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JUST OUT OF TOUCH: EMBODIED HAPTIC CUES

INFLUENCE SOCIAL APPRAISALS

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by

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ABSTRACT

Investigations examining Allport's (1954) contact hypothesis have provided substantial evidence for reduced instances of racial prejudice when people are in close contact with racial outgroups (see Pettigrew & Tropp, 2006 for a review). Similarly, Relational Models Theory (Fiske, 2004) posits that cues such as proximity, touch, and synchrony (e.g., shared traits) help create a sense of communal sharing—commonly found between close kin, friends, and members of social groups. Combining these research domains, the current research aimed to prime participants to feel either a high or low sense of positivity via embodied social cues (i.e., haptic feedback) before they completed an evaluative task. The results showed that participants who experienced smooth haptic feedback (vs. rough), showed better appraisals of job candidates. However, the results were not qualified by an interaction with candidate race on evaluations, behavioral approach, or memory.

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Chapter 1. INTRODUCTION

Humans are social beings. We depend upon social groups to fulfill basic needs of affiliation and validation within social systems (Baumeister & Leary, 1995). Indeed, strong interpersonal relationships within groups can improve self-esteem, buffer rejection, and even make an anxious event less daunting. As John Donne (1975) once put it so eloquently, "No (person) is an island." The formation of groups makes our lives easier by being a conduit to essential survival needs like food, shelter, and protection. Accordingly, social relationships also serve as a psychological resource—bringing meaning and fulfillment to our lives (Baumeister & Leary, 1995).

Social cohesion can, however, have a dark side. An unfortunate byproduct of group formations is that groups can also serve to facilitate intergroup bias and conflict. Intergroup bias refers to an array of beliefs about, evaluations of, and behaviors toward, members of different groups. Dovidio and Gaertner (2010) broadly define bias as "an unfair evaluative, emotional, cognitive, or behavioral response toward another group in ways that devalue or disadvantage the other group and its members either directly or indirectly by valuing or privileging members of one's own group." Thus, bias can influence a perceiver's evaluations, perceptions, emotions, and behavioral responses to others based on group membership alone. Accordingly, bias can lead to many undesirable beliefs (i.e., stereotypes), attitudes (i.e., prejudice), and unjust behavior towards other groups (i.e., discrimination).

The goal of the proposed research is to examine whether a person's embodied sensory experience can affect the prevalence of intergroup bias. This goal is in line with and extends a growing body of research that suggests that input from our physical senses can influence our social judgment. In an initial test of this notion, Strack, Martin, and Stepper (1988) found

that people judged comic strips to be more humorous when they held a pen between their teeth (vs. their lips) to cause (vs. prevent) the contraction of the facial muscles used to smile (vs. frown). More recently, research has shown that the physical sense of warmth (e.g., holding a warm coffee cup) can evoke appraisals of interaction partners as interpersonally warmer (Williams & Bargh, 2008) and résumés attached to heavier clipboards led people to perceive job applicants as more qualified (Ackerman, Nocera, & Bargh, 2010). Thus, a growing body of research suggests that there is a link between our physical senses and cognitive appraisals of the world around us.

Importantly, examination of the question of whether input from our physical senses can contribute to intergroup bias extends prior research. Prior research on embodied cognition has examined interpersonal experiences (e.g., Ackerman et al., 2010; Williams & Bargh, 2008), leaving questions about the intersection of intergroup bias and embodied cognition unaddressed. To consider the possibility that input from our physical senses can contribute to racial bias, I first review theory and research showing how group categorization contributes to perceptions of similarities with and differences between groups and how those perceptions give rise to intergroup bias in impression formation, behavior, and perception. Second, I discuss the phenomenon of embodied cognition and review possible mechanisms that could contribute to embodied cognition effects. Finally, using a cognitive complexity framework (e.g., Linville & Jones, 1980), I will lay out predications about how embodied cues of touch might influence the perception of job candidates from different racial groups.

Social Categorization, Intergroup Bias, and Prejudice

Theorists and scholars have long thought that basic categorization processes underlie intergroup bias. To illustrate classic thought on the issue, I first define categorization. I then

discuss Tajfel's accentuation principles underlying categorization and describe the operation of ingroup favoritism, before noting how the operation of basic categorization processes provide the foundation of intergroup bias and prejudice.

Social categorization is the process of classifying people into groups based on appearance or prototypic group traits. Compared to individuation, or the processing of people based on unique characteristics, social categorization has been conceptualized as a quick, efficient process that is often engaged automatically and outside our conscious control (Allport, 1954; Bargh, 1994; Fiske & Neuberg, 1990). Once people are categorized as ingroup and outgroup members, processes of assimilation and contrast occur to maximally differentiate ingroups from outgroups.

Tajfel's *accentuation theory* (1959) describes the processes of assimilation and contrast that underlie categorization. People tend to minimize the perception of differences between stimuli falling within the same category (assimilation effect). Conversely, people tend to simultaneously maximize the perception of differences between stimuli belonging to different categories (contrast effect). Thus, once a person is categorized, there is an accentuation of similarities within groups and differences between groups. For example, White Americans come to be seen as very similar to other White Americans, Black Americans come to be seen as very similar to other Black Americans, and White Americans come to be seen as very different from Black Americans. This has been shown in the 'who-said-what' paradigm where people tend to see contributions of members of one group as similar to one another and different from those of other groups, resulting in recognition errors regarding who made what contributions to a group discussion (e.g., Taylor, Fiske, & Etcoff, 1978). This has also been shown perceptually in terms of recognition deficits for people from different groups (e.g., cross-race effect; for a review see

Hugenberg, Young, Bernstein, & Sacco, 2010). Thus, social categorizations shape perceptions of groups and provide the foundation for intergroup bias by emphasizing similarities within groups and differences between groups.

One of the most widely accepted mechanisms for intergroup bias and conflict is the idea of ingroup favoritism. Ingroup favoritism can be described as positive appraisals of people belonging to one's ingroup and must be distinguished from outgroup derogation, or the negative appraisals of people belonging to other groups. As Allport (1954) noted in his seminal consideration of the sources of intergroup prejudice, "the very act of affirming our way of life often leads us to the brink of prejudice. . . one must first overestimate the things one loves before one can underestimate the contraries" (p. 25). According to Allport, intergroup bias stems from our valuing that which is familiar to us (our ingroups) and understanding our ingroups by comparing and contrasting them to other groups. This sentiment is well depicted by the following quote:

> "Although we could not perceive our own ingroups excepting as they contrast
>
> to outgroups, still the ingroups are psychologically primary. . . .
>
> Hostility toward outgroups helps strengthen our sense of belonging, but
>
> it is not required. . . . The familiar is preferred. What is alien is regarded
>
> as somehow inferior, less "good," but there is not necessarily hostility
>
> against it. . . . Thus, while a certain amount of predilection is inevitable in
>
> all ingroup memberships, the reciprocal attitude toward outgroups may
>
> range widely."

—Allport, 1954 (p. 42)

As the foregoing points illustrate, Allport (1954) noted that people are motivated to protect themselves *and*, as extensions of the self, the groups to which they belong. Allport's keen observation has endured the test of time; for instance, in a thorough review of existing research on intergroup bias, Brewer (1979) concluded that ingroup favoritism was a more typical and potent motivator of intergroup bias than was outgroup derogation.

The foregoing logic highlights two points. First, categorization leads to the perception of exaggerated similarities within groups and differences between groups. Second, ingroup favoritism prevails. These two processes set the stage for the application of activated stereotypes of outgroups. Moreover, classifying people into groups through social categorization allows for generalizations to be formulated about common characteristics of group members in the form of stereotypes, regardless of veracity or attributes possessed by the individual being stereotyped.

In the absence of knowledge about relevant individuating information, stereotypic knowledge about outgroups prevails. When stereotypes are activated for instance, individual group members can be imparted with judgments based on group membership and expectations. Ingroups are generally endowed with good qualities while outgroup members are perceived in a less favorable light. For instance, ingroup members can elicit feelings of pride and admiration, while outgroups provoke emotions from envy, anger, and pity to disgust and resentment (Cuddy, Fiske, & Glick, 2007; Dovidio & Gaerner, 2010). Thus, it is no surprise that stereotyping can lead to major deficits within interpersonal relations, often without any justification or basis in reality.

There have been many theories put forth explaining intergroup bias. Theories explaining the sources of intergroup bias note the importance of conflict over limited

resources (*realistic group conflict theory*; Sherif, 1966), collective identity (*social identity*

theory; Tajfel & Turner, 1979), and imbalanced power hierarchies (*social dominance theory*;

Sidanius & Pratto, 1999). Theories noting routes to amelioration of bias and reduced

prejudice stress the importance of contact between groups (*intergroup contact theory*;

Allport, 1954; Williams, 1947), reframing groups as cooperative (*mutual intergroup*

differentiation model; Hewstone & Brown, 1986), and recategorizing outgroup members

under a mutually shared ingroup identity (*common ingroup identity model*; Gaertner,

Dovidio, Anastasio, Bachman, & Rust, 1993; Gaertner & Dovidio, 2000).

An additional, and previously unexplored, route to ameliorate intergroup bias and

reduce prejudice may be that positive experiences of embodied cognition can depose

intergroup bias. In other words, once people are categorized as ingroup and outgroup

members, with similarities within groups and differences between groups being emphasized,

physical cues about the nature of the relationship might influence intergroup bias. To

consider this possibility, I turn attention to theory and research on embodied cognition with

specific focus on the experience of touch and the effects of touch on perceptions of

interpersonal closeness.

Embodied Cognitions of Touching as Cues to Closeness

There is ample evidence that the sense of touch can facilitate a physical sense of

closeness, which transcends into a psychological and emotional sense of closeness. For instance,

Relational Models Theory (Fiske, 2004) suggests that touching can create feelings of physical

overlap (e.g., closeness) and be an embodied cue to self-other overlap (overlaps in mental

representations of the self and someone else). In addition, classic findings shows that people who

were touched incidentally (compared to not touched) by a target person reported more positive

attitudes towards that person (Fisher, Rytting, & Heslin, 1976). In general, touching induces positivity whether the touch comes from a waitress garnering bigger tips (Crusco & Wetzel, 1984), involves skin-to-skin contact that facilitates an intrinsic expression of attachment (Ainsworth, 1967), or comes from a new roommate toward which one is quite positive (Waugh & Fredrickson, 2006). Generally, signaling systems such as touch have been centrally linked to the formation and maintenance of relationships (Keltner & Lerner, 2010). Therefore, it seems that touch signals closeness of a relationship (Kurzban, 2001), operates in online and offline cognitions (Niedenthal, Barsalou, Winkielman, Krauth-Gruber, & Ric, 2005), and often operates outside of conscious awareness (Gueguen, 2002).

