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UNIVERSITY OF CALIFORNIA,
IRVINE

“Other Minds Are Not Equal”: Exploring the Role of Mind Perception in an Intergroup Context

DISSERTATION

submitted in partial satisfaction of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

in Psychology and Social Behavior

by

Christina M. Pedram

Dissertation Committee:
Professor Chuansheng Chen, Ph.D., Chair
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2015

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ABSTRACT OF THE DISSERTATION

“Other Minds Are Not Equal”: Exploring the Role of Mind Perception in an Intergroup Context

By

Christina M. Pedram

Doctor of Philosophy in Psychology and Social Behavior

University of California, Irvine, 2015

Chancellor’s Professor Chuansheng Chen, Chair

Many theories have been developed to explain the processes by which people attribute mental states to other minds. However, these theories do not fully address potential asymmetries in the attribution of mind to members of one’s own vs. other groups. Recent research suggests that attributing or denying mental states to other human beings may depend on perceived stereotypes of the target group, but differences may also occur in the “minimal group” context—that is, upon first categorizing targets into arbitrary or novel groups. The current research proposes that there is, indeed, a difference in how we perceive the minds of ingroup and outgroup members and, consequently, in our moral judgments involving those individuals. Two studies were designed to analyze test this thesis. Study 1(N = 494 college students) made use of a writing task and speeded action identification task to assess spontaneous mental state attributions to members of four differentially stereotyped groups. Overall, the types of mind attributions produced in the writing samples reflected the stereotype content of the targeted groups. Results also confirmed that participants were more easily able to imagine the ingroup member performing complex actions, requiring higher levels of agency and motivation attributions, compared to the homeless target. This study also examined the moral consequences of attributing or withholding mental capacities to group members—with a specific focus on differences in

harm and closeness, as well as consequentialist thoughts about the targeted groups. Mixed results were found supporting certain predictions based on stereotype content for some groups, but not others. Study 2 (N = 390 college students) used the same tools to further explore the underlying mind perception in a less stereotype-rich context—namely, the minimal group paradigm. By manipulating group meaningfulness, this study examined the minimum conditions for the emergence of mind perception asymmetries. Despite the successful induction of minimal groups, this study's findings found limited support for group entitativity influence on mind perception in this context. Theoretical implications for the future research are provided in the discussion.

INTRODUCTION

Inferences about other people's mental states (e.g., what other people are thinking and feeling) are often the foundation of social thought and behavior, and social psychologists have conducted many studies exploring why and how people make these inferences (Epley & Waytz, 2010). The dominant inquiries in this area have examined individuals' attribution of causality for social events—in particular, people's intuitive explanations of other people's behavior in terms of targets' stable dispositions and personalities (Macrae & Quadflieg, 2010). Since intentional actions usually reveal more about someone's stable dispositions than accidental actions, inferences about others' mental states (e.g., their intentions) are often a driving factor in the person perception process. However, before a person can decide which mental states are responsible for a particular action, he/she must first determine whether the other agent has a mind and, if so, what *kind* of mind it is. Consistent with previous literature (Wegner, 2002), I will refer to this process as “mind perception.”

Social psychological research on mind perception works to identify the kinds of causes that might explain or predict another's behavior. In this way, it can be seen as a preattributional process, since the presence or absence of mind is the key to distinctions between people and nonpeople. This distinction is critical, as it draws a line between human and nonhuman –us and them- but it is also among the most difficult to objectively define (Farah & Heberlein, 2007). People can experience conscious emotions such as shame, pride, compassion, or joy, whereas objects or nonhuman agents are incapable of doing so. Most people also think that other humans are capable of intentional actions, self-control, and deliberate planning, but this doesn't apply to nonhumans such as animals. Therefore, mind perception is essential for phenomena such as anthropomorphism, where people see nonhuman agents as having human qualities (Epley,

Waytz, & Cacioppo, 2007), and also the opposite process of dehumanization, when people see other people in the same way as animals or objects (Haslam, 2006). This ability to attribute or deny mental states to human and nonhuman agents plays a major role in how people understand other minds in everyday life and the resulting consequences of those inferences.

