal state data.

Looking first at self-rated anger, in a test (Black targets vs. White targets) X explicit attitudes (LPP vs. HPP, by median split) repeated measures ANOVA, there was a main effect of test,  $F(1, 49) = 8.31, p < .01$ , such that participants reported experiencing more anger while completing the Black targets test than while completing the White targets test. However, there was a significant interaction between explicit prejudice and test,  $F(1, 49) = 4.51, p < .05$ , showing that HPP reported the highest experience of anger while completing the Black targets test (see Table 9 for the means). For self-rated anxiety, there were no significant main effects or interactions in a test (Black targets vs. White targets) X explicit attitudes (less negative vs. more negative, by median split)

repeated measures ANOVA, all  $F$ s < 1.00. However, the means are presented in Table 10 for completeness.

Turning to other-rated anger, in a test (Black targets vs. White targets) X explicit attitudes (LPP vs. HPP, by median split) repeated measures ANOVA, there were no significant main effects or interactions, all  $F$ s < 1.00 Table 9). For other-rated anxiety, in a test (Black targets vs. White targets) x explicit attitudes (LPP vs. HPP, by median split) repeated measures ANOVA, there was a main effect of test,  $F(1, 23) = 10.12, p < .01$ , such that participants were coded as being more anxious while completing the Black targets than the White targets test. There was also an interaction between explicit prejudice and test type,  $F(1, 23) = 4.10, p = .06$ , showing that the HPP were coded as being the most anxious while completing the Black targets test (Table 10). Interestingly, the lowest other-rated anxiety rating was the cell where the HPP were judging the White targets. Not only do HPP appear anxious while decoding Black targets, but they seem to be the least fazed (i.e., have the least anxiety aroused) while decoding White targets.

The correlations between self- and other- rated proximal states varied across states;  $r = -0.00, ns$ , for the relation between self- and other-rated anger on the Black targets test;  $r = 0.24, ns$ , for the relation between self- and other-rated anxiety on the Black targets test;  $r = 0.37, p < .05$ , for the relation between self- and other-rated anger on the White targets test; and  $r = -0.04, ns$ , for the relation between self- and other-rated anxiety on the White targets test. Thus, participants' self-rated reports of proximal states only agreed with the trained coders' ratings for the relation between self- and other-rated anger on the White targets test.

Because the results from the repeated measures ANOVAs provide support that HPP were experiencing more negative proximal states than their lower prejudiced counterparts while completing the Black targets test, correlations among proximal states, accuracy (Black and White targets tests), and prejudice (explicit and implicit) were conducted in order to determine if one of the negative proximal states HPP were experiencing while completing the Black targets test would mediate the relation between prejudice and accuracy. Correlations between the self-rated proximal state of anger and anxiety, accuracy on the Black and White targets tests, and the median splits of implicit prejudice (as measured by the Implicit Association Test) and explicit prejudice (as measured by the Attitudes Toward Blacks scale) are presented in Table 11. In order to control for individual differences in demeanor, the self- and other-rated proximal states are analyzed as difference scores created by subtracting the White score from the Black score. This procedure has been used in other research assessing racial differences (see Richeson & Trawalter, 2008) and allows the researcher to attain a more fine-tuned measurement of the difference in a specific psychological construct, in this case the experience of a negative proximal state, based on whether or not the participant is interacting or judging a Black target versus a White target. Higher values on the difference scores for anger and anxiety indicate more negative feeling on the Black relative to the White targets test.

Explicit prejudice and accuracy on the Black targets task were inversely related as predicted,  $r = -0.33$ ,  $p < .05$ , such that the HPP performed more poorly on the Black targets test than their less prejudiced counterparts.<sup>17</sup> This inverse relation went in the

same direction for the relation between explicit prejudice and accuracy on the White targets test but was not statistically significant,  $r = -0.14$ , *ns*. There was a positive relation between self-rated anger and explicit prejudice,  $r = 0.29$ ,  $p < .05$ , such that the HPP self-rated being more angry while completing the Black targets test than their lower prejudiced counterparts (this result corresponds to the ANOVA interaction effect reported earlier).

Correlations between the other-rated proximal states of anger and anxiety, accuracy on the Black and White targets tests, and the median splits of implicit prejudice (as measured by the Implicit Association Test), and explicit prejudice (as measured by the Attitudes Toward Blacks scale) are presented in Table 15. Explicit prejudice and accuracy on the Black targets task were inversely related as predicted though the relation did not reach significance,  $r = -0.27$ , *ns*, such that the HPP performed more poorly on the Black targets test than their less prejudiced counterparts. There was a marginally significant positive relation between prejudice and other-rated anxiety,  $r = 0.40$ ,  $p < .10$ , suggesting that the HPP experienced more anxiety while completing the Black targets test relative to the White targets test than their lower prejudiced counterparts. There was also an inverse relation between other-rated anxiety and accuracy on the Black targets test,  $r = -0.36$ ,  $p < .10$ , suggesting that the participants experiencing relatively more anxiety while completing the Black than White targets test performed more poorly than those who were not experiencing as much relative anxiety. While the paths are only marginally significant, and therefore full mediation is not possible, the results suggest that if a better measure of anxiety could be utilized, then anxiety could potentially fully mediate the

relation between prejudice and accuracy. See Figure 1 for a diagram of the hypothesized mediation with the statistics from the other-rated anxiety measure from the current study presented. The diagram is only presented for other-rated anxiety because the other-rated anxiety difference score was the only proximal state measure that was strongly related to both increased prejudice levels and decreased accuracy on the Black targets test.

### Discussion

Study 5 investigated the experience of the negative proximal states and anger and anxiety in HPP while completing a Black targets test compared to a White targets test. Study 5 expanded upon the research established in Study 2 in which manipulated anger produced accuracy deficits on a Black targets test. Study 5 revealed that HPP did experience more negative proximal states than their lower prejudiced counterparts while completing a Black targets test.