The sensation of touch has been an important topic of interest within and beyond the boundaries of psychology. Within the psychological literature on close relationships, touch has been found to be central to soothing, flirtation, greeting, and play (Hertenstein, 2002). More broadly, touch has also been linked to increased compliance of requests (Willis & Hamm, 1980) and associated with greater cooperation with strangers in economic games (Kurzban, 2001). In marketing, the touch phenomenon extends to inanimate objects as well. A consumer touching products has been linked to more positive product appraisals (Peck & Childers, 2003) and a greater sense of product ownership (Peck & Shu, 2009; Wolf, Arkes, & Muhanna, 2008). Because touch is associated with the activation of the orbitofrontal region, which is the region of the brain associated with secondary awards (Rolls, 2000), the experience of physical touch may be a powerful way in which we receive and interpret positive information about our outside world.

Closeness of physical proximity and direct contact (e.g., touching) have also been shown to decrease levels of implicit prejudice. Findings indicate that the mere presence of an African-

American experimenter in the laboratory was associated with a decrease in Whites' implicit

prejudice towards African-Americans (Lowery, Hardin, Sinclair, 2001). Furthermore, Seger and

Smith (2007; as cited in Semin & Smith, 2008) also found that implicit (but not explicit)

prejudice was reduced when an African-American experimenter physically touched participants

before an Implicit Association Test (IAT) for African-Americans. These findings are consistent

with the embodied account of self-other overlap that a physical overlap between two parties (i.e.,

touch) can transcend into instances of psychological overlap, bridging the cognitive gap between

the perceiver and racial outgroup members. Thus, the act of physical interpersonal touch can be

construed into an embodied cue of self-other overlap; both physical space and internal cognitive

representations of the 'self' and 'other' seem to overlap following touch.

Research has proposed that perceptual motor information might be the basis for abstract

concepts (Barsalou, 1999) and thus, embodiment serves as a subtle indicator of how we should

navigate our world and how we interpret and use perceptual information in abstract thinking. For

example, Ackerman and colleagues (2010) suggest that sensory motor experiences early in life

form a kind of mental scaffold for the development of conceptual knowledge. Such associative

links between sensory memory and conceptual knowledge (e.g., an item is heavy so it must be

valuable or expensive) becomes integrated into a network over time and can be later activated

during sensorimotor events, cuing touch-related conceptual processing. Consistent with this

notion, Ackerman et al. have shown that merely holding an object, such as rough sandpaper, can

influence our perceptions and judgments of interaction partners, affecting judgments about how

rough or smooth an interaction is perceived. Specifically, because sandpaper is associated early

on in life as a texture that is unpleasant to the touch, holding rough sandpaper when evaluating

others typically leads to a spillover of negative sensory information that then transfers onto other people when they are linked together (Ackerman et. al., 2010).

Theories of Embodiment: Cognitive Mechanisms or Misconstrual?

The way we make sense and glean knowledge from our world has been at the heart of psychology since its inception. In light of burgeoning research on embodied cognition, it is no surprise that much emphasis has been made towards an explanation for embodied effects that at times, seem counterintuitive. After all, few laypersons would guess a priori that merely nodding your head during a specious statement would make you more likely to agree with it during evaluation (Tom, Pettersen, Lau, Burton, & Cook, 1991). Therefore, researchers have been asking, what is the connection between our sensory experience and judgments of information in our environment? In the next section, I will discuss a few theories that have been put forth, about this very question of embodied cognition. Because the proposed research is an initial examination of the possibility that embodied cognition may provide a route to intergroup bias reduction, I first seek to test that possibility before turning attention to potential mechanisms. Although the current research does not provide an empirical test of these possible mechanisms for embodied cognition, it is important to review the literature that has offered insightful suppositions and points to important conditions to include in experimental designs.

As noted above, Relational Models Theory (Fiske, 2004) suggests that touching can be an embodied cue to self-other overlap due to a feeling of physical overlap (e.g., closeness). This idea suggests a clear, potential mediator—self-other overlap. Beyond self-other overlap, three other factors have been suggested as possible mediators of embodied cognition effects.

First, according to *Perceptual Symbol Systems theory* (PSS; Barsalou, 1999), memory may be structured in ways that link sensory experiences to abstract constructs. According to PSS,

much of memory is based upon our perceptual bottom-up experience and the association of later top-down conceptual knowledge of abstract concepts. Presumably through the use of selective attention, schematic representations of perceptual components are extracted from experience and stored in memory (e.g., memories of hot, soft, heavy). As one gains more experience with their environment and world (e.g., during development), these memories become more complex and organized around a common concept that links both conceptual information with fundamental sensory experience.

To illustrate how PSS accounts for the phenomenon of embodied cognition, let us take a head nodding experiment as an example. A study investigating embodied persuasion found that people who are asked to nod their heads up and down (vs. left to right) were more likely to be persuaded to approve of a neutral object (Tom et al., 1991). According to PSS theory, early on in development (possibly even before we are able to speak), we learn that nodding one's head up and down is the signal of approval while shaking one's head side-to-side signals disapproval. Thus, we use this method of communication to express approval before we can even communicate verbally. Over time, this sensory experience of shaking your head up and down becomes ingrained with the concept of approval in our memory. Moreover, the representation of shaking one's head up and down becomes closely associated with agreement in our long-term memory (i.e., a great majority of past events with the same sensory experience are closely associated with approval). Eventually, both cognitive representations of sensory memory and conceptual knowledge are so closely linked that triggering a similar sensory experience (i.e., shaking one's head up and down) can activate associated concepts (i.e., abstract knowledge of approval) to be used in short-term memory and, as a consequence, used in current judgments.

Therefore, once established, these connected representations form a basic conceptual system that represents types, supports categorization, and produces categorical inferences (Barsalou, 1999).

Second, Ackerman and colleagues (2010) suggested that sensorimotor events and concepts are integrated via common 'linguistic deciphers,' or metaphors used to explain our world. Specifically, in our lexicon, it is suggested that common metaphors, representations, and the way we describe objects is grounded in the sensory feedback we receive from our environment. For example, it is common for one to describe an interaction as smooth as opposed to rough or warm as opposed to cold. Common phrases like "I had a rough day" or "their words cut me" describe a sensory experience (i.e., touch) or interaction that is not necessarily true in a literal sense. However, a major criticism to this linguistic metaphor based embodied explanation is lack of evidence that such phrases appear universally across cultures and generations. An ancient Chinese proverb might not have the same meaning to an American in the Midwest. Indeed, *social pain theory* (MacDonald & Leary, 2005) suggests that social and physical pain overlap in the brain (due to evolutionary pressures to have one single system able to detect both domains of pain) which may explain why all words that describe emotional pain also describe physical pain (e.g., I am love sick, heartbroken) in languages from all over the world.

Third, and distinct from the above explanations, others have suggested that embodiment in social cognition might be a byproduct of misattributions. The misattribution effect occurs when arousal inspired by one source is erroneously applied another cognitive label, producing a different reaction (for a discussion see Baumeister & Bushman, 2008; Schachter & Singer, 1962). In a seminal study, Dutton and Aron (1974) found that male participants were more likely to misattribute their elevated arousal after walking across a high bridge to feelings of interpersonal attraction toward a female experimenter compared to males who walked across a

lower, safer bridge. Dutton and Aron posited that the increased level of arousal from crossing the

high bridge (due to fear, anxiety) was misinterpreted by their male participants to be

synonymous with feelings of strong interpersonal attraction that is often described as a similar

physical event of arousal (e.g., elevated heart rate, fear).

Importantly, however, misattribution effects are undermined by explicit awareness. Thus,

Schwarz and Clore (1983) discovered in a misattribution study on weather and well-being that

people feel better when it is sunny outside and worse when it is a rainy day. Interestingly

however, the effect goes away when participants are made explicitly aware of the weather

conditions (e.g., asking participants how the weather is) before making judgments about their

lives. The work by Schwarz and Clore provides support to the notion that misattribution effects

are a type of false alarm or type 1 error between two events that are commonly co-occurring but

can be mutually exclusive. The fact that the misattribution effect was attenuated with explicit

awareness of the stimulus in the weather study suggests that perhaps these associations and

processes are automatic (e.g., spreading activation) and can be overridden with deliberative

thinking. Recently, research has provided initial evidence that two events in close proximity of

time and space can interfere with one another, leading to similar misattribution effects with

exacerbation and attenuation depending on temporal distance between both events (Payne, Hall,

Daryl, & Bishara, 2010).

Overview of Predictions and Current Research

Perhaps one of the most widely studied exchanges in intergroup relations (especially in

the United States) has been the relationship between people of different races, most notably

between Whites and Blacks. Race, along with gender and age, are among the primary bases

along which people categorize others (Brewer, 1988; Fiske & Neuberg, 1990). Not only does

race play a big part in how we perceive others, race also influences expectations for actions. It is, therefore, not surprising that the influence of group membership, particularly race, has been a central focus for the understanding of intergroup evaluation and appraisal (Jussim, Coleman, & Lerch, 1987).