LITERATURE REVIEW

Models of Mind Perception

Action Identification Theory: How Much Mind? Action identification theory (Vallacher & Wegner, 1985) treats mind perception as the process by which we seek to characterize behavior in terms of more or less “mentality.” According to the theory, the first step in understanding behavior is identifying what was done—that is, bodily movements and the outcomes of those movements. Identifying a behavior as a full-fledged *action*, however, assumes that there is more to the event than just motion and an outcome; rather, actions are assumed to reflect the actor’s mind and its role in generating the action. One does not consider objects capable of performing actions, whereas sentient beings, intelligent machines, and other agents can. Actions can be identified at different levels, from low-level details indicating how the action was performed to high-level consequences indicating *why* the action was performed (e.g., Austin, 1961; Goldman, 1970). At the lowest level of identification (e.g., “moving a finger”), no reference is made to circumstances or events outside the action itself, whereas the higher-level identifications (e.g., “turning on a light”) indicates causal effects, conventional interpretations, and special circumstances (Vallacher & Wegner, 1985). Higher-level identifications imply that a mind capable of understanding these complex concepts produced the action. Thus, by examining the level at which an action is identified, we can assess the extent, or degree, to which a perceiver recognizes that a mind and mental states underlie the target’s actions. Consistent with this, Kozak, Marsh and Wegner (2006) found that individuals who made higher-level inferences about others’ mental states also identified those individuals’ actions at higher (i.e., more intentional) levels. Their research also revealed strong positive relationships among positivity (liking, respect, goodness, and similarity), action identification, and other forms of mind

attribution. Importantly, such findings imply that levels of action identification might play a role in an intergroup context where positive versus negative feelings about a group are crucial.

Agency vs. Experience: What kind of mind? Action identification can be seen as a general measure of the *degree* of mind perception. However, psychologists have recently begun to explore different subsets of mind perception dimensions, each of which represents a particular psychological capacity. Most research seems to confirm that people intuitively represent other minds along two broad dimensions: conscious *experience* and intentional *agency* (Gray, Gray, & Wegner, 2007).

Conscious experience involves metacognitive capacities, including secondary emotions (e.g., regret, rage, sympathy, pride, or joy; Demoulin et al., 2004; Leyens et al., 2003), conscious awareness of one's environment, and basic psychological states (e.g., fear, hunger, thirst, or pain). Intentional agency is the capacity to engage in reasoned action, self-control, strategic planning, or goal directed behavior—and therefore to possess conscious preferences, beliefs, and explicit knowledge. These mental capacities are attributed to agents (entities that act) in varying degrees. Moreover, agents can differ on these two dimensions independently. For example, some can have a high degree of both intentional agency and experience (e.g., the self), whereas others can have a high degree of experience but little agency (e.g., a baby), high agency but little experience (e.g., God), or little agency or experience (e.g., a dead person; Gray & Wegner, 2008).

Mind Perception in an Intergroup Context

The relative difficulty of assessing others' mental states appears to increase as the gap between self and other becomes wider. Research has shown that perceived similarity increases the tendency to use one's own mental states as a guide to others' beliefs, attitudes and

preferences (Ames, 2004). This enables people to use introspection and simulation techniques to reason about others who are close to the self, compared with those who are more distant.

Research supporting this conclusion also comes from studies looking at the differences in representations and mental capacities attributed to ingroup versus outgroup members. At the most inclusive level of categorization (Turner et al., 1987), social perceivers regard individuals as sharing a human identity. Anthropologists have long recognized that members of human groups consider themselves to be canonical exemplars of “human” category, while often downgrading members of other groups to subhuman species levels of categorization (Lévi-Strauss, 1952). Recently, however, social psychologists have begun to investigate this phenomenon. Two distinct, yet related, phenomena have been identified: infrahumanization and dehumanization. The former explores people’s perceptions of others as lesser representatives of the human category (Leyens et al, 2000), and the latter describes situations where others are categorized outside of the boundaries defined by the human species (Staub, 1989). Both infrahumanization and dehumanization can be considered as biased and prejudicial appraisals of outgroups.

Infrahumanization theory suggests that because people believe social groups to possess essential differences (Leyens, Demoulin, Vaes, Gaunt, & Paladino, 2007), coupled with people’s general ethnocentricity, members of a group usually reserve complete human essence for themselves and give outgroups an infrahuman status (Demoulin et al., 2004; Leyens et al., 2003). When asked to indicate which qualities are unique to humans, people often refer to complex emotions, such as embarrassment and contempt, as opposed to more rudimentary emotions also experienced by nonhuman animals (e.g., joy, anger). People tend to attribute these more uniquely human emotions to members of the ingroup than to outgroup members (Leyens et al., 2001;

Paladino et al., 2002). Some studies have shown that people actually resent outgroup members when they express uniquely human emotions and violate these boundaries (Gaunt, Leyens, & Demoulin, 2002; Vaes, Paladino, Castelli, Leyens, & Giovanazzi, 2003). Research also shows that the ingroup, but not the outgroup, is linked in memory with uniquely human emotions (Boccatto, Cortes, Demoulin, & Leyens, 2007; Paladino et al., 2002). It is worth noting that conflict is not necessary for infrahumanization to emerge, and low-status groups may also infrahumanize higher-status ones (Cortes, 2005).