Other-rated anxiety when participants were watching the Black relative to White targets test was marginally associated with higher prejudice levels, as well as marginally decreased accuracy on the Black targets test. However, because not all of the paths were significant, full mediation of the model was not possible. Self-rated anger was significantly associated with higher prejudice levels, and while the relationship between self-rated anger and accuracy on the Black targets test was in the predicted direction, it was not statistically significant. Self-rated anxiety and other-rated anger did not produce significant relations with either prejudice or accuracy.

Taken together, the results suggest that HPP do experience more anger and anxiety, as measured by self-rated anger and other-rated anxiety, than their lower

prejudiced counterparts while completing the Black targets test. The link between these proximal states and the experience of the HPP while completing the Black targets test was an important conceptual link that needed to be tested to understand the mechanism driving the relation between prejudice and accuracy. However, the results from Study 5 did not provide strong statistical support for a link between how the experience of these negative proximal states is associated with a decrease in accuracy on the Black targets test, though the small sample size of the other other-rated data should be noted.

The results suggest that if a more reliable and valid measurement of either of the proximal states of anger or anxiety could be utilized, then perhaps the full mediation of the relation between prejudice and accuracy could be revealed. For now, the results suggest there is a strong possibility that other-rated anxiety of the participant mediates the relation between prejudice and accuracy and that self-rated anger is at least related to the experience of the HPP while completing a Black targets test.

One question that may be raised by the results of Study 5 is why the predicted results came out for self-rated anger but not for self-rated anxiety? Another question raised by the results of Study 5 is why the predicted results came out for other-rated anxiety but not for other-rated anger? The most straightforward answers seem to be random variation, imperfect measurements of the negative proximal states, and small sample size. As discussed earlier, self-report data from proximal states are not always a “true” measurement of one’s actual proximal state. In addition, self-reports can be biased by participants’ desire to appear a certain way as they were completing the self-ratings. Another possible explanation is that participants vary in the degree of accurate self-

knowledge they possess regarding various negative proximal states. Perhaps participants had more accurate self-knowledge of their anger while completing their tasks than self-knowledge about their anxiety levels. In a similar vein, perhaps coded nonverbal ratings provide a more accurate measurement of anxiety in this paradigm, but are not as accurate for coding experienced anger.

*Limitations.* All of the other-rated data were coded from minimal nonverbal cues. Participants were seated in front of a computer screen and were unobtrusively videotaped while completing the experiment. While the trained coders were reliable in their nonverbal ratings of the participants, this does not mean that the interpretation of the coding is completely transparent. A furrowed eye-brow while completing a computer-based experiment may indicate anger or it may indicate intense concentration on the task at hand. The interpretations of the nonverbal ratings, or other-rated data, are speculative as no one has previously validated such nonverbal coding measures in a paradigm that does not elicit much nonverbal expression to begin with (i.e., doing a task on a computer as part of a psychology experiment).

## Chapter 7: General Discussion

Researchers generally consider interpersonal sensitivity to be a desirable skill for individuals to have. Previous research has shown that there are many positive psychosocial outcomes related to interpersonal sensitivity, or the ability to accurately decode and interpret nonverbal cues (Hall & Andrzejewski, 2008; Hall, Andrzejewski, & Yopchick, in press). Limited research on prejudice and interpersonal sensitivity (Cline, 1955; Hall & Carter, 1999), along with findings on the relation of interpersonal sensitivity to personality traits such as openness and tolerance (Hall, Andrzejewski, & Yopchick, in press), suggested that HPP would perform more poorly on interpersonal sensitivity tasks than LPP. However, the previous research examined prejudice measures that are not commonly used in the prejudice and stereotyping literature. Also, the previous research did not examine the relationship between prejudice and accuracy on emotion recognition tasks of interpersonal sensitivity and no one, to my knowledge, has examined the relation between prejudice and interpersonal sensitivity when the targets of the task are outgroup members.

The present research documented the finding that prejudice is indeed inversely related to accuracy, such that the higher prejudiced individuals are less accurate at emotion recognition tasks than their less prejudiced counterparts. This research also documented the finding that the inverse relation between prejudice and accuracy is stronger when the targets of the interpersonal sensitivity test are outgroup members. Additionally, this research was the first to explore negative proximal states as a possible

mechanism underlying the relation between prejudice and accuracy on Black targets tests of interpersonal sensitivity.

Results suggest that there is a statistically significant relation between prejudice and accuracy, such that the more prejudiced participants perform worse on both Black and White targets tests of interpersonal sensitivity (Study 1). There was some suggestion that this relation is larger when the targets of the interpersonal sensitivity test are outgroup members. Results also suggest that negative proximal states, more specifically anger and cognitive load (Studies 2 and 3, respectively) do hinder performance on Black tests of interpersonal sensitivity and that these negative proximal states are linked to the experience of the highly prejudiced individual while completing an interpersonal sensitivity test involving Black targets (Study 5). Withdrawal of effort was also shown to account for part of the inverse relation between prejudice and accuracy (Study 4); suggesting that the HPP are withdrawing effort on Black targets tests but not on White targets tests.

### *Proximal Mechanisms*

Overall, the results suggest that proximal factors play a prominent role in the relation between prejudice and accuracy at decoding emotional expressions, especially for Black targets. The results also suggest that participants' self-ratings of their proximal states as they complete these tests do not necessarily correspond to the nonverbal expression, as assessed by trained coders, of their proximal states as they complete these tests. Participants could be self presenting on their responses on the self-rated proximal state measurement as a way to make themselves seem less prejudiced.

Motivation, or withdrawal of effort from HPP, on the Black targets test helps explain the relation between implicit prejudice and accuracy on the Black targets task, while negative emotion, anger or anxiety, seems to be a plausible mediating factor in explaining the relation between explicit prejudice and accuracy on Black target tasks. Without further replications of the studies I cannot be sure these results are specific to explicit vs. implicit prejudice or just vary randomly across these two modes of assessment.