Numerous theories have been put forth about how appraisals of ingroup and outgroup members are formulated, with several perspectives predicting outgroup polarization. For instance, *complexity-extremity theory* (Linville & Jones, 1980) suggests that ingroup members, because of greater contact and familiarity, are evaluated along a greater number of independent dimensions. By contrast, given lack of contact and familiarity, outgroup members are judged using fewer independent dimensions (e.g., good-bad). Thus, when evaluating an ingroup member, many positive and negative characteristics can be taken into account and when averaging across many dimensions, overall appraisals are more moderate. For outgroup members, who are evaluated using only a limited number of dimensions, evaluations can easily become polarized to either all good or all bad. Consistent with this perspective, research has provided evidence that Blacks, compared to similarly qualified Whites, were evaluated more extremely when they possessed either outstanding or poor credentials (see *polarized appraisals theory*; Linville & Jones, 1980). Moreover, when Blacks were highly qualified, they were rated more positively than similarly qualified Whites. In contrast, poorly qualified Blacks were rated more negatively than similarly qualified Whites. Thus, according to cognitive complexity theory, as well as several other theories (ambivalent racism, Katz & Haass, 1988; aversive racism, Gaertner & Dovidio, 1986; expectancy-violation, Jussim et al., 1987), quality serves as a situational cue that pushes Whites' evaluations of Blacks to extremes (good-bad).

Given the importance of touch in interpersonal interactions and social judgment, it is possible that touch can serve as a similar situational cue for evaluations. In other words, physical cues of smooth and rough touch may function as a sensory indicator of candidate quality. Little empirical work in the embodied literature has looked into the dynamics of embodied cognition and intergroup bias. In order to assess this possibility, this research had participants evaluate Black and White job candidates for a faculty position (cf. Akerman et al., 2010). Participants evaluated job candidates based on the résumés which were presented on clipboards with high-gloss paper underneath (smooth condition) or coarse, sandpaper (rough condition) underneath.

Past research indicates that individuals exposed to rough tactile feedback, make negative judgments towards social interactions when compared to smooth haptic feedback (Ackerman et al., 2010). Operating under the polarized appraisals approach to intergroup evaluation (e.g., Jussim et al., 1987; Linville & Jones, 1980), it is assumed that people will make more extreme judgments of stereotyped outgroup members due to the lack of complexity in their schema for outgroup members. Therefore, in the absence of any tactile feedback, it is predicted that White participants will conform to typical patterns of intergroup bias by showing more favorable evaluations of White candidates over Black candidates. Importantly, if the hypothesized influence of embodied contact (smooth tactile feedback) triggers positive associations between the target and the perceiver, then it is predicted that intergroup biases will be reversed or at least attenuated between White and Black job candidates because Black candidates will be evaluated more positively than a similar White candidate. In contrast, in the rough tactile conditions, it is predicted that Black candidates will be evaluated worse than White candidates.

Chapter 2. PILOT STUDY OVERVIEW

A pilot study was conducted to examine whether a haptic manipulation of clipboard texture would be sufficient to influence perceptions of job candidates, when no information about the race of the job applicant was provided. Bridging from the work with haptic feedback from Ackerman and colleagues (2010) which found that people were influenced to judge social interactions as going more smoothly when touching a smooth surface (as opposed to rough), a pilot study was conceived to test if texture underneath clipboards can influence résumé evaluations and test the strength of the dependent measure (questionnaire items). Thus, an independent sample of participants was recruited in a pilot study to test stimulus materials.

Method

Participants and Design

Participants were 16 female and 8 male undergraduates at the Pennsylvania State University, who were enrolled in an introductory psychology class and who participated in exchange for course credit. Four participants were excluded for either not following the experimenter's directions or holding the clipboard improperly (e.g., laying the clipboard on a table, holding with their sleeves). The design of the study was a single factor between-participants design in which participants were randomly assigned to Smooth or Rough clipboard texture conditions.

Materials and Procedure

Six identical clipboards were used with equal appearance, weight, and texture. For the smooth texture clipboards, professional high-glossy photo paper was affixed underneath three of the clipboards using double-sided tape. For the rough texture clipboards, general-purpose (rated 60 coarse) sandpaper was placed underneath the other three clipboards using double-sided tape.

For the résumé, a curriculum vita (CV) was generously provided by a colleague (see Appendix A). The CV consisted of two pages with sections related to education, work experience, fellowships, research publications, and professional affiliations. All identifying information was removed along with original article publication names and titles.

Participants arrived at the study and were informed that the researchers were interested in evaluating student and faculty perceptions of job candidates. They were told that they would be reviewing a résumé from a potential job applicant who was applying for a faculty position within the psychology department. Furthermore, participants were told that past research has indicated that even when faced with a limited amount of information (such as a résumé), people can still make pretty accurate judgments of others. After these directions, participants were given clipboards with the résumé on them. Participants were randomly assigned a clipboard that was either smooth textured underneath or rough textured underneath on a between-subjects basis.

After spending about 2-3 minutes reviewing the résumés while holding the clipboard, participants were given an evaluation form. The evaluation form contained eight items that were answered using 7-point Likert scale with anchors (depending on the context of the question) at -3(*very negative*) and +3(*very positive*). These included: (a) "What is your overall impression of the job candidate?", (b) "How would you rate the strength of the applicant for the position?", (c) "How do you feel about the future job performance of this applicant?", (d) "How much do you think that this candidate would get along with other co-workers?", (e) "How serious of interest does this candidate appear to be?", (f) "What is your impression of the job materials presented by the candidate?", (g) "What do you think the likelihood of this candidate being interviewed?", and (h) "What do you think the likelihood of this candidate being hired?" (see Appendix B). As a behavioral measure, the last question asked participants if they would be willing to leave their

Penn State email address to be a reference for the job candidate by circling 'yes' or 'no'. Finally, participants were probed for suspicion and thoroughly debriefed.

Results

Participants' responses on each item were submitted to an independent samples *t*-test for analysis. Results revealed that participants using the smooth (vs. rough) textured clipboards rated the candidate as significantly better overall (Ms = 2.69 and 2.00, $t(22) = 2.22$, $p < .04$), as a stronger candidate (Ms = 2.62 and 1.91, $t(22) = 2.34$, $p < .03$), as a candidate that was more interested in the position (Ms = 2.62 and 1.81, $t(22) = 2.11$, $p < .05$), and as a candidate that would get along better with co-workers (Ms = 2.38 and 1.45, $t(22) = 2.10$, $p < .05$; see Table 1). From the pattern of results, it appears that the smooth (vs. rough) haptic feedback had the most influence on more global judgments (e.g., overall impressions of job candidate) compared to specific, career-oriented predictions of the job candidate (e.g., likelihood of being hired). Therefore, we submitted the 8-item scale to a factor analysis to test if the items would load onto separate factors. However, the exploratory factor analysis revealed that a one factor solution was the best representation of the scaled-responses. Accordingly, we then aggregated the complete 8-item scale into a single composite score (Chronbach's $\alpha = .85$). Results on this composite score demonstrated that participants in the smooth condition rated the job candidate higher ($M = 2.45$, $SD = .28$) than those in the rough condition ($M = 1.90$, $SD = .81$), $t(22) = 2.28$, $p < .04$.

Table 1

Job candidate evaluation questions with comparisons between smooth and rough texture conditions

	Smooth	Rough	
How would you rate the strength of the applicant for the position?	$M = 2.62$ $SD = .51$	$M = 1.91$ $SD = .94$	$t(22) = 2.34$ $p < .03$

What is your overall impression of the job candidate?	*M* = 2.69 *SD* = .48	*M* = 2.00 *SD* = 1.00	*t*(22) = 2.22 *p* < .04
How serious of interest does this candidate appear to be?	*M* = 2.62 *SD* = .77	*M* = 1.82 *SD* = 1.08	*t*(22) = 2.11 *p* < .05
How much do you think that this candidate would get along with coworkers?	*M* = 2.38 *SD* = .87	*M* = 1.45 *SD* = 1.29	*t*(22) = 2.10 *p* < .05
What is your impression of the job materials presented by the candidate?	*M* = 2.46 *SD* = .66	*M* = 1.90 *SD* = .94	*t*(22) = 1.68 *p* > .10
How do you feel about the future job performance of this candidate?	*M* = 2.30 *SD* = .63	*M* = 2.00 *SD* = .77	*t*(22) = 1.07 *p* > .29
What do you think the likelihood of this candidate being interviewed?	*M* = 2.54 *SD* = .66	*M* = 2.18 *SD* = 1.25	*t*(22) = .89 *p* > .38
What do you think the likelihood of this candidate being hired?	*M* = 2.00 *SD* = .82	*M* = 2.00 *SD* = 1.00	*t*(22) = .00 *p* > .99
Composite Score (*α* = .85)	*M* = 2.45 *SD* = .28	*M* = 1.91 *SD* = .81	*t*(22) = 2.28 *p* < .04

However, logistic regression analysis on the behavioral measure of leaving an e-mail address did not reach significance ($p = .10$) and was trending in the opposite direction of predictions (i.e., more likely to leave email address for people in the rough feedback condition). Thus, the results of the pilot data suggest that clipboard texture does indeed influence judgments of race unspecified job candidates; job candidates were evaluated better when rated on smooth textured clipboards as opposed to rough textured.

Discussion

Using a haptic feedback manipulation, these preliminary findings were consistent with hypotheses that smooth texture can in fact influence evaluations of job candidates (absent of any cues to race). Specifically, following smooth haptic feedback people rated the job candidate's résumé more favorably than following rough feedback. Findings also suggested that significant effects of haptic feedback conditions emerged on global evaluations (see first four rows of Table 1), but not estimates of future performance (e.g., getting along with co-workers; see bottom half of Table 1). An exploratory factor analysis did not, however, support the distinction of separate factors, pointing to a single factor structure. Also, the lack of effects of haptic feedback conditions on the behavioral measure pointed to questions about whether being a reference for a job candidate is the best behavioral measure for students, who could not easily present such a reference and who would not normally be asked to make such a recommendation. A better behavioral measure might be one that asks participants about the likelihood of them taking a class or participating in research with the job candidate. In sum, the pilot study reported here serves as a foundation unto which the proposed study can build and expand upon within the domain of intergroup bias.

Chapter 3. STUDY 1 OVERVIEW

This study expands upon the pilot study in five ways. First, Study 1 adds a no-touch control condition to compare job candidate evaluations in smooth and rough feedback conditions to evaluations in a no feedback condition. Second, the race of the job applicant (White vs. Black) was manipulated via attachment of images to résumés. Third, Study 1 included two new behavioral variables. The behavioral measure from the pilot study was replaced; In Study 1, participants were asked if they "Would take a class offered by this candidate, if hired?" and "Would you be interested in doing research (as a research assistant) with this candidate, if hired?" instead of being asked if they would serve as a reference for the candidate. Fourth, as a hypothesis generating rather than a hypothesis testing variable, memory accuracy was measured with participants being asked to recall information from the candidate's credentials and pick their face out from a line up. Fifth, and finally, a mood measure (positive/negative) was included to rule out any changes in mood state that could offer alternative explanations for predicted effects.