A separate, but similar, concept to infrahumanization is that of dehumanization. According to Haslam (2006), there are two different conceptions of humanity that allow for two possible forms of dehumanization. When we withhold from others certain “typically human” qualities—features *necessary* for humanity, such as basic emotional experience—we engage in *mechanistic dehumanization*. This type of dehumanization amounts to treating another as an unfeeling or robotic being. On the other hand, when we withhold from others certain “uniquely human” qualities—features *sufficient* for humanity, such as logic, complex beliefs, and long-term planning ability—we engage in “animalistic” dehumanization. With this type of dehumanization, we regard others as simplistic and animal-like. Research on dehumanization has typically shown that perceivers deny these different kinds of human capacities depending on the stereotypes associated with specific social categories. For instance, businesspeople (often seen to lack emotionality and openness) are implicitly associated with machines, and artists (often seen to lack self-control and civility) are linked to animals (Loughnan & Haslam, 2007).

A related theory, also based on stereotype content, suggests that outgroups can be viewed as possessing differing levels of interpersonal warmth or competence (Fiske, Cuddy, Glick, & Xu, 2002). In the Stereotype Content Model (SCM), the warmth dimension—comprising such

traits as morality, trustworthiness, sincerity, kindness, and friendliness—assesses another’s perceived intentions in the social context. Second, actors need to know others’ ability to pursue their intentions; the competence dimension—comprising such traits as efficacy, skill, creativity, confidence, and intelligence—relates to perceived ability to enact intent. Motivationally, warmth represents an accommodating orientation that profits others more than the self, whereas competence represents self-profitable traits related to the ability to bring about desired events. In sum, actors distinguish individuals and groups according to their likely impact on the self or ingroup as determined by perceived intentions and capabilities (Cuddy, Fiske, & Glick, 2008).

Importantly, Fiske and colleagues suggest that attributions of warmth and competence result from specific stereotypes associated with a target group. Some outgroups are viewed as competent but not warm (e.g., Asians, Jews, the rich), or as warm but not competent (e.g., the disabled, the elderly, housewives). Although some groups (homeless, poor, welfare recipients) are stereotyped as low on both warmth and competence, only reference groups—ingroups (e.g., students) and societal prototype groups (e.g., Whites, middle-class)—are perceived to be both warm and competent. Subjectively positive stereotypes on one dimension often do not reduce discrimination but rather reinforce unflattering stereotypes on the other dimension and justify unequal treatment.

Despite a difference in nomenclature, the SCM maps well onto Gray and Wegner’s agency/experience model, where agency incorporates competence and experience includes capacities related to interpersonal warmth. Moreover, there is significant overlap between these theories and Haslam’s dehumanization model. By denying typical human feeling, the failure to grant warmth/experience to a target is a form of mechanistic dehumanization. Likewise, by denying uniquely human cognitive capacities, failure to grant competence/agency is a form of

animalistic dehumanization.

Assessing Mental States in a Minimal Group Framework

The research reviewed above suggests that a target's ingroup versus outgroup status has important consequences for a perceiver's perception of the target's mind. However, these studies have all been conducted with stereotype-rich group categories, such as race, sex, or age. Do mind perception asymmetries require a rich set of historically determined and culturally transmitted intergroup beliefs, or are such asymmetries a fundamental result of ingroup-outgroup categorization *per se*? Unlike situations involving naturally occurring social groups with long histories of conflict, the minimal group paradigm (Tajfel, Billig, Bundy, & Flament, 1971) is based on the random assignment of participants to ingroups and outgroups. There is no history with ingroup and outgroup members and, therefore no prior experiences to support intergroup bias. Despite the lack of preformed stereotypes, minimal ingroups are sometime sufficient to induce favorable evaluations of and greater allocation of rewards to ingroup members (Tajfel, Billig, Bundy, & Flament, 1971) for outgroup members. Social identity theory (Tajfel & Turner, 1986) and self-categorization theory (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987) suggest that individuals derive their self-esteem from groups to which they belong. Thus, people are motivated to see their ingroups in a favorable light, and can elevate their self-esteem by raising the status of their ingroup relative to the outgroup.

Cadinu and Rothbart (1996) argued that positive feelings about the self are generalized to the ingroup as a result of a self-anchoring process. Since people tend to have positive self-evaluations (Taylor & Brown, 1988), their evaluation of the ingroup should also be positive. Cadinu and Rothbart also argued that people then view the out-group in a negative light by contrasting the in-group with the out-group.

Minimal group research indicates that people readily make evaluative distinctions between ingroups and outgroups. It is plausible that individuals exist in a state of “mental readiness” to favor their ingroups and, through differentiation, derogate outgroups. In addition to explicit outcomes, intergroup bias has been shown to emerge at the implicit level—in the absence of intent or conscious awareness—even in minimal group conditions (Ashburn-Nardo, Voils, & Monteith, 2001). Research on infrahumanization in a minimal group paradigm reflects this bias, showing that participants attributed more secondary emotions to the ingroup than to the outgroup (Demoulin et al., 2009). Attributions of other mental capacities, such as agency and patiency, warmth and competence, and intentionality have yet to be explored in this context.