As discussed in previous chapters, part of the reason why implicit prejudice predicts accuracy in some experiments, but explicit prejudice predicts accuracy in other experiments, could be due to the uncertain processing nature of the interpersonal sensitivity tests used in these studies. No one, to my knowledge, has classified either the Black or White DANVA as inherently implicit or explicit tests of interpersonal sensitivity. Researchers who discuss the ability of explicit prejudice and implicit prejudice to differentially predict different dependent variables based on the explicitness of those measures typically examine dependent variables that can be easily classified as either explicit (i.e., speech) or implicit (i.e., eye blinking) (Dovidio, Kawakami, & Gaertner, 2002; Fazio, Jackson, Dunton, & Williams, 1995). In contrast, the DANVA tests probably fall somewhere in the middle of this spectrum of explicitness, containing both some elements of implicit processes and other elements of explicit; therefore, it is unsurprising that in some circumstances implicit prejudice predicts accuracy, while in others explicit prejudice predicts accuracy. Further research on the nature of the

DANVA, and or replication of the studies, would be needed to further explain the divergence of implicit and explicit prejudice in these studies.

In addition to being an under-explored area of research in both the prejudice and accuracy domains, there are also real-world implications of this research as HPP are indeed less accurate than LPP on interpersonal sensitivity tasks involving minority group members. Every day, people are asked to make countless judgments of others based on minimal nonverbal information. If HPP are less accurate in their decoding of this minimal nonverbal information, then one can imagine scenarios where the consequences of the HPP's inaccuracy are great. Job interviews were discussed in the introductions; decisions on the course of action police officers or other armed officials should take when confronting a situation with an outgroup target would be another example. There are myriad other scenarios that could have potentially long lasting consequences for both the target of the inaccurate judgment and the perceiver.

### *Limitations*

The results of this body of work are limited to standardized tests of interpersonal sensitivity, and more specifically the Black and White versions of the DANVA. As far as I know, no one has examined the relation between prejudice and accuracy in live interracial interactions. There could be myriad other factors that contribute to the accurate, or inaccurate, detection of nonverbal cues in live interactions. In addition, the unobtrusive filming of participants may not have yielded a wide enough range of nonverbal cues as to determine what proximal state the perceiver is experiencing. A live

interaction paradigm where a Black and White person interact may produce a wider range of nonverbal cues indicative of the perceiver's proximal state.

In addition, while previous research has linked the experience of negative emotion to cognitive load, this link was not directly tested in this set of studies. The results are suggestive that anger and anxiety are cognitively taxing to experience while decoding the Black targets test, because their impact on accuracy was similar. However, future research should explore whether the experience of anger and anxiety is indeed cognitively taxing (Gray, 2001; Ikeda, Iwanaga, & Seiwa, 1996). Alternatively, future research could explore the idea that HPP experience more of a cognitive load while completing the Black targets test than their less prejudiced counterparts. This intuitively makes sense because HPP may be ruminating about their dislike of the Black targets decoding test, or may be concerned about appearing prejudiced in the experiment and trying to "cover up" one's prejudice, both of which could be construed as cognitively taxing situations.

While this set of studies provides an important first step into the area of prejudice and accuracy research, there are still many more questions that need to be addressed.

#### *Future Directions*

As discussed in the limitations section, all of the results are limited to standardized tests of interpersonal sensitivity. The next logical step is to take the original result, that HPP are worse decoders of Black and White targets and that this relation is larger for Black targets, and to see if this inverse relation still holds true in interracial interactions. Perhaps there are other factors that may play into the relation between

prejudice and accuracy in live interaction settings. These factors could be the aforementioned distal factors, discussed in Chapter 1, that were not explored in this dissertation but could potentially mediate the relation between prejudice and accuracy. This dissertation examined negative proximal states as one mechanism underlying the inverse relation between prejudice and accuracy. While this set of studies provides some statistical evidence for a proximal mechanism underlying the relation between prejudice and accuracy on Black targets tests, there could still be additional distal factors driving both the relation between prejudice and accuracy on Black and White targets tests of interpersonal sensitivity. These distal factors should be explored in future research.

Another possible factor involved in interracial interactions could be the comfort level of the participants during the interaction. An interracial interaction that goes very well, or extremely poorly, may alter the relation between prejudice and accuracy during the interaction. Alternatively, the relation between prejudice and accuracy could also lead the interaction to go relatively smoothly, or poorly. The direction of causation could be explored in live-interaction setting. As discussed in the limitations section, perhaps live interracial interactions may also induce stronger, or more pronounced, experiences of negative proximal states, which could potentially make self-rating or other-rating of these proximal states more sensitive and accurate and thus help researchers to uncover the mechanism driving the relation between prejudice and accuracy.

Future research could also attempt to use more precise measures of negative proximal states, such as physiological measures (e.g., heart rate, blood pressure), or brain

imaging in order to try and find the mediating mechanism of the prejudice and accuracy relation.

Another possible future direction would be to use a prejudice reduction technique (Dasgupta & Greenwald, 2001), such as exposing White participants to Black exemplars versus race-neutral exemplars before completing a task, in order to momentarily reduce participants' prejudice level and then have them complete the Black targets test of interpersonal sensitivity. If the prejudice level of HPP is causing the experience of a negative proximal state that then hinders accuracy, then prejudice reduction techniques should also increase accuracy by decreasing the experience of these negative proximal states.

### *Conclusions*

This dissertation examined a relatively under explored correlate of interpersonal sensitivity, prejudicial attitudes. This dissertation confirmed the inverse relation between prejudice and accuracy and confirmed that this inverse relation is larger when participants are asked to decode Black targets. Additionally, this dissertation explored the mechanisms driving this inverse relation in order to try and understand why HPP experience a decoding deficit compared to LPP. Learning why certain subgroups experience a decoding deficit will further our limited knowledge of theories as to why interpersonal sensitivity skill develops/exists in certain individuals and not in others.