Study 1 is, therefore, designed to test the hypothesis that manipulating embodied touch cues will affect White people's perceptions of Black and White candidates in ways that can enhance or attenuate intergroup bias. Specifically, I predict that participants who receive smooth haptic feedback (glossy photo paper) will show more favorable evaluations, give higher salaries, and show greater behavioral approach towards Black candidates than White candidates. In contrast, I predict that participants who receive rough haptic feedback (abrasive sandpaper) will show less favorable evaluations, give lower salaries, and be less likely to behaviorally approach Black candidates than White job candidates. In the absence of any haptic feedback, a classic racial bias effect is predicted; White participants are expected to more poorly evaluate, give lower salaries, and behaviorally avoid the Black candidate compared to the White candidate.

Although the current work is agnostic to direction for the memory measure, previous research might support that memory could be improved with smooth haptic feedback due to cognitive disregard of aversive stimuli (Rodin, 1987) or in contrast, the mood is information approach (e.g., Schwarz & Clore, 1983) would suggest negative stimuli could evoke greater attention toward the environment, improving memory for the job candidate. Also, literature on the well-established cross-race effect in recognition memory (see Hugenberg et al., 2010) might suggest that memory for members of one's own race would be better than for people representing other racial groups. Since the memory component of the current research is an exploratory measure, I acknowledge that there are many different outcomes that could present themselves based on prior research on memory bias.

Method

Participants and Design

Participants were 94 White undergraduates of the Pennsylvania State University (20 men, 74 women; M_{age} = 19.54), who were enrolled in an introductory psychology class and who completed the experiment in exchange for course credit. This study used a Clipboard Texture (Rough, Smooth, or Control) × Candidate Race (White or Black) between-participants design with approximately equal assignment of men and women to each condition.

Materials and Procedure

Face stimuli were selected from the NIMSTIM face database (Tottenham et al., 2009) and consisted of two pictures of a White male face and a Black male face, displaying features of only face and hair. Faces were selected such that facial expression (i.e., neutral), head position (i.e., frontal-facing), physical attractiveness (i.e., average) and relative size, brightness, and contrast were equal across the different conditions. The two faces were assigned equally across

the three experimental conditions: smooth paper texture, rough texture, and no-touch control (i.e., participants reviewed candidate without touching clipboard). Accordingly, the addition of the no-touch control group allowed for the testing of the direction of the different texture effects. In the smooth texture condition, premium plus photo paper (high gloss) was affixed to the underside of the clipboard that the participants held while reviewing and evaluating the résumé (similar to the pilot study). In the rough texture condition, highly abrasive sand paper (60 coarse) was affixed to the underside of the clipboard. In the no-touch control condition, participants did not hold a clipboard and reviewed the résumé by sight only (i.e., viewing the résumé lying flat on a table).

Participants were brought into the laboratory for a study concerning the evaluation of job candidates for a faculty position. Participants were greeted by the experimenter and told that the experimenters are interested in comparing non-experts (students) evaluations to expert (professor) evaluations (see Ackerman et al., 2010). Participants were told that accurate evaluations of real job candidates can be gleaned with relatively little information. Participants were also told to be open and honest with their judgments and impressions of potential candidates. The résumé in this study was the same curriculum vita (CV) used in the pilot study (see Appendix A).

After spending approximately 2-3 minutes reading the job candidate's résumé (at their leisure), participants completed all dependent variables. More specifically, participants evaluated the candidate, estimated the salary the candidate should make, and indicated their interest in taking and class with and/or doing research with the candidate. To test for potential memory biases, participants also completed a six-item memory test and then completed a mood measure. After completing all dependent measures, participants in the smooth and rough conditions rated

the texture of the clipboard (endpoints: -3 = *very rough*; 0 = *neutral*; +3 = *very smooth*).

Participants in the no-touch control condition did not complete this rating, since they did not hold

a clipboard. Lastly, after all measures, participants were thanked and debriefed.

Dependent Variables

Manipulation Check. As a manipulation check of clipboard texture, participants in the

smooth and rough conditions who held clipboards were asked to rate the texture of the clipboard

(endpoints: -3 = *very rough*; 0 = *neutral*; +3 = *very smooth*).

Appraisals. Participants evaluated the applicant using an evaluation form assessing the

same eight items used in the pilot study with all responses made using a 7-point Likert scale (-3

= *very negative; +3 = very positive*). In addition, four items were also completed (using the same

scale) asking about student relevant behavior of the candidate. Those four items included: (a)

"How patient would you expect this candidate to be with a student who was struggling to

understand the course material?", (b) "What tone would you expect from this candidate when not

satisfied with a student's performance?", (c) "How would you expect this candidate to behave

when disagreeing with a student's contributions to discussion?", and (d) "How would you expect

the candidate to greet students?" (see Appendix B). An overall evaluation variable was created

by averaging across these 12-items (α = .86).

Salary Estimates. Participants were given information pertaining to the average yearly

salary of incoming assistant professors; specifically, participants read: "The average annual

starting salary for an incoming Assistant Professor at Penn State is $55, 000, if hired, how much

do you think the candidate should make, starting out?" Participants then provided their

assessment (via free response) of a starting salary for a given job candidate (M = $55, 936, SD =

$5,859).

Behavioral Measures. Using 7-point scales (endpoints labeled: -3 = *not likely*; +3 *very likely*), participants indicated their likelihood of wanting to (a) do research with the job candidate or (b) take a class with the job candidate. Participants were also asked to leave their school e-mail address if they would like to be contacted for any future classes or research opportunities with the candidate they just evaluated. The two behavior questions were combined to form a single behavioral item ($r = .69$).

Memory. Five multiple-choice memory questions were asked about the job candidate's résumé. These included: (a) "What University did the candidate attend for graduate studies?", (b) What was the job candidate's last name?", (c) "How many research publications did the job candidate have?", (d) "What type of degree does the job candidate have?", and (e) "What class did the job candidate instruct alone?" Participants also considered a series of five photos and were asked to indicate which of the five was an image of the job candidate. All six memory questions (including the facial recognition item) were evaluated and participants were given a point for each correct response, which was summed to create a total memory score.

Positive Mood. To examine whether mood varies as a function of clipboard texture and could account for the predicted pattern of results, using 7-point scales (endpoints: 1 = *not at all*; 7 = *extremely*), participants completed rated the degree that they are currently feeling positive affect (i.e., relaxed, comfortable, soothed, easy-going, social) and negative states (i.e., critical, abrasive, harsh, irritated, ruffled) after viewing the candidate résumé (see Appendix B). Affective states were chosen to reflect positive and negative states that could be similar to concepts of rough and smoothness (see Ackerman et al., 2010 for a similar procedure). After reverse scoring participants' responses on the negative items, I averaged across responses, such

that higher numbers reflect more positive moods ($\alpha = .81$). Running the positive and negative items separately did not change the pattern of results.

Results

Manipulation Check. Responses to the texture manipulation check were analyzed by means of a one-sample *t*-test within the smooth and rough texture conditions to examine whether they significantly differed from the mid-point of the scale (i.e., zero). Verifying the effectiveness of the manipulation, participants in the smooth condition were more likely to perceive the clipboard to be smooth ($M = 2.17$, $SD = 1.15$), $t(29) = 10.35$, $p < .001$ and those in the rough texture condition felt that the clipboard was rough ($M = $ -1.03, $SD = 2.34$), $t(28) = $ -2.38, $p = .02$. In addition, an independent-samples *t*-test revealed that the two experimental groups predictably differed from one another in the perception of texture, $t(57) = 6.71$, $p < .001$, $d = 1.83$.

Appraisals. Candidate evaluations were submitted to a Clipboard Texture (Smooth, Rough, Control) $\times$ Candidate Race (White vs. Black) between-subjects analysis of variance (ANOVA). Means for the full experimental design are shown in Figure 1. Results revealed a significant main effect of texture, $F(2, 88) = 3.87$, $p < .05$, $\eta^2 = .08$; job candidates were evaluated more favorably in the smooth clipboard condition ($M = 28.43$, $SD = 5.59$) than in either the rough clipboard condition ($M = 23.66$, $SD = 7.65$), $F(1, 88) = 5.47$, $p < .05$, $\eta^2 = .06$ or the no-touch control condition ($M = 24.09$, $SD = 7.75$), $F(1, 88) = 6.12$, $p < .05$, $\eta^2 = .07$. Evaluations of job candidates did not significantly differ between rough and no-touch control conditions ($p = $ ns). Contrary to predictions, candidate race did not exert a main or interactive effect ($p = $ ns); in fact, the means were opposite of predictions, with the Black candidate being non-significantly better evaluated than the White candidate.

Figure 1. Participants' mean composite evaluation by feedback condition and target race for Study 1.

Mean Evaluation vs. Haptic Feedback Condition (Smooth, Rough, Control) for White Candidate and Black Candidate.
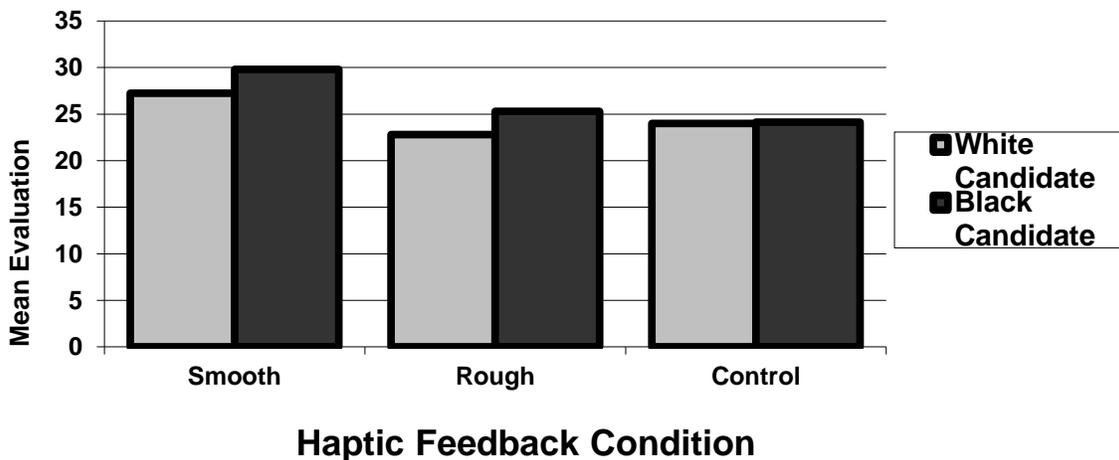
Salary Estimates. Similar analysis of salary estimates produced no significant main or interactive effects (all *p*s > .33).