Moral Consequences of Denying Mental States

Attributing basic mental experience and agency to others can be seen as granting them the basic rights of “personhood” that enables possible empathetic and altruistic responses. On the other hand, denying those mental states to others lays the foundation for the sort of dehumanization that gives rise to mistreatment and aggression (Haslam, 2006). The ways in which mind perception influences moral values and ethical treatment can depend on the mental states being inferred. Recognizing mindful agency (intentions, planning, and deliberate thought) is related to the judgments of causal responsibility and thus praise or blame for an agent’s actions. Perceiving a capacity for mindful experience (conscious awareness, secondary emotions, suffering, and pain) seems to influence empathy, compassion, and the willingness to harm or impinge on the basic rights of others (Gray et al., 2007). For example, in a study conducted on the aftermath Hurricane Katrina, people were interested in helping the victims only to the degree that they perceived those victims to be experiencing secondary emotions such as anguish and remorse (Cuddy, Rock, & Norton, 2007). In related research, willingness to attribute humanlike

mental states to nonhuman agents also predicted how morally wrong it seemed to harm a nonhuman agent, such as destroying a chess-playing computer or trampling over a bed of flowers (Waytz, Cacioppo, & Epley, 2009). In general, the extent to which an agent has the capacity for mindful experience predicts how unpleasant people report it would be to hurt that agent if they had to do so (Gray et al., 2007). Increasing, the likelihood of spontaneously considering another's mental experience, such as by increasing the sense of similarity or desire to affiliate, also increases the extent to which people experience empathic concern for another's pain or suffering (Cialdini, Brown, Lewis, Luce, & Neuberg, 1997; Pickett et al., 2004; Preston & de Waal, 2002).

If mindful experience is critical for granting others full "personhood", then failing to perceive mindful experience in others should lead people to treat others as mindless agents or objects. As mentioned, the basis of dehumanization is denying mental states and experiences to others by representing them as either thoughtless savages or unfeeling robots (Haslam, 2006; Loughnan & Haslam, 2007). Perceiving an agent's capacity to suffer makes harming that agent appear immoral and unethical. On the other hand, denying an agent the capacity to suffer makes aggression and otherwise immoral harm seem permissible (Bandura, 2002). Dehumanizing outgroup members by denying them mental capacities increases the extent to which violence and aggression toward the outgroup appears acceptable and justified (Castano & Giner-Sorolla, 2006; Goff et al., 2008), increases actual aggression toward the outgroup (Bandura et al., 1975), and increases negative attitudes toward the outgroup (Hodson & Costello, 2007).

Asymmetries in considering other's mental experiences can result in differing types of ethical reasoning, for example, treating other agents as means to an end (consequentialist reasoning) rather than as ends in themselves (deontological reasoning). The principle of

consequentialism holds that acts are morally right or wrong to the degree that they maximize good consequences. Many deontologists, on the other hand, realize the consequences, but believe that there are limits against certain actions regardless of their consequences and that some acts are just wrong in-and-of themselves. These limits usually stem from rules such as not to break promises, not to lie, and not to harm innocent others (Uhlmann, Pizarro, Tannenbaum, & Ditto, 2009). The debate between these two principles has resulted in several well-known studies where both principles are tested against each other in one moral decision (e.g., the “Trolley” and “Footbridge” dilemmas; Foot, 1967; Thompson, 1986). In this dilemma, an individual must decide whether or not to sacrifice one innocent person in order to save a group of people who will be killed by a trolley headed in their direction. Failing to consider a target’s own intentions, goals, or mental experience can lead to more consequentialist thoughts, where they are represented in terms of their instrumental qualities and seen as being more fungible rather than as a mindful target whose life is more protected. For example, more fungible targets may be sacrificed more readily to save others, compared to more cherished targets.

AIMS OF THE CURRENT RESEARCH

Research on mind perception has produced many theories about mental states, each seemingly different from each other. However, the overlap in these theories' core concepts suggests that these capacities may be related to one another at a deep level, with similar consequences when attributed to or withheld from others. The goal of this dissertation was to improve on previous research by exploring how people spontaneously and implicitly assign types of mind to other humans and how the perception of these mental capacities can vary in intergroup contexts.