The results from the previous five studies suggest that the HPP are experiencing some sort of negative proximal state (i.e., anger, cognitive load, and/or withdrawal of effort) that results in the decrease of accuracy on the Black targets test. The LPP do not

experience these proximal states to the same extent, if any, as they complete the Black targets test, thus their accuracy scores are unaffected. Studies 2 and 3 demonstrated that external manipulations of anger, anxiety, and cognitive load, which are assumed to be experienced by the HPP as they experience the Black targets test, produces a decrease in accuracy. However, when these external manipulations are not present, then the HPP experience these negative proximal states to a greater extent than the LPP, thus producing an accuracy deficit. Finally, this dissertation linked the experience of anger and anxiety to HPP completing the Black targets tests and HPP withdrawal of effort when completing the Black targets test. Taken together, the results suggest that anger, anxiety, cognitive load, and withdrawal of effort all play an integral role in the relation between prejudice and accuracy on Black targets tests of interpersonal sensitivity.

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## Footnotes

<sup>1</sup>For the purpose of this dissertation, the term “prejudice” in Study 1 and the Introduction (Chapters 1 and 2) refers to prejudicial attitudes towards any minority group as opposed to prejudice towards one specific minority group (e.g., African-Americans). Studies 2, 3, 4, and 5 only refer to prejudice towards Blacks in order to better understand the specific relationship between prejudice towards Blacks and accuracy on both Black and White targets tests of interpersonal sensitivity.

<sup>2</sup>The research on Jewish identification and prejudice has been summarized in Andrzejewski et al. (in press) and therefore will not be included in the present article. It should be noted that there was some overlap between the participant groups that contributed to that review and those reported in the present chapter.

<sup>3</sup>Hall and Carter (1999) and Cline (1955) were not included in the present meta-analysis because these studies did not use emotion recognition tests of interpersonal sensitivity, which is what the eleven new studies used. In addition, the author did not believe that the Benevolent Sexism Scale used by Hall and Carter (1999) was conceptually similar enough to the more hostile forms of prejudice measured in the eleven new studies included in the meta-analysis.

<sup>4</sup>In Study 7 the demographics questionnaire also asked two questions pertaining to the diversity level of the high school the participant attended and the neighborhood he/she grew up in.

<sup>5</sup>In some cases only 31 of the 32 pictures from the DANVA2-AAAF test were shown to the participants as there was a missing slide in the stimulus set.

<sup>6</sup>The effects of gender were always analyzed and showed virtually no interpretable results so I will not be talking about gender in the remainder of this dissertation.

<sup>7</sup>Dissertation studies 2 and 3 used a between-subjects design. Therefore, the participants who completed the Black targets test were different, and independent, from the participants who completed the White targets test.

<sup>8</sup>The effects of contact were always analyzed and showed virtually no interpretable results so I will not be talking about contact in the remainder of this dissertation.

<sup>9</sup>To have good power ( $>.80$ ) for White targets test effect of explicit prejudice and accuracy ( $r = -0.12$ ), about 800 people would be needed in the study to detect the effect. To have the same power with for the Black targets test effect of explicit prejudice and accuracy  $r = -.21$ , about 200 people would be needed in the study.

<sup>10</sup>When all non-White participants (i.e., Hispanics, Asians, and other minority group members) were excluded from the analyses, the pattern of results remained unchanged.

<sup>11</sup>Regression analyses confirmed the same relationships found with median splits on prejudice in all of the dissertation studies; however, for ease of presentation all results are presented in median split format.

<sup>12</sup>The total accuracy scores are different for the White and Black tests because there are 24 items on the White targets test and 31 items on the Black targets test. Where

relevant, results are presented based on percentage accuracy scores in order to equate the two tests on the same scale.

<sup>13</sup>With exception of the result that anxiety increased performance on the White targets test in Study 2.

<sup>14</sup>The introduction of Study 3 (Chapter 4) suggested that if the DANVA task fell more towards the explicit end of the continuum from implicit to explicit, that the cognitive load manipulation should not affect accuracy because the task would be assumed to be more automatic (Tracy & Robins, 2008). As far as I know, no one has researched where exactly the DANVA, or any other standardized interpersonal sensitivity, falls on the spectrum between implicit and explicit which is why this dissertation provides arguments from both sides of the spectrum.

<sup>15</sup>One of the coders served as an experimenter for two trials but the significance of the results did not change depending on whether or not those participants were included in the analyses so the data were kept in all analyses.

<sup>16</sup>The videotape analyses could not be used in all cases. In some cases the camera ran out of tape, the participant was not in camera view, the experimenter forgot to turn the camera on, etc. Therefore, the *N* reported for the “Other” data is smaller than the total *N* for the study.

<sup>17</sup>The correlations in the text do not always match the numbers in the table because the sample sizes were different for the self- and other- proximal state ratings. The sample sizes corresponding to the statistics are presented in Tables 11 and 12.

Table 1

*Overview of Studies Included in this Dissertation*


---

	Study	Goal(s)
I.	Document the phenomenon	
	1	Confirm inverse relation between prejudice and interpersonal sensitivity
II.	Proximal Variables	
	2	Determine if negative mood is a plausible source of HPP low accuracy
	3	Determine if cognitive load is a plausible source of HPP low accuracy
	4	Determine if lack of motivation is a plausible source of HPP low accuracy
	5	Determine if the states experimentally manipulated in Studies 2 and 3 are also linked to HPP in a correlational (i.e., naturalistic) study

---

Table 2

*Relations Between Explicit Prejudice and Interpersonal Sensitivity*

Study	Prejudice measure	White targets <sup>a</sup>		Black targets		
		<i>r</i>	<i>N</i>	<i>r</i>	<i>N</i>	<i>rc</i> <sup>b</sup>
1	Jewish	-0.08	94			
1	Arab	-0.16	85			
1	Hispanic	-0.14	90			
1	Combined prejudice <sup>c</sup>	-0.17	82			
4	Homosexual	-0.26*	65			
5	Black	-0.12	87	-0.34***	87	-0.37***
6	Jewish	-0.20**	189			
6	Arab	-0.04	201			