Behavioral Measures. When behavior was submitted to a Clipboard Texture (Smooth, Rough, Control) × Candidate Race (White vs. Black) between-subjects ANOVA a single effect approached significance. There was a marginally significant main effect of texture on the likelihood of participants wanting to take a class or do research with the job candidate, $F(2, 88) = 2.56$, $p = .08$, $\eta^2 = .06$. People were more inclined to behaviorally approach the job candidate after evaluating the candidate in the smooth clipboard condition ($M = 3.53$, $SD = 2.33$) than in the rough clipboard condition ($M = 2.14$, $SD = 2.70$), $F(1, 88) = 5.12$, $p < .05$, $\eta^2 = .06$. However, evaluations in the smooth and rough conditions did not significantly differ from the no-touch control condition ($M = 2.74$, $SD = 2.57$), all *p*s > .23. Decisions to leave e-mail addresses to be contacted later about research opportunities and/or course offerings by the candidate did not yield any main or interactive effects in logistic regression (all *p*s > .30).

Memory. Memory scores were submitted to Clipboard Texture (Smooth, Rough, Control) × Candidate Race (White vs. Black) between-subjects ANOVA. No significant effects emerged from this analysis, all $ps > .20$.

Positive Mood. To examine whether mood could account for emergent evaluation effects, mood was submitted to a Clipboard Texture (Smooth, Rough, Control) × Candidate Race (White vs. Black) between-subjects ANOVA. While there was a significant main effect of texture on appraisals, texture condition did not exert any main or interaction effects on mood. In fact, the only significant effect to emerge was a main effect of candidate race; participants felt more positive when evaluating a Black candidate ($M = 39.38$) than a White candidate ($M = 35.94$), $F(1, 88) = 9.98$, $p < .01$, $\eta^2 = .10$.

Discussion

This study investigated the influence of haptic feedback and target race on evaluations of job candidates. However, contrary to predictions, clipboard texture and candidate race did not interactively combine to effect candidate evaluations. Instead, only a significant effect of texture was found. Candidates were evaluated more favorably in the smooth clipboard condition than in either the rough clipboard condition or the no-touch control condition. This pattern was echoed by the behavioral measures with participants being more likely to approach the job candidate to do research or take his class when evaluating the candidate on a smooth clipboard.

Interestingly, however, across measures, there were no differences in evaluations of White and Black candidates in the experimental conditions and within the no-touch control conditions, the means were in the opposite direction than expected, showing a pro-Black bias. Given the unexpected findings in the no-touch control condition, it was not possible to make comparisons in a meaningful way.

Why were people more likely to evaluate Black candidates more favorably than Whites? One explanation for these results might be due to the quality of the résumés presented to participants. By having people evaluate faculty-level job candidates who are submitting résumés with outstanding credentials, the Black candidate may have resulted in an expectancy-violation. According to expectation-violation theory (e.g., Jussim et al., 1987), when an individual's characteristics violate stereotypic expectations, evaluations tend to be made more extreme in the same direction as the expectancy-violation. In this study, a résumé of a Black candidate with very strong credentials (e.g., holding a Ph.D. degree, applying for a high-level faculty position) might have violated Whites' stereotype-based expectations of Blacks, given racial disparities in educational attainment and the underrepresentation of Blacks (particularly Black males) as professors in the academy. This, in turn, could have led White participants to evaluate the Black candidate more extremely across conditions. Therefore, a follow-up study was run using more modest résumés for a lower level position, permitting tests of predictions that were not possible given the unexpected pro-Black bias in Study 1.

Chapter 4. STUDY 2 OVERVIEW

The main objective for Study 2 was to modify experimental materials to assure anti-Black bias would emerge in the no-touch control conditions and therefore, permit the tests of primary predictions. Specifically, in Study 2, résumés were created for an average entry-level position rather than for a high-status professorial position.

Method

Participants and Design

Participants were 137 White undergraduates of the Pennsylvania State University (45 men, 92 women; M_{age} = 19.42), who were enrolled in an introductory psychology class and who were asked to participate in the experiment in exchange for course credit. This study used a Clipboard Texture (Rough, Smooth, or Control) × Candidate Race (White or Black) between-participants design.

Materials and Procedure

The procedure of Study 2 was like that of Study 1 with two exceptions. First, instead of being told they were evaluating applications for a professorial position, participants were told that they would be evaluating a job candidate who was a student at the university and this job candidate was applying for a position as a desk clerk at the university library. Accordingly, similar to Study 1, a résumé of the potential job candidate was provided to the participants to evaluate on either a clipboard with smooth or rough texture underneath, while others reviewed the résumé with no clipboards as a no-touch control group. Second, unlike Study 1, the job candidate's résumé reflected an average candidate with limited work and academic experience (see Appendix C). Lastly, participants evaluated the job candidate using a similar form as in

Study 1, but the form was modified for the current study to be relevant to a clerical position at a library.

After spending approximately 2-3 minutes reading the job candidate's résumé (at their leisure), participants completed all dependent variables. More specifically, participants evaluated the candidate, estimated the hourly salary the candidate should make, and indicated their interest seeking help and/or performing library research with the candidate. To test for potential memory biases, participants also completed a six-item memory test and then completed a mood measure. After completing all dependent measures, participants in the smooth and rough conditions rated the texture of the clipboard (endpoints: -3 = *very rough*; 0 = *neutral*; +3 = *very smooth*). Participants in the no-touch control condition did not complete this rating, since they did not hold a clipboard. Lastly, after all measures, participants were thanked and debriefed.

Dependent Variables

Manipulation Check. As in Study 1, ratings of clipboard texture were recorded for comparison.

Appraisals. Participants completed the same eight evaluative items as in Study 1 and four additional items that included: (a) "How patient would you expect this candidate to be with a student who was struggling to understand library resources?", (b) "What tone would you expect from this candidate when not satisfied with a student's attitude?", (c) "How would you expect this candidate to behave toward a student filing a complaint?", and (d) "How would you expect the candidate to greet students?" (see Appendix D). All 12 items were averaged to create an overall appraisal variable ($\alpha = .90$).

Salary Estimates. Participants were given information pertaining to the average hourly salary of incoming library clerks; specifically, participants read: "An incoming help clerk at Penn

State is a level 12 employee, who can be paid between $8.25 and $12.50 per hour; if hired, how much do you think the candidate should make, starting out?" Participants then provided their assessment (via free response) of an hourly salary for a given job candidate (M = $9.30, SD = $0.98).

Behavioral Measures. Using 7-point scales (endpoints labeled: -3 = *not likely*; +3 *very likely*), participants indicated their likelihood (if hired) of wanting to (a) seek library help form the candidate or (b) using the candidate for library research. Participants were also asked to leave their school e-mail address if they would like to be contacted for any future, detailed evaluation of the candidate. As in Study 1, the two behavior questions were combined to form a single behavioral item (r = .75).

Memory. As in Study 1, the six memory questions (including the facial recognition item) were scored for correctness and summed to form a total item score.

Positive Mood. Participants completed the same mood measure as in Study 1 (α = .69).

Results

Manipulation Check. Responses were analyzed by means of a one-sample t-test within the smooth and rough texture conditions to examine whether they significantly differed from the mid-point of the scale (i.e., zero). Attesting to the effectiveness of the texture manipulation, the clipboard was rated as smooth in the smooth conditions (M = 2.55, SD = .73), $t(43)$ = 23.13, $p <$ .001 and was rated as rough in the rough conditions (M = -1.78, SD = 1.96), $t(44)$ = -6.07, $p <$ .001. In addition, the clipboard texture felt in both smooth and rough conditions differed from each other, as indicated by an independent samples t-test, $t(87)$ = 13.70, $p <$ .001, d = 3.22.

Appraisals. Evaluations were submitted to a Clipboard Texture (Smooth, Rough, Control) $\times$ Candidate Race (White vs. Black) between-participants ANOVA. Means for the full

experimental design are shown in Figure 2. The only effect to approach significance was a

marginally significant main effect of candidate's race, $F(1, 131) = 3.13$, $p = .08$, $\eta^2 = .02$; Black

job candidates ($M = 26.85$, $SD = 8.50$) were rated more favorably than White candidates ($M =$

24.39, $SD = 7.81$).

Figure 2. Experimental participants' mean evaluation composite by feedback condition and
target race for Study 2.
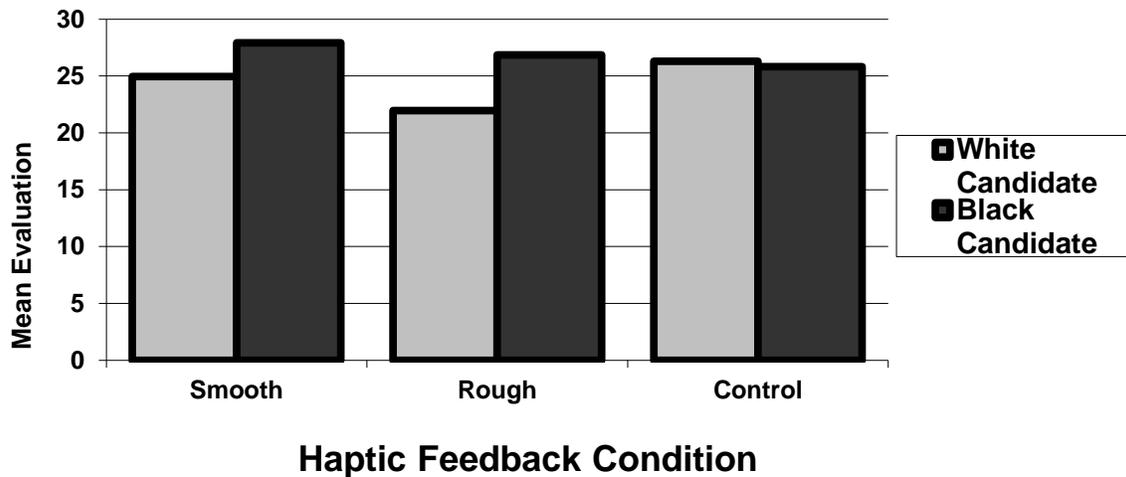
Salary Estimates. Parallel analysis of salary estimates produced no significant main or

interactive effects (all *p*s > .44).