Unlike previous studies, which have used direct scales and explicit measures, Study 1 makes use of a spontaneous writing task designed to elicit mind attribution to members of designated groups. Study 1 also introduces a new measurement of action identification using a novel speeded computer task, to examine the degree to which the perceiver attributes goals and intentionality in the target's actions, a phenomenon which has not yet been assessed among stereotyped groups. In addition, Study 1 examines potential behavioral consequences of moral reasoning concerning these richly stereotyped ingroup versus outgroup members. Using the same constructs as Study 1, Study 2 will test the minimal conditions for mind perception within the context of a minimal group paradigm, as well as any potential effects on moral reasoning.

STUDY 1

Study 1: Overview

The main aim of Study 1 was to assess how spontaneous mental state attributions occur when the target is a member of a group that is associated with a preexisting stereotype. Four stereotyped groups were chosen as condition targets to capture a wide range of stereotype content. Target group members included: a UCI student (ingroup typically shown to be high on warmth and high on competence), a homeless man (outgroup shown to be low on warmth and low on competence), a businessman (outgroup shown to be low on warmth but high on competence), and an elderly man (outgroup shown to be high on warmth but low on competence). Although previous research has already explored mind perception with naturally occurring social groups, many of these studies used specific explicit measures that only tap into certain mental capacities, such as asking participants to select from a list of secondary and primary emotions when describing ingroup and outgroup members (Demoulin et al., 2004). The present study improved on these methods by providing a general survey of not only the types of mental capacities used, but also the degree to which mind is extended to others, both measured in spontaneous, implicit contexts. Participants were asked to write a story interpreting an ambiguous picture involving the target group member; written responses were then coded for types of mind attribution. A measure of the extent of mind perception was also used, by recording the accuracy of participants in a novel speeded action identification task. The current study also examined possible moral consequences of intergroup asymmetries in mind perception. As mentioned previously, actively considering or not considering other's mental experiences can result in different types of moral reasoning. Specifically, failing to consider an agent's own intentions, goals, or mental experience can lead to consequentialist

thought, wherein others are represented in terms of their instrumental qualities (how that agent can be used to achieve one's own goals) rather than as a mindful agent with goals, intentions, and desires deserving of consideration. In Study 1, the measure used for consequentialism assesses willingness to sacrifice the target for "the greater good", where the sacrifice benefits not only the perceiver but also other lives as well. While some may see this as a "fair" exchange, what about "unfair" or seemingly unjustifiable actions made for personal gain? Denying mental states to other minds may result in a loss of humanity, or "sacredness", making it easier to perform these types of actions. Although the original sacredness scale was designed to examine moral foundations (Graham, Haidt, & Nosek, 2009), I have adopted the basic structure of the scale, which tests subjects' willingness to violate taboos in exchange for money, to examine how willing subjects will be to act harmfully or unfairly towards ingroup and outgroup members. I have also included items created to assess a general willingness to engage in a range of close interactions with them, which will give a sense of personal distancing or rejection towards the target group member.

Specific Predictions

Participants are expected to show varying types of mental state attribution based on the stereotype content of the target group member in each condition. Specific hypotheses are:

Hypothesis 1 (writing task). Based on the content of the associated group stereotypes, participants were expected to produce greater warmth, competence, and uniquely human emotion word percentages when writing about the UCI student compared to the homeless person. The student target was predicted to have similar or slightly higher levels of warmth as the elderly target, and similar or slightly higher levels of competence as the businessman target. Based on previous research, the homeless individual was hypothesized to evoke the lowest word

percentages on all word categories, compared to the other three targets. The businessman target should elicit higher word percentages related to competence compared to the elderly man, but the opposite effect is expected for warmth, which should be higher in the elderly man condition vs. the businessman condition. There is no previous research that assesses uniquely human emotions between these two groups, therefore there are no specific hypotheses regarding differences on this dimension.

Hypothesis 2 (action identification). Participants in the ingroup target condition are expected to respond with greater levels of high action identification, compared to participants in the homeless target condition and similar levels to that of the businessman target. Assuming the homeless target will be perceived as less capable of complex intentions and thoughts, this target should elicit the lowest levels of high action identification compared to all other groups. Due to perceived higher competence, the businessman target may evoke greater high action identification compared to the elderly target, who may be seen as having less agency and therefore less complex actions.

Hypothesis 3: (unwillingness to harm). Due to a higher sense of sacredness, participants should show more unwillingness to harm the UCI student target for personal gain, compared to the homeless target. There may also be a greater hesitance to harm the elderly target compared to the businessman, since elderly people are usually seen as more warm, and part of a protected population.

Hypothesis 4: (closeness). Participants may be more willing to engage in activities that require a certain sense of closeness with the individual in the UCI student and elderly target conditions, due to higher perceptions of warmth and likability for these group members.

Hypothesis 5 (consequentialism). Assuming the homeless target will be seen as less

warm, competent, and human, it is predicted that participants will show more consequentialism in judgments towards that group member, compared to all other conditions.