(table continues)

Table 2, continued

Study	Prejudice measure	White targets <sup>a</sup>		Black targets		
		<i>r</i>	<i>N</i>	<i>r</i>	<i>N</i>	<i>rc</i> <sup>b</sup>
6	Black	-0.07	198			
6	Homosexual	-0.09	207			
6	Combined prejudice <sup>c</sup>	-0.11	170			
7	Black	-0.12	174	-0.18*	174	-0.11
Dissertation 2	Jewish	-0.06	125	-0.10	119	
Dissertation 2	Black	0.02	130	-0.02	130	
Dissertation 2	Homosexual	-0.03	135	-0.03	129	
Dissertation 2	Combined prejudice <sup>c</sup>	-0.04	118	-0.08	118	
Dissertation 3A	Black	-0.13	87			

(table continues)

Table 2, continued

Study	Prejudice measure	White targets <sup>a</sup>		Black targets		
		<i>r</i>	<i>N</i>	<i>r</i>	<i>N</i>	<i>rc</i> <sup>b</sup>
Dissertation 3B	Black			-0.24*	90	-0.25*
Dissertation 4A <sup>d</sup>	Black	-0.05	30			
Dissertation 4B <sup>d</sup>	Black			-0.26	24	-0.24
Dissertation 5	Black	-0.07	55	-0.27*	55	

*Note:* Studies 1, 4, 5, 6, 7, Dissertation Study 2, Dissertation Study 3, Dissertation Study 4, and Dissertation Study 5 used White or Black forms of the DANVA test (see text for description). Dissertation studies 3 and 4 are noted as separate, independent samples in the table because different participants completed the different tests. The two different samples are noted by the “A” and “B” next to the study number.

(table continues)

Table 2, continued

<sup>a</sup>The older studies used the PONS and IPT (Hall & Carter, 1999) or a personality judgment measure (Cline, 1955); because these stimuli consist of a majority of White targets they are included with the results of the White DANVA.

<sup>b</sup>*r<sub>c</sub>* is for correlations with self-reported contact with Blacks partialled out.

<sup>c</sup>Removes minority group members who belonged to any of the minority groups represented in the prejudice measures. Only the results for combined prejudice measures were entered into the meta-analysis, to maintain independence (see text).

<sup>d</sup>The money motivation manipulation in this experiment produced an interaction between prejudice and accuracy, therefore, only the effect size between prejudice and accuracy for the participants in the control condition are given here.

\*  $p \leq .05$

\*\*  $p \leq .01$

\*\*\*  $p \leq .001$

Table 3

*Relations Between Implicit Prejudice and Interpersonal Sensitivity*

Study	Prejudice measure	White targets		Black targets		
		<i>r</i>	<i>N</i>	<i>r</i>	<i>N</i>	<i>rc</i> <sup>a</sup>
2	Black	-0.08	78	-0.25*	78	-0.25*
3	Black	-0.05	60	-0.14	60	-0.09
4	Homosexual	-0.05	65			
5	Black	0.13	87	-0.01	87	-0.04
7	Black	-0.06	174	0.01	169	0.01
Dissertation 2	Black	-0.09	130	-0.05	130	
Dissertation 2	Homosexual	0.02	129	-0.16+	123	
Dissertation 2	Combined prejudice <sup>b</sup>	-0.10	118	-0.15	118	
Dissertation 3A	Black	0.07	87			

(table continues)

Table 3, continued

Study	Prejudice measure	White targets		Black targets		
		<i>r</i>	<i>N</i>	<i>r</i>	<i>N</i>	<i>rc</i> <sup>a</sup>
Dissertation 3B	Black			0.06	88	0.05
Dissertation 4A <sup>c</sup>	Black	-0.06	30			
Dissertation 4B <sup>c</sup>	Black			-0.42*	24	-0.41
Dissertation 5	Black	-0.16	53	-0.07	53	

*Note:* All means are unweighted and averaged across prejudice measures as outlined in the meta-analysis method section. Dissertation studies 3 and 4 are noted as separate, independent samples in the table because different participants completed the different tests. The two different samples are noted by the “A” and “B” next to the study number.

<sup>a</sup>*rc* is for correlations with self-reported contact with Blacks partialled out.

<sup>b</sup>Removes minority group members who belonged to any of the minority groups represented in the prejudice measures.

(table continues)

Table 3, continued

The term combined prejudice refers to the averaging of the two implicit prejudice measures used for that particular study and correlating the average prejudice measure with the interpersonal sensitivity test to maintain independence as described in the text.

<sup>c</sup>The money motivation manipulation in this experiment produced an interaction between prejudice and accuracy, therefore, only the effect size between prejudice and accuracy for the participants in the control condition are given here.

+  $p \leq .10$

\*  $p \leq .05$

Table 4

*Meta-Analysis of Relations Between Prejudice and Interpersonal Sensitivity by Target Ethnicity and Prejudice Measure (Explicit vs. Implicit)*

Prejudice measure	White targets						Black targets					
	k	$r_{\text{unweighted}}$	$r_{\text{weighted}}$	Combined Z	Heterogeneity	$N^a$	k	$r_{\text{unweighted}}$	$r_{\text{weighted}}$	Combined Z	Heterogeneity	$N^a$
Explicit	9	-0.12	-0.12	-3.44***	2.56	18	6	-0.21	-0.21	-4.84***	4.22	32
Implicit	9	-0.04	-0.04	-0.99	4.83	-	8	-0.09	-0.08	-2.02*	9.37	5

*Note:* All of the analyses were done on the correlations that do not have contact with Blacks partialled out.