Behavioral Measures. The behavioral measure was submitted to a Clipboard Texture

(Smooth, Rough, Control) × Candidate Race (White vs. Black) between-participants ANOVA.

The only significant effect to emerge was a main effect of candidate race, $F(1, 131) = 3.90$, $p =$

.05, $\eta^2 = .03$; participants reported more behavioral approach when the candidate was Black (M

$= 3.98$, $SD = 1.90$) than White ($M = 3.32$, $SD = 2.04$). No other effects approached significance

(all *p*s > .32). Decisions to leave e-mail addresses to be contacted later about providing a more

detailed evaluation of the candidate did not yield any main or interactive effects in logistic

regression (all *p*s > .73).

Memory. Memory was submitted to a Clipboard Texture (Smooth, Rough, Control) × Candidate Race (White vs. Black) between-participants ANOVA. The only effect to approach significance was a marginally significant main effect of candidate race, $F(1, 131) = 3.34$, $p = .07$, $\eta^2 = .03$; White candidates ($M = 5.10$, $SD = .81$) were remembered somewhat better than Black candidates ($M = 4.79$, $SD = 1.13$). No other effects reached significance ($ps > .61$).

Positive Mood. Parallel analysis of mood revealed no significant main or interactive effects ($ps > .32$).

Discussion

This study sought to use modified résumé materials that could allow for the tests of primary predictions related to candidate race and haptic feedback. Moreover, to avoid the possibility that expectancy-violations resulted from seeing a candidate that was surprisingly 'over-qualified' given stereotypes of Black Americans, Study 2 used résumés for less prestigious jobs and résumés more typical of what a college student would prepare; namely, student candidates applying for a library clerk position. By using a more ordinary résumé and job position, it was hoped that participants would view the job candidates (especially the Black candidates) as more typical, and thus, less likely to break conventional expectations as a basis for stimulus presentation.

The results of the second study seemed to indicate that the revised résumé and cover story did not significantly change the pattern of results from the first study. Across measures, the only pattern of results that appeared somewhat consistently (albeit only marginally significant) was a tendency for participants to evaluate Black candidates more favorably than White. Therefore, people were somewhat more likely to favorably evaluate and approach a Black than a White candidate.

It is unclear why White candidates were not evaluated more favorably than Black candidates in the no-touch control condition. There are, however, a few potential explanations for the lack of typical racial bias within the no-touch control condition. First, the résumé materials (in the absent of photos manipulating race) might have been intrinsically slanted to be more representative of a stereotypically White individual. From the use of a stereotypically White name (Miles Christopher Ryan) to playing a predominately White sport (i.e., tennis), the résumé contents might have been a little too characteristic of White category members, which could undermine the manipulation of the candidate being a stereotypically Black category member. Second, it is possible the explicit nature of the race manipulation (as conveyed by images attached to resumes), made race extremely salient. That is, White participants might have become aware of this explicit racial marker and thus, might have worked to overcompensate or correct for the normal bias that would normally emerge. This would also account for the marginally significance reversal, or pro-Black bias, that emerged overall across both studies. Accordingly, compounding this issue of self-presentation and appearing to be non-bias, during the course of data collection, a widely-publicized case in the news reporting the death of a Black teenager by a mixed-race adult fanned the flames of race in the greater social consciousness across the nation. Thus, this greater self-awareness of racial tensions across the country might have also contributed to White perceivers being motivated to appear not to be racist.

Interestingly, across dependent measures, a predicted effect of clipboard texture was not observed. This lack of significance might have occurred as by-product of tailoring the résumés in Study 2 to be more familiar to participants. Specifically, the current theory of embodied feedback posits that the use of sensory information is typically used as a meaningful cue when there is an absence of other important information or expertise in a given area of evaluation. In the current

study, the résumés presented to participants were more in-line with résumés they would have themselves or see from their peers, and importantly, would have a greater expertise or ability to evaluate these résumés. By having a greater ability to evaluate the stimulus materials due to greater familiarity and expertise, participants might not have relied as much on the sensory information from the different textures. Accordingly, as stated previously, embodied effects only tend to emerge when one is explicitly unaware of the stimulus feedback (preventing misattribution of arousal). By using a résumé that participants had more expertise with might have freed up additional cognitive resources that could have brought the sensory information into greater awareness, washing out embodied effects. Thus, the failure to replicate the texture effects found in previous studies might be due to using a résumé that is more familiar to the expertise of the college-aged participants.

Chapter 5. GENERAL DISCUSSION

The current research investigated the hypothesis that haptic feedback associated with résumés will influence evaluative responses to job candidates of different races in unique ways. Using the theoretical framework of cognitive complexity theory (Linville & Jones, 1980) as a basis for intergroup bias, it was predicted that different textures would exacerbate and attenuate racial bias in the evaluation of job candidates. Specifically, a number of hypotheses were put forth to test the interacting influence of haptic feedback on perceptions of African-Americans. First, it was predicted that in the absence of embodied cues (i.e., no-touch control condition) Whites would show an anti-Black evaluative bias. Stated differently, Whites' were expected to bestow more favorable judgments upon White candidates than equally qualified Black candidates. Second, it was hypothesized that positive haptic cues (i.e., smooth clipboard texture) would inspire more favorable judgments of job candidates compared to negative haptic cues (i.e., rough clipboard texture), and no-touch controls (i.e., just visual evaluation). Third, it was hypothesized that intergroup bias towards Black job candidates would be attenuated when Black candidates (vs. White candidates) are evaluated with smooth clipboards (vs. rough, control). In contrast, it was predicted that intergroup bias would be exacerbated when Black job candidates (vs. White candidates) were evaluated with rough clipboards (vs. smooth, control). Furthermore, this pattern of embodied effects was expected to manifest in multiple measures including, evaluative appraisals, salary estimates, behavioral approach, and memory.

Across two studies, the results offered only limited support for hypotheses. In the first study (as well as the pilot study), participants were more likely to positively evaluate a job candidate when reviewing that candidate's résumé on a clipboard with a smooth texture underneath. Accordingly, participants were also marginally more likely to approach the

candidate if they had a smooth clipboard to evaluate the given candidate. However, these effects were not qualified by an interaction with candidate race.

In the second study, results were a bit murkier with marginally consistent findings only being tied to the variable of candidate race. Across several measures, Study 2's findings suggested a non-significant tendency for Black candidates to be evaluated more favorably than White candidates. Although the level of credentials of the job candidates were reduced in the second study to avoid expectancy-violation effects, results of the second study provided evidence that people's better evaluations of Black candidates (vs. White) might not be due to a violation of expectations. Thus, this general favorability toward Black candidates by White evaluators could be due to some sort of self-presentation effect or motivation to avoid seeming prejudice. In conjunction with recent racial tensions in the media during data collection, participants might have been especially motivated to appear that they were not prejudice toward Black candidates, which might explain more favorable appraisals assigned to them, even in the no-touch control groups. To avoid this potential issue in future research, using gender as a group comparison or a racial group that is less divisive in the social consciousness of Americans (e.g., individuals of Hispanic, Arab, or Chinese descent) might be a more subtle way to look at group-based bias while avoiding the potential for people to self-present their responses in an effort to seem non-prejudice. Accordingly, using just names on the résumés (e.g., gendered-names or racially-associated names) might also be a more subtle way to manipulate group membership.

In addition to using a different racial outgroup, collecting explicit individual difference measures such as motivations to appear without prejudice (e.g., Plant & Devine, 1998) and implicit measures of race associations in an Implicit Associations Test (IAT), might provide a clearer picture of how race and embodied touch influence evaluations of outgroup members.

Implicit measures of behavior like nonverbal expressions (i.e., eye contact during an interview, seating distance) might also serve as a better test of predictions due to their more subtle nature and less susceptibility to social monitoring.

In contrast to the first study, the overall clipboard texture effect did not replicate but was in the same direction in Study 2. This finding might be due to a change in the quality of the résumé presented to participants. Specifically, a failure to replicate this embodied feedback effect might be due to the greater familiarity that participants had in the second study with a résumé reflecting a college student's credentials compared to a recent doctoral graduate. By having greater familiarity or expertise in which to evaluate a college student candidate, participants might have been less likely to utilize embodied feedback cues to make their judgments because they already had a good sense of the quality of the job candidate. Since the influence of embodied cues typically occurs when a person is unfamiliar or has little expertise with another person or object, it is important to use stimulus material that will not be too familiar to the participant. Accordingly, having experimental materials that participants were more familiar with might have also blocked the possible misattribution processes of embodiment. For instance, it might be the case that the more familiar résumé materials in Study 2 might have allowed for more cognitive resources to be directed to the presence of texture underneath the clipboards. Thus, increased awareness of clipboard texture might have wiped out the misattribution processes that typically lead to embodied cognitive appraisals. In hopes of replication in future studies, it will be important to maintain that the stimulus material is familiar enough for the participants to understand, but not too familiar so that they will have an overwhelming expertise in the area and have no need to rely on haptic feedback cues when making their judgments of others. Perhaps having participants evaluate unique works of art or drawings (varying texture

underneath) from different racial groups might be a way to avoid too much familiarity and high levels of candidate quality.