Hypothesis 6 (implicit attitudes). Overall, positive implicit attitude is expected to be highest in the UCI student condition and lowest in the homeless target condition. Positive implicit attitude is also predicted to be positively correlated with warmth, competence, and uniquely human emotion word percentages, as well as accuracy on high action identification. It should also be positively correlated with hesitance to harm and willingness to engage in close behaviors with the target. Consequentialism is the only variable expected to be negatively correlated with positive implicit associations.

Study 1: Method

Participants

University of California, Irvine, undergraduates (N = 494; 75.2% female; Age 18-24 = 92.1%; 24.5% East Asian, 20.4%, European American, 24.0% Hispanic, 8.5% South Asian, 6.9% Filipino, 2.6% Asian Indian, 2.2% African American, 8.1% other/unspecified) were recruited from the UCI Social Science Human Subject Pool to participate in a study about “Creativity and Social Reasoning” in exchange for course credit. The only requirement for participation was English fluency.

Online study

Upon signing up for the study, participants were emailed the link to the experiment’s website. After completing a short demographic questionnaire, participants were randomly presented with an ambiguous photo of a scene showing a member of one of four stereotyped groups, and asked to write for 5 minutes on a story describing the scene. Participants were then presented with the action identification task (described below), followed by a Go/No-Go

Association Task (GNAT) to measure implicit attitudes towards the group member. Finally, subjects were asked to complete a series of individual difference measures, after which they were debriefed and given contact information in case of questions or withdrawal of data. A brief outline of the procedures is included in Appendix A.

Writing Task. Participants were informed that the experimenters are interested in investigating their abilities to construct an interpretive story from visual information. Participants were then randomly assigned to be shown a photograph of one of four stereotyped groups: UCI student (ingroup condition), homeless man (low warmth and low competence outgroup), businessman (low warmth and high competence outgroup), or elderly man (high warmth and low competence outgroup). The photographs were not labeled in any way, allowing subjects to implicitly encode the group membership of the target. All photographs were acquired from online public databases and showed ambiguous scenes with little to no background context. Participants were asked to spend 5 minutes writing a story explaining the photograph. Similar to the Thematic Apperception Task (Murray, 1939), subjects were directed to include 1) what has led up to the event shown, 2) what is happening at the moment, 3) what the outcome of the story is.

Word Percentage Computation. Participants' written responses were coded using Linguistic Inquiry and Word Count software (LIWC; Pennebaker, Booth, et al., 2007). LIWC is a computerized text analysis program that uses an internal dictionary to search for approximately 4500 words or word stems in text files and categorizes the words into 80 linguistic categories. These categories include basic language components (e.g., pronouns, prepositions), psychological processes (e.g., emotions, cognitive processes), and non-psychological constructs (e.g., work, money), among others. After counting the number of words in each category, LIWC

calculates a proportion score for each category by converting the raw word counts into a percentage based on total words used in the text. For example, an unstandardized score of 6.80 on *prepositions* would indicate that 6.80% of written words were prepositions. Individuals' scores on these standard LIWC categories have been used to discriminate certain groups of people from others based on word usage (e.g., liars from truth-tellers [Newman, Pennebaker, Berry, & Richards, 2003] and high-status individuals from lower-status individuals [Pennebaker, 2011]). In addition, LIWC categories have demonstrated good reliability as well as external, construct, and predictive validity (Pennebaker, Chung, et al., 2007; Pennebaker, Francis, & Booth, 2001; Pennebaker & King, 1999).

Tausczik and Pennebaker (2010) have described cognitive complexity as “a richness of two components of reasoning: the extent to which someone differentiates between multiple competing solutions and the extent to which someone integrates among solutions.” These two processes are captured by two LIWC categories—exclusion words and conjunctions. Exclusive words (e.g., but, without, exclude) are mostly used when making distinctions. Conjunctions (e.g., and, also, although) are used to join multiple thoughts together and are important for creating a coherent narrative (Graesser, McNamara, Louwerson, & Cai, 2004). The built-in LIWC categories of prepositions (e.g., to, with, above), cognitive mechanisms (e.g., cause, know, ought), and words greater than six letters are all also indicative of more complex language (Tausczik & Pennebaker, 2010). Holm and Fiske (2013) used the following built-in LIWC categories to assess competence: *words longer than six letters, work, and achievement*. In the same study, warmth was assessed using the following built-in categories: *social processes, friends, positive emotions, you, and question marks*.

Based on the above mentioned research, a word percentage was created by aggregating the following built-in dictionary scores to represent competence related words: *exclusion words*, *conjunctions*, *prepositions*, *cognitive mechanisms*, *words greater than six letters*, *work*, and *achievement*. Warmth was assessed using the *social processes*, *friends*, *positive emotions* dictionaries. The *you* and *question marks* dictionaries were not used in this study due to the objective nature of the writing task, which did not ask participants to write from a subjective perspective.