<sup>a</sup>File drawer  $N$

\*  $p \leq .05$

\*\*\*  $p \leq .001$

Table 5

*Percentage Correct on the Black and White Targets Tests for the Emotion Study (Study 2)*

	White targets test			Black targets test		
	Ang.	Anx.	Neut.	Ang.	Anx.	Neut.
Implicit						
HPP*	72	75	72	67	68	69
LPP	72	74	71	66	69	72
Explicit						
HPP	71	76	70	66	69	71
LPP	73	73	72	67	68	71

*Note:* “Ang.” = anger, “Anx.” = anxiety, and “Neut.” = neutral. All means in the table are presented in terms of percentage accuracy on the tests in order to equate the accuracy scores on tests containing different numbers of items (i.e., the Black targets test contains 31 items while the White targets test contains 24 items). Means based on the total number of items correct for the main effect of mood manipulation are presented in the text.

\* HPP = upper 1/2 of the scores; LPP = lower 1/2 of scores



Table 7

*Actual Percentage Correct on the Black and White Targets Tests for the Cognitive Load Study (Study 3)*

	White targets test		Black targets test	
	2-back	no-back	2-back	no-back
Implicit				
HPP	85	79	69	73
LPP	84	84	70	73
Explicit				
HPP	83	80	71	73
LPP	86	83	70	74

*Note:* “HPP” stands for High Prejudiced Persons and “LPP” stands for Low Prejudiced Persons. All means in the table are presented in terms of percentage accuracy on the tests in order to equate the accuracy scores on tests containing different numbers of items (i.e., the Black targets test contains 31 items while the White targets test contains 24 items).

Means based on percentage accuracy on the tests.

Table 8

*Percentage Correct on the Black and White Targets Tests for the Money Motivation Study (Study 4)*

	White targets test		Black targets test	
	Money	No Money	Money	No Money
Implicit				
HPP	81	76	71	63
LPP	77	78	69	71
Explicit				
HPP	77	79	68	64
LPP	79	76	73	67

*Note:* “HPP” stands for High Prejudiced Persons and “LPP” stands for Low Prejudiced Persons. All means in the table are presented in terms of percentage accuracy on the tests in order to equate the accuracy scores on tests containing different numbers of items (i.e., the Black targets test contains 31 items while the White targets test contains 24 items).

Means based on percentage accuracy on the tests.

Table 9

*Repeated Measures ANOVA Means on Self-Rated and Other-Rated Anger for both the Black and White Targets Tests*

	Self-Rated Anger		Other-Rated Anger	
	White Test	Black Test	White Test	Black Test
HPP	1.27	1.96	1.15	1.20
LPP	1.24	1.35	1.47	1.37

*Note:* “HPP” stands for High Prejudiced Persons and “LPP” stands for Low Prejudiced Persons.

Table 10

*Repeated Measures ANOVA Means on Self-Rated and Other-Rated Anxiety for both the Black and White Targets Tests*

	Self-Rated Anxiety		Other-Rated Anxiety	
	White Test	Black Test	White Test	Black Test
HPP	2.18	2.23	1.85	2.60
LPP	1.55	1.66	2.13	2.30

*Note:* “HPP” stands for High Prejudiced Persons and “LPP” stands for Low Prejudiced Persons.

Table 11

*Correlations Between Self-Rated Anger and Anxiety, Implicit Prejudice, Explicit Prejudice, and Accuracy on the Black and White Targets Tests*

---

	Anger	Anxiety	IAT	ATB	Black Test	White Test
Anger	-	-.08	.15	.29*	-.05	.03
Anxiety	-	-	-.24+	-.02	-.18	-.08
IAT	-	-	-	.17	.01	-.04
ATB	-	-	-	-	-.33*	-.14
Black Test	-	-	-	-	-	.18

---

*Note:* “IAT” = Implicit Association Test, “ATB” = Attitudes Toward Blacks scale.

$N = 51$ .

+  $p < .10$

\*  $p < .05$

Table 12

*Correlations Between Other-Rated Anger and Anxiety, Implicit Prejudice, Explicit Prejudice, and Accuracy on the Black and White Targets Test*

---

	Anger	Anxiety	IAT	ATB	Black Test	White Test
Anger	-	.10	.35	.19	-.33	-.30
Anxiety	-	-	-.03	.40+	-.36+	-.28
IAT	-	-	-	.20	-.01	-.08
ATB	-	-	-	-	-.27	.10
Black Test	-	-	-	-	-	.12

---

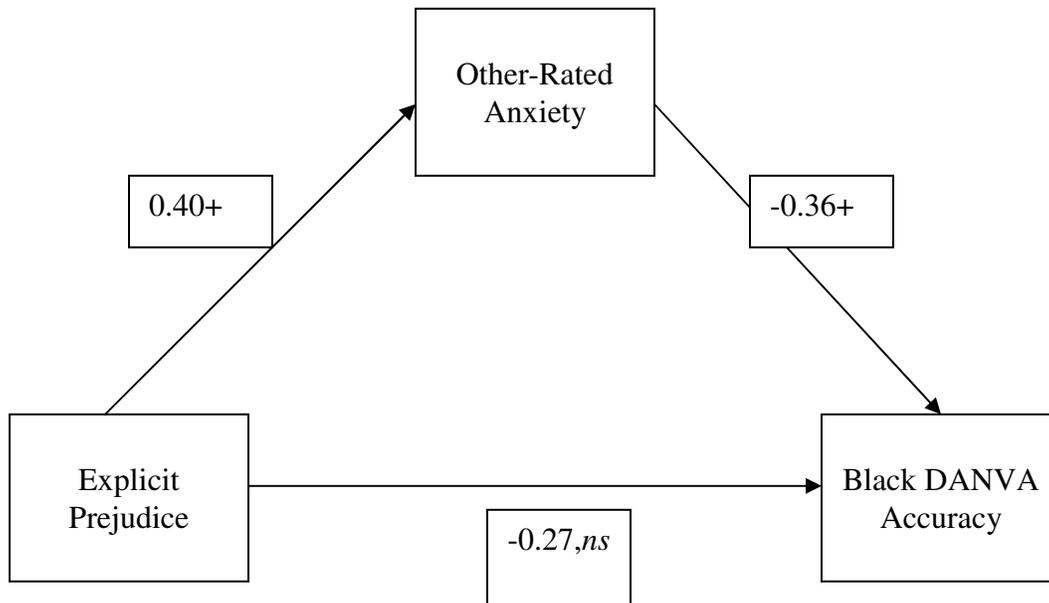
*Note:* "IAT" = Implicit Association Test, "ATB" = Attitudes Toward Blacks scale.