Future research might also be behooved to investigate whether or not intergroup anxiety might play a role in the effect of tactile embodiment. For example, perhaps the smooth tactile feedback acts as a buffer to feelings of anxiety (especially for those high in intergroup anxiety) which then leads to an increase in positive outgroup appraisals. More broadly, using a methodology that includes the potential for future interaction with an outgroup member could provide interesting tests of the primary predictions by measuring both behavioral intentions and expressed anxiety about interacting with an outgroup member. Accordingly, it would be interesting to see if the embodied cue of contact (i.e., smoothness/roughness) could also activate related physiological/psychological processes (e.g., changes in heart rate, brain activation, galvanic skin response) during or with the expectation of an interpersonal interaction.

Also, although the current research seeks to establish a link between intergroup bias and embodied cognition, future work would also benefit from looking at the possible mechanism that might drive the expected findings. Given the work by Ackerman and colleagues (2010) suggesting that embodied effects are a result of linguistic scaffolding, whereby metaphors are generated—connecting the physical world with abstract states—to describe our world (e.g., 'this situation is heavy', 'that person was very rough with me'), I would think that these ideas would be grounded in their networked associations within memory. Therefore, in future examinations, I would be interested in exploring the moderating effects of an Implicit Associations Test (IAT) for the associative linkage between smooth/good and rough/bad and how this ease of association (or lack thereof) could affect the influence of these haptic feedback effects on job candidate perceptions. I would predict that people with stronger associations for smooth=good and

rough=bad would be more likely to show exacerbations in the predicted effects while those with relatively weak associations might not display the same results.

Overall, the current research adds to a growing body of work suggesting that embodied cues can influence the perceptions of others. Supporting the work of Ackerman and colleagues (2010), the present research finds that haptic cues of texture can shape our perceptions of job candidates. More precisely, people had a greater tendency to evaluate job candidates more favorably when making their judgments on a clipboard with a smooth texture underneath compared to one with a rough, abrasive texture. Thus, embodied haptic sensations seem to play some part in our judgments of others, especially when we are less familiar with the criterion of judgment.

In the end, across two studies and a pilot study, the current findings do suggest that haptic feedback cues can be informative in influencing subsequent judgments of others. Given both the pleasant sensation of smooth objects and positively associated metaphors in language, the current research provides further support that associating a smooth sensation of touch with a job candidate will increase the likelihood of that person being evaluated more favorably than one who is judged based on a rougher, aversive-feeling texture. Thus, the current work underlines the importance of studying the interplay of both cognitive and sensory information when studying the formation and expression of evaluative judgments about the people we come into contact every day in our social world.

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Appendix A: Experimental Materials (Academic Curriculum Vita - Pilot and Study 1)

Miles Christopher Ryan

Curriculum Vita
Phone: ████████
Email: ████████
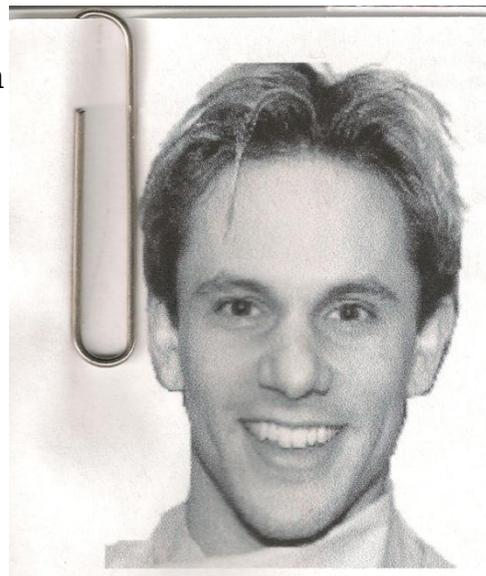
EDUCATION AND WORK EXPERIENCE

2007 - 2010	Miami University, Oxford, OH Department of Psychology Degree: Ph.D., Social Psychology
2005 - 2007	Miami University, Oxford, OH Department of Psychology Degree: M.A., Social Psychology
2000 - 2004	University of Kentucky , Lexington, KY Degree: B.A. Psychology, Philosophy; Cum Laude

FELLOWSHIPS, GRANTS, AND AWARDS

2008 - 2009	Midwestern Psychological Association Graduate Research Award
2007 - 2008	Miami University Graduate Student Achievement Award

RESEARCH PUBLICATIONS

Smith, K., Jones, S.G., Kaplan, D.F., & **Ryan, M. C.** (*under review*). Social cognitive influences on the processing of emotion and identity recognition. To appear in A.J. Calder, G. Rhodes, J.V. Haxby, and M. H. Johnson, (Eds.), *The Handbook of Face Perception*. Oxford: Oxford University Press.

Ryan, M. C., Kaplan, D. F., Jones, S. G., Smith, K., & Henry, E. (2010). The effects of social emotion are enhanced by the perceived essentialism of mood. *Personality and Social Psychology Bulletin, 36,* 999-1009.

Kaplan, D. F. & **Ryan, M. C.** (2010). A video introduction to psychology: Using technology to facilitate interest and participation in psychology research. *Journal of Teaching Psychology, 37*, 28-31.

Ryan, M. C., Jones, S. G., Sultz, C. M., Kaplan, D. F., & Osborne, H. M. (2008). Adaptive responses to social emotion: Social emotion improves detection of real and fake smiles. *Psychological Science, 19,* 981-983.

INVTITED TALKS

Ryan, M. C. (2011, April). *Emotion and pain: The effects of social emotion on our physical and social systems.* Colloquia to be given at Colby College, Waterville, MA.

Ryan, M. C. (2010, July). *Social cognition and consumer science.* Colloquia given at Procter and Gamble BRIC Research and Development Department, Cincinnati, OH.

CONFERENCE PRESENTATIONS

Ryan, M. C., Jones, S. G., Sultz, C. M., Kaplan, D. F., & Osborne, H. M. (2010, May). *Looking for new friends: The effects of social emotion on smile perception.* Symposium paper presented at the 22nd annual meeting of the Association for Psychological Science, Boston, MA.

Ryan, M. C. & Osborne, H. M. (2010, May). *Familiarity's impact on attitudes as moderated by attribution instructions.* Paper presented at the 82nd annual meeting of the Midwestern Psychological Association, Chicago, IL.

Kaplan, D. F., **Ryan, M. C.,** Jones, S. G., & Smith, K. (2009, May). *Emotion and person perception: Smiling from others feels good.* Paper presented at the 81st annual meeting of the Midwestern Psychological Association, Chicago, IL.

TEACHING EXPERIENCE AND TRAINGING

2008 - Fall	Instructor, Social Cognition
2008 - Spring	Co-Instructor, Introduction to Social Psychology
2008 - Spring	Co-Instructor, Introduction to Psychological Methods

PROFESSRIONAL ACTIVITIES AND SERVICE

2008 - 2009	Graduate Student Representative to the Psychology Faculty
2008 - 2009	University Graduate Program Review Committee
2007 - 2008	Undergraduate Research Symposium Moderator

PROFESSIONAL AFFILIATIONS

The American Psychological Society

Midwestern Psychological Association

Society for Personality and Social Psychology

Appendix B: Experimental Materials (Candidate Evaluation Form - Pilot and Study 1)

Candidate Evaluation Form

For the following, <u>please circle</u> the response that best fits your opinion for each question. Please be open and honest with your evaluations. If you are unsure, please go with your 'gut' response, it tends to be the most accurate.

1. **What is your overall impression of the job candidate?**

    -3   -2   -1   0   1   2   3
    Very Negative   Neutral   Very Positive

2. **How would you rate the strength of the applicant for the position?**

    -3   -2   -1   0   1   2   3
    Very Weak   Neutral   Very Strong

3. **How do you feel about the future job performance of this applicant?**

    -3   -2   -1   0   1   2   3
    Very Negative   Neutral   Very Positive

4. **How much do you think that this candidate would get along with other co-workers?**

    -3   -2   -1   0   1   2   3
    Very Poorly   Neutral   Very Well

5. **How serious of interest does this candidate appear to be?**

    -3   -2   -1   0   1   2   3
    Not Serious   Neutral   Very Serious

6. **What is your impression of the job materials presented by the candidate?**

    -3   -2   -1   0   1   2   3
    Very Negative   Neutral   Very Positive

7. **What do you think the likelihood of this candidate being interviewed?**

    -3   -2   -1   0   1   2   3
    Not Likely   Neutral   Very Likely

8. **What do you think the likelihood of this candidate being hired?**

    -3   -2   -1   0   1   2   3

Not Likely   Neutral   Very Likely

9. How patient would you expect this candidate to be with a student who was struggling to understand the course material?

-3   -2   -1   0   1   2   3
Very Impatient   Neutral   Very Patient

10. What tone would you expect from this candidate when not satisfied with a student's performance?

-3   -2   -1   0   1   2   3
Abrasive   Neutral   Encouraging

11. How would you expect this candidate to behave when disagreeing with a student's contributions to discussion?

-3   -2   -1   0   1   2   3
Competitively   Neutral   Cooperatively

12. How would you expect the candidate to greet students?

-3   -2   -1   0   1   2   3
Unpleasantly   Neutral   Pleasantly

13. The average annual starting salary for an incoming Assistant Professor at Penn State is $55, 000, if hired, how much do you think the candidate should make, starting out?