In addition to its default dictionaries, LIWC also allows users to create custom dictionaries by inputting word sets. In order to assess any differences in infrahumanization among groups, a custom dictionary was created for this study using emotions rated as “uniquely human” in previous research (e.g. optimism, admiration, sympathy; Demoulin, et al., 2004). These emotions were rated as more exclusive to humans (versus ability to be experienced by animals). A word list for the uniquely human emotion dictionary used in the present study is reported in Appendix C.

Action identification task. Following the writing task, participants were asked to complete a speeded identification task based on the character seen in the photograph. The task consisted of a modified version of the Behavior Identification Form (BIF; Cronbach’s $\alpha = .71$; Vallacher & Wegner, 1989). Participants were instructed to imagine that the person in the photograph was performing the various actions and to choose whether the identification statement presented described the action.

For all items, the action was a neutral behavior and is presented along with three possible identifications: low level, high level, and non-related. For example, “picking an apple” (the neutral behavior) was shown on the same screen with one of the three identifications: the lower

level “pulling fruit off a branch”, the higher level “getting something to eat”, or the non-related “painting a room.” All three identifications were paired with the neutral statement in a counterbalanced order. Participants were instructed to press the “I” key to indicate that the identification described the behavior or the “E” key to indicate that the identification did not describe the behavior and to be as fast and accurate as possible on all trials. An example screenshot is provided in Appendix A and all action statements and corresponding behaviors are listed in Appendix D.

For the action identification task of each participant, data comprises of 14 blocks (neutral behaviors) containing 3 trials each (low, high, and non-related action identification statements). For each trial, participants determined whether the action identification described the neutral behavior by selecting “Yes” or “No.” The low and high level action statements were written to describe the behavior, therefore the technically correct answer for all these trials is “Yes”, compared to “No” for the non-related statements. Three separate dependent variables were created based on the accuracy scores, one for each of the three types of action identification statements (low, high, and non-related) by adding up the number of trials correctly matched (participants responded “Yes” when shown low and high level statements and “No” when shown non-related statements) and dividing by the total number of trials for each type of identification.

Implicit Attitudes. Participants were given a Go/No-go Association Task (Nosek & Banaji, 2001) to measure implicit attitude towards the target group member. Based on assigned condition, the GNAT measured evaluative associations between *Student* and *Good* (relative to *Student* and *Bad*), *Homeless* and *Good* (relative to *Homeless* and *Bad*), *Businessman* and *Good* (relative to *Businessman* and *Bad*), or *Elderly* and *Good* (relative to *Elderly* and *Bad*). The GNAT is similar to the popular Implicit Association Test (Greenwald et al., 1998), in that it is a

computer-based, signal-detection framework for measuring mental associations between categories and attributes. The Inquisit 2.0 (2006) software was used to program a web-based GNAT. The GNAT consisted of two randomly ordered, 34-trial blocks: one pairing the category *Student/Homeless/Businessman/Elderly* with the attribute *Good* and the other pairing *Student/Homeless/Businessman/Elderly* with the attribute *Bad*. During the critical blocks for the task, participants see two category labels on the screen in the upper left and right corners of the screen, and are asked to evaluate whether stimuli that appear in the middle of the screen belong to one of these two categories. Unlike the IAT, the GNAT does not require classifying stimuli into one category pair versus into a contrasting category pair. Instead, participants need only identify whether the presented stimulus belong to the target categories or not. Participants are instructed to press the space bar (the “Go” response) if the presented stimulus belongs to either of the categories whose labels appear on the screen (e.g., *Homeless* and *Good*), or to not press any key (the “No-Go” response) if the stimulus does not belong to either category. The task is speeded and individuals have to give a response within a set amount of time before the next stimulus is displayed. The GNAT uses hit rates (i.e., the proportion of ‘Go’ trials in which a participant correctly presses the space bar) and false alarm rates (i.e., the proportion of ‘No-go’ trials in which the participant mistakenly presses the space bar) to calculate the automatic associations.

Participants’ GNAT scores were calculated using the standard procedures (Nosek & Banaji, 2001). Each GNAT block assesses participants’ accuracy in distinguishing between cases of a target-attribute grouping (i.e., *Homeless-Good* or *Homeless-Bad*) and a set of distractors (i.e., bad words in the *Homeless-Good* block and good words in the *Homeless-Bad* block). When participants show high accuracy, it reflects a strong association between the target and the

attribute. Based on signal-detection theory, accuracy is indexed by d' , which reflects the sensitivity with which individuals can differentiate signal from noise (Nosek & Banaji, 2001). A higher d' indicates that the signal can be more readily detected. The d' for each GNAT block was determined by calculating participants' hit and false alarm rates, and taking the difference between the z-scores for these values. Positive implicit attitude scores were calculated by taking the difference between d' values for the *Student/Homeless/Businessman/Elderly-Good* and *Student/Homeless/Businessman/Elderly -Bad* blocks.

Unwillingness to Harm Scale. This task was adapted from a well known scale measuring “sacredness” reactions to taboo trade-offs (Graham, Haidt, & Nosek, 2009). Participants were given the following instructions:

Try to imagine actually doing the following things, and indicate how much money someone would have to pay you (anonymously and secretly) to be willing to do each thing towards the character in the photograph. For each action, assume that nothing bad would happen to you afterwards. Also assume that you cannot use the money to make up for your action.

Response options given after each action were *\$0 (I'd do it for free), \$10, \$100, \$1,000, \$10,000, \$100,000, a million dollars, and never for any amount of money.* Three items were included to measure willingness to harm the target group member: “Make cruel remarks to him about his appearance”, “Stick a pin into the palm of his hand”, and “Cheat in a game of cards played for money with him.” These three scale items were combined to form an index assessing unwillingness to harm (Cronbach's $\alpha = .71$) the target group member.

Unwillingness for Closeness Scale. An additional three items were created for the present study and included in the above task to measure willingness to perform interactions of

varying closeness with the target group member: “Give him a ride home”, “Give him a hug”, and “Eat a plate of food while sharing a spoon with him”. These three scale items were reverse coded to easily compare with the Unwillingness for Harm variable and combined to form an index assessing willingness to perform interactions of varying closeness with the target group member (Cronbach’s $\alpha = .59$) the target group member. Higher scores on both these variables can now be understood to indicate more hesitance to harm and more comfort being close to the target group member, respectively.

Footbridge dilemma task. This task consisted of a modified version of an intergroup footbridge dilemma previously used by Uhlmann, Pizarro, Tannenbaum, & Ditto (2009). Participants were asked to imagine themselves in a situation where they must decide whether or not to throw the character in the photograph (the target group member), who is severely injured (so injured that he would not survive) off of a crowded lifeboat in order to prevent the lifeboat from sinking and drowning all of the individuals on board. Immediately after reading the scenario, participants responded to four questions assessing their endorsement of consequentialism. They were asked to rate, using 7-point scales, the items:

1. *“Is sacrificing him to save the other members on board acceptable or unacceptable?”*
2. *“Is sacrificing him to save the other members on board moral or immoral?”*
3. *“We should never violate certain core principles, such as the principle of not killing innocent others, even if in the end the net result is better.”*(reverse coded)
4. *“It is sometimes necessary to allow the death of innocents lives in order to promote a greater good.”*

Scores on the four items (Item 3 was reverse coded) were combined to form an index of consequentialism (Cronbach’s $\alpha = .74$). Higher scores indicated greater endorsement of

consequentialism — that it was morally justified to sacrifice the target group member in order to save the lives of others on the lifeboat.

Ancillary measures. Participants also completed several individual difference measures. These include: Rosenberg Self Esteem scale (Rosenberg, 1965), Social Dominance Orientation (SDO) scale (Pratto et al., 1994), and the Interpersonal Reactivity Index (Davis, 1980, 1983). These measures were included for exploratory purposes only and no specific predictions were made regarding their relationship to mind perception for the various conditions.

Study 1: Results

Warmth, Competence, and Uniquely Human Emotions

A one-way ANOVA was conducted to reveal significant differences in *warmth* related word percentages among group conditions, $F(3, 490) = 15.17, p < .001$. Figure 1 presents means and statistical comparisons between groups. Post-hoc analyses (Games-Howell, due to unequal variances across groups) confirmed, as predicted, that scenario descriptions written by participants about the *homeless* man contained fewer *warmth*-related words as compared with the descriptions written by participants in all other conditions ($ps < .05$; $M_{\text{homeless}} = 18.77, SD_{\text{homeless}} = 5.39$; $M_{\text{businessman}} = 20.95, SD_{\text{businessman}} = 5.99$; $M_{\text{student}} = 21.23, SD_{\text{student}} = 7.49$; $M_{\text{elderly}} = 24.38, SD_{\text{elderly}} = 5.82$). Partially consistent with my first hypothesis, descriptions written by participants about the *elderly* man contained more *warmth*-related words than descriptions written by participants in all other conditions ($ps < .01$). However, inconsistent with my predictions, descriptions of the *student* and *businessman* scenarios did not significantly differ on usage of *warmth* related words ($p > .05$).

Group differences were also found in usage of *competence* related words among conditions, $F(3, 490) = 39.94, p < .001$. Figure 2 presents means and statistical comparisons

between groups. Post-hoc analyses