$N = 25$ .

+  $p < .10$

Figure 1

*Hypothesized Mediation of the Relation Between Prejudice and Accuracy on the Black Targets Test*



+  $p < .10$

## Appendix A

### Summary of Studies Included in Study 1 Meta-Analysis

#### *Overview*

All participants in the following studies were undergraduates at Northeastern University who participated in partial fulfillment of introductory psychology course requirements. To maintain a clear distinction between ingroup and outgroup membership, all participants belonging to the group being identified (i.e., target group for either the prejudice measure and/or the target minority group member in the sensitivity tasks) were removed before carrying out analyses involving that target group. These exclusions are reflected in the sample size data given in Tables 1 and 2.

The demographics questionnaire and contact measures were kept constant across all of the studies they were included in, except that the contact measures were tailored to each of the minority groups that were relevant to each particular study. The demographics questionnaire asked participants' age, gender, ethnic identification, religious identification, and sexual orientation. The contact measures included in Studies 1, 4, 5, and 7 asked how many members of the target minority group the participant reported knowing, as well as how often they reported interacting with members of this minority group, how close they feel to people who are members of this minority group, and how many members of this minority group they would consider to be their close friends.<sup>4</sup>

General ethnicity data from other experiments conducted on participants from the pool yielded ethnicity data as follows: 76.9% White, 8.6% Asian, 6.4% Hispanic/Latino, 5.2% Black, and 2.7% "other," and their mean age was 18.7 (range 17-22).

### Study 1

Participants completed this study in small groups of 6-10. Participants were first asked to complete several different minority group identification tasks that were unrelated to the question of emotional sensitivity and decoding. Participants then completed the DANVA2-AF faces via Powerpoint on a large screen at the front of the classroom where the students were completing this study. Participants then filled out Bushman and Bonacci's (2004) Arab and Hispanic prejudice measures as well as a prejudice measure that was adapted from these measures for anti-Semitism. Participants were asked to rate eleven questions on a seven-point scale, for example "I can hardly imagine myself voting for a Jewish [Arab, or Hispanic] American who is running for an important political office" and "If I knew I had been assigned to live in a dorm room with an Arab [Jewish, or Hispanic] American I would ask to change rooms." Cronbach's alpha was .87, .89, and .93 for the Jewish, Arab, and Hispanic measures. Participants were also asked to fill out some basic demographic information, as well as several questions asking about the amount of contact they had with Jews, Arabs, and Hispanics.

### Studies 2 and 3

Participants completed Studies 2 and 3 individually on a personal computer in a small laboratory. The study was administered using Media Lab and Direct RT software (Jarvis, 2006). Participants were first asked to participate in a racial identification vocal task that was not of any interest to our prejudice and sensitivity question. Participants were then asked to complete a Black implicit association test (IAT; Greenwald, McGhee, & Schwartz, 1998) that assessed participants' negative associations with Blacks. The IAT

consisted of faces of Black Americans or White Americans and positive and negative words. The stimuli were taken from the Project Implicit website and were put together in an IAT which was conducted with Media Lab and DirectRT software (Jarvis, 2006). The IAT was administered individually on a personal computer and was scored using the revised algorithm presented in Greenwald, Nosek, and Banaji (2003). Higher scores mean that the participant has more negative associations with Blacks as determined by calculating response latencies on tasks which asked participants to match different pictures with positive and negative words. Participants then completed both the DANVA2-AF and DANVA2-AAAF sensitivity tasks (counterbalanced), a few attitude questionnaires that are not relevant to the main research question, contact measures assessing the amount of contact the participant has had with Blacks, and a basic demographics questionnaire. The only difference between Studies 2 and 3 was a stimuli difference in a task that was unrelated to the present question of the relation between prejudice and sensitivity.

#### Study 4

Participants completed Study 4 individually on a personal computer in a small laboratory. The study was administered using Media Lab and Direct RT software (Jarvis, 2006). Participants were first asked to participate in a homosexual identification task that was not of any interest to the prejudice and sensitivity question. Participants were then asked to complete a homosexual implicit association test (IAT; Greenwald, McGhee, & Schwartz, 1998) that assessed participants' negative associations with homosexuals. This IAT was set up in the same way as the Black IAT used in Studies 2 and 3; however,

symbols and pictures depicting homosexual or heterosexual relationships were used. These stimuli were also taken from the Project Implicit website. Participants then completed the DANVA2-AF and the male homosexual subscale of the Modern Homonegativity Scale, which was used as a measure of participants' explicit prejudice (Morrison & Morrison, 2002). This measure included items such as "Gay men should stop shoving their lifestyle down other people's throats," and "Celebrations such as 'Gay Pride Day' are ridiculous because they assume that an individual's sexual orientation should constitute a source of pride." Participants then filled out some questions about the amount of contact they had with homosexuals, an attitude scale that is not pertinent to the main research question, and a basic demographics questionnaire.

#### Study 5

Participants completed Study 5 individually on a personal computer in a small laboratory. The study was administered using Media Lab and Direct RT software (Jarvis, 2006). In this study participants first completed the DANVA2-AF, then the DANVA2-AAAF, and then a race identification test that is not relevant to the present research question. Participants then completed a Black IAT followed by the Attitudes Toward Blacks Scale (Brigham, 1993), on which participants rate the extent they agree with statements such as "If a Black person were put in charge of me, I would not mind taking advice and direction from him or her" (reverse scored) and "I enjoy a funny racial joke even if some people might find it offensive." Participants then filled out a measure of their contact with Blacks and a basic demographics questionnaire.

### Study 6

Participants completed Study 7 in groups of about 30-40 in a large classroom that was equipped with audiovisual equipment. Participants completed several unrelated tasks before completing the DANVA2-AF and a battery of questionnaires that included explicit measures towards Arabs, Jews, Blacks, and homosexuals (as used in Studies 1, 4, and 5). The battery also included several other personality measures that were not relevant to the main research question in this study.

### Study 7

Participants completed Study 8 individually on a personal computer in a small laboratory. The study was administered using Media Lab and Direct RT software (Jarvis, 2006). This study consisted of three main sections that were counterbalanced: the DANVA2-AAAF, the DANVA2-AF, and the “battery.” The “battery” consisted of the Black IAT, Attitudes Toward Blacks Scale, several items measuring the amount of contact the participants had with Blacks, several other personality and state measurements that are not relevant to the main research question of this article, and a basic demographics questionnaire. Because all of the conditions were counterbalanced, this is the only study in the meta-analysis where some participants completed the Black and White sensitivity measures after they completed their IAT and explicit prejudice measure. For our purposes we collapsed across all of these conditions when reporting the correlation in this meta-analysis.

## Appendix B

## Explicit Racism Questionnaire: Attitudes Toward Blacks (ATB) Scale

Instructions: please select the number corresponding to how you feel about each question.

1. If a Black person were put in charge of me, I would not mind taking advice and direction from him or her.\*
2. If I had a chance to introduce Black visitors to my friends and neighbors, I would be pleased to do so.\*
3. I would rather not have Black people live in the same apartment building I live in.
4. I would probably feel somewhat self-conscious dancing with a Black person in a public space.
5. I would not mind at all if a Black family with about the same income and education as me moved in next door.\*
6. I think Black people look more similar to each other than White people do.
7. Interracial marriage should be discouraged to avoid the “who-am-I?” confusion, which the children feel.
8. I get very upset when I hear White people make prejudicial remarks about Black people.\*
9. I favor open housing laws that allow more racial integration of neighborhoods.\*
10. It would not bother me if my new roommate were Black.\*
11. It is likely that Black people will bring violence to neighborhoods when they move in.
12. I enjoy a funny racial joke, even if some people might find it offensive.
13. The federal government should take decisive steps to override the injustices Black people suffer at the hands of local authorities.\*
14. Black and White people are inherently equal.\*
15. Black people are demanding too much too fast in their push for equal rights.
16. Whites should support Blacks in their struggle against discrimination and segregation.\*
17. Generally, Blacks are not as smart as Whites.
18. I worry that in the next few years I may be denied my application for a job or promotion because of preferential treatment given to minority group members.
19. Racial integration of (schools, businesses, residences, etc.) has benefited both Blacks and Whites.\*
20. Some Blacks are so touchy about race that it is difficult to get along with them.

\* Items marked with an “\*” were reverse scored.

## Appendix C

## Demographics Questionnaire

1. Age
2. Gender
  - a. Male
  - b. Female
3. Ethnic ID
  - a. African American
  - b. Native American
  - c. Hispanic
  - d. White
  - e. Middle Eastern
  - f. Asian
  - g. Multiracial
  - h. Other
4. Religion
  - a. Jewish
  - b. Muslim
  - c. Catholic
  - d. Protestant
  - e. Eastern Orthodox
  - f. Oriental Orthodox
  - g. No Organized
  - h. Other
5. Homosexual
  - a. Predominantly Men
  - b. Somewhat Men
  - c. Equally
  - d. Somewhat Women
  - e. Predominantly Women

## Appendix D

## Proximal State Ratings Sheet

Participant ID# \_\_\_\_\_  
 Coder Initials \_\_\_\_\_  
 Sheet # \_\_\_\_\_

**Instructions:** Please circle the number which best reflects how you think the participant was feeling during the particular phase of the study. Please remember that when the participant flips over the sheet in front of them this signals the end of that particular phase of the study. You will answer all of the coding questions for each phase of the study.

1. How happy did the participant appear?  
 Not at all 1          2          3          4          5          6          7 Noticeably
2. How angry did the participant appear?  
 Not at all 1          2          3          4          5          6          7 Noticeably
3. How sad did the participant appear?  
 Not at all 1          2          3          4          5          6          7 Noticeably
4. How challenged did the participant appear?  
 Not at all 1          2          3          4          5          6          7 Noticeably
5. How uncomfortable did the participant appear?  
 Not at all 1          2          3          4          5          6          7 Noticeably
6. How anxious did the participant appear?  
 Not at all 1          2          3          4          5          6          7 Noticeably
7. How dominant did the participant appear?  
 Not at all 1          2          3          4          5          6          7 Noticeably
8. How cheerful did the participant appear?  
 Not at all 1          2          3          4          5          6          7 Noticeably
9. How aggravated did the participant appear?  
 Not at all 1          2          3          4          5          6          7 Noticeably
10. How gloomy did the participant appear?  
 Not at all 1          2          3          4          5          6          7 Noticeably

11. How difficult did the participant find the task?  
 Not at all 1          2          3          4          5          6          7 Noticeably
12. How tense did the participant appear?  
 Not at all 1          2          3          4          5          6          7 Noticeably
13. How powerful did the participant appear?  
 Not at all 1          2          3          4          5          6          7 Noticeably
14. How depressed did the participant appear?  
 Not at all 1          2          3          4          5          6          7 Noticeably
15. How optimistic did the participant appear?  
 Not at all 1          2          3          4          5          6          7 Noticeably
16. How irritated did the participant appear?  
 Not at all 1          2          3          4          5          6          7 Noticeably
17. How resentful did the participant appear?  
 Not at all 1          2          3          4          5          6          7 Noticeably
18. How annoyed did the participant appear?  
 Not at all 1          2          3          4          5          6          7 Noticeably
19. How strong did the participant appear?  
 Not at all 1          2          3          4          5          6          7 Noticeably
20. How fearful did the participant appear?  
 Not at all 1          2          3          4          5          6          7 Noticeably
21. How hard did it appear for the participant to focus on the task?  
 Not at all 1          2          3          4          5          6          7 Noticeably