$_____/per year

14. How likely would you take a class offered by this candidate, if hired?

-3   -2   -1   0   1   2   3
Not Likely   Neutral   Very Likely

15. How likely would you be interested in doing research (as a research assistant) with this candidate, if hired?

-3   -2   -1   0   1   2   3
Not Likely   Neutral   Very Likely

16. If interested in being contacted in the future about future classes or research opportunities offered by this candidate, please leave your school email address (abc123@psu.edu) _____

In the next section, you will be asked to answer a few questions about the job candidate to see what you remember from their résumé. Please answer the following questions to the best of your ability by <u>circling</u> *your response. Usually, your first guess is the best choice.*

17. What University did the candidate attend for graduate studies?

a) Duke University   b) Miami University c) Elon University   d) UConn University

18. What was the job candidate's last name?

a)   Ryan   b) Smith   c) Hawkings   d) Cade

19. How many Research Publications did the job candidate have?

a)   0   b) 2   c) 4   d) 6

20. What type of degree does the job candidate have?

a)   Marketing b) Cognitive Psychology   c) Developmental Psychology   d) Social Psychology

21. What class did the job candidate instruct alone?

a)   Social Cognition   b) Bio-Psych c) Developmental Psych   d) Personality Psych

22. Of the faces below, which one was the job candidate you evaluated?
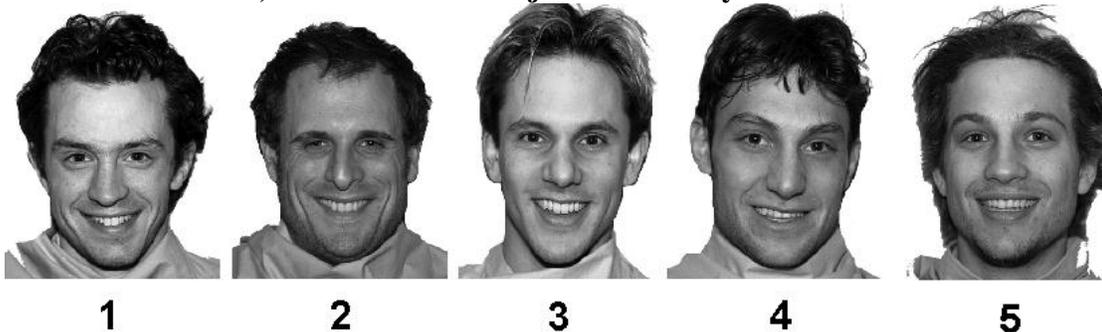
1   2   3   4   5

This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you feel this way right now, that is, at this present moment. Use the following scale to record your answers.

1 -------------------- 2 -------------------- 3-------------------- 4 -------------------- 5
Very slightly   A Little   Moderately   Quite a Bit   Extremely
 or not at all

23. ____Relaxed

24. ____Critical

25. ____Comfortable

26. ____Abrasive

27. ____Harsh

28. ____Soothed

29. ____Easy-going

30. ____Irritated

31. ____Social

32. ____Ruffled

Please circle the response that best fits you:

33. My sex is...

      1. Male

      2. Female

34. My race is...

      1. Caucasian

      2. African American

      3. Asian

      4. Hispanic

      5. Other

35. Write in your age _____ (Free Response).

36. Is English your first language?

      1. Yes

      2. No

37. My family's approximate yearly income lies somewhere between? (Please guess if you are unsure):

      1. $0-$24,999

      2. $25,000-$49,999

      3. $50,000-$99,999

      4. $100,000-$149,999

      5. $150,000-$199,999

      6. $200,000 or more

38. How rough/smooth was the surface underneath the clipboard you were holding?

    -3   -2   -1   0   1   2   3

Very Rough   Neutral   Very Smooth

Appendix C: Experimental Materials (Student Résumé – Study 2)

Miles Christopher Ryan
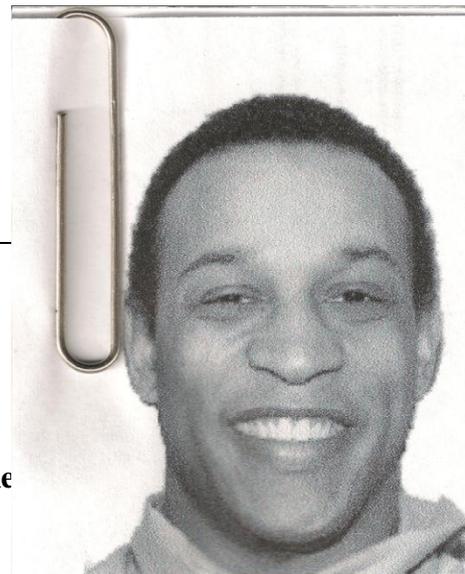
Objective	**Entry Level Position**

Education

Penn State University: 2010-Present   **State Colle**
- Degree: Undecided
- Overall GPA: 3.2

Adena High School 2006-2010   **Harrisburg, PA**
- High School Diploma
- Spanish Club
- Graduated with a 3.5 grade point average
  Student Council – Treasurer

Work Experience

3SG Technology Co-Sourcing- 363 Marietta Road ▮▮▮▮
- General Clerical work: Including copying, redacting, sorting.
- Prepping sensitive legal documents: scanning, copying
- Data entry
- Quality assurance
- From 5/14/2007 to 8/3/2007

JOE's Cafe - 65 Western Ave ▮▮▮▮
- Cashier
- Selected employee of the month for friendly/speedy service
- Promoted to Barista
- From 5/14/2006 to 8/4/2006

The School Fund – Harrisburg, PA, *June 2006 - July 2006*

Caller for Non-Profit University Fund

- Raised over $5400 dollars in seven week period
- Lead caller in two categories of reluctant alumni donors

Computer Skills   Microsoft Word (40 WPM), Excel, PowerPoint. E-mail, Office Machines

Languages   English, Fluent in writing in Spanish, Proficient in speaking Spanish

Extracurricular and Leadership Activities

- Morale Team Captain for Penn State Dance Marathon (THON)

- Intramural Tennis (participated in annual round-robin tournament, 2011)

- Music (play bass guitar)

Volunteer Experience

Hershey Regional Medical   Harrisburg, PA
- Gift shop volunteer
- Worked cashier and provided customer service
- Assisted in restocking shelves and other miscellaneous duties
- From 6/10/2002 to 8/3/2002

References   John Winchester (Manager of JOE's Cafe)

James Ferrier (3SG)

Appendix D: Experimental Materials: Candidate Evaluation Form – Study 2)

Candidate Evaluation Form

For the following, <u>please circle</u> the response that best fits your opinion for each question. Please be open and honest with your evaluations. If you are unsure, please go with your 'gut' response, it tends to be the most accurate.

39. What is your overall impression of the job candidate?

    -3   -2   -1   0   1   2   3
Very Negative   Neutral   Very Positive

40. How would you rate the strength of the applicant for the position?

    -3   -2   -1   0   1   2   3
Very Weak   Neutral   Very Strong

41. How do you feel about the future job performance of this applicant?

    -3   -2   -1   0   1   2   3
Very Negative   Neutral   Very Positive

42. How much do you think that this candidate would get along with other co-workers?

    -3   -2   -1   0   1   2   3
Very Poorly   Neutral   Very Well

43. How serious of interest does this candidate appear to be?

    -3   -2   -1   0   1   2   3
Not Serious   Neutral   Very Serious

44. What is your impression of the job materials presented by the candidate?

    -3   -2   -1   0   1   2   3
Very Negative   Neutral   Very Positive

45. What do you think the likelihood of this candidate being interviewed?

    -3   -2   -1   0   1   2   3
Not Likely   Neutral   Very Likely

46. What do you think the likelihood of this candidate being hired?

    -3   -2   -1   0   1   2   3
Not Likely   Neutral   Very Likely

47. How patient would you expect this candidate to be with a student who was struggling to understand library resources?

-3   -2   -1   0   1   2   3
Very Impatient   Neutral   Very Patient

48. What tone would you expect from this candidate when not satisfied with a student's attitude?

-3   -2   -1   0   1   2   3
Abrasive   Neutral   Encouraging

49. How would you expect this candidate to behave toward a student filing a complaint?

-3   -2   -1   0   1   2   3
Competitively   Neutral   Cooperatively

50. How would you expect the candidate to greet students?

-3   -2   -1   0   1   2   3
Unpleasantly   Neutral   Pleasantly

51. An incoming help clerk at Penn State is a level 12 employee, who can be paid between $8.25 and $12.50 per hour; if hired, how much do you think the candidate should make, starting out?

$_____/per hour

52. How likely would you seek library help from this candidate, if hired?

-3   -2   -1   0   1   2   3
Not Likely   Neutral   Very Likely

53. How likely would you be interested in using this candidate for library research, if hired?

-3   -2   -1   0   1   2   3
Not Likely   Neutral   Very Likely

54. If interested in being contacted in the future about providing a more detailed evaluation of this candidate, please leave your school email address (abc123@psu.edu) _____

In the next section, you will be asked to answer a few questions about the job candidate to see what you remember from their résumé. Please answer the following questions to the best of your ability by circling your response. Usually, your first guess is the best choice.

55. What High School did the candidate attend for graduate studies?

  a) Hillsboro   b) Adena   c) Chambersburg   d) Huntington

56. What was the job candidate's last name?

  b) Ryan   b) Smith   c) Hawkings   d) Cade

57. How many different jobs did the job candidate list under "Work Experience"?

  b) 0   b) 3   c) 5   d) 7

58. What type of major does the job candidate have?

  b) Marketing   b) Psychology   c) Engineering   d) Undecided

59. What position did the job candidate have for THON?

  b) Morale Team Captain   b) Dancer   c) Organizational Committee   d) None

60. Of the faces below, which one was the job candidate you evaluated?

1   2   3   4   5

This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you feel this way right now, that is, at this present moment. Use the following scale to record your answers.

1 -------------------- 2 -------------------- 3-------------------- 4 -------------------- 5
Very slightly   A Little   Moderately   Quite a Bit   Extremely
 or not at all

61. ____Relaxed

62. ____Critical

63. ____Comfortable

64. ____Abrasive

65. ____Harsh

66. ____Soothed

67. ____Easy-going

68. ____Irritated

69. ____Social

70. ____Ruffled

Please <u>circle</u> the response that best fits you:

71. My sex is...

       1. Male

       2. Female

72. My race is...

       1. Caucasian

       2. African American

       3. Asian

       4. Hispanic

       5. Other

73. Write in your age _____ (Free Response).

74. Is English your first language?

       1. Yes

       2. No

75. My family's approximate yearly income lies somewhere between? (Please guess if you are unsure):

       1. $0-$24,999

       2. $25,000-$49,999

       3. $50,000-$99,999

       4. $100,000-$149,999

       5. $150,000-$199,999

       6. $200,000 or more

76. How rough/smooth was the surface underneath the clipboard you were holding? **Note** If you weren't holding a clipboard, ignore this question.

       -3   -2   -1   0   1   2   3

    Very Rough   Neutral   Very Smooth

Please make sure you have answered all of the questions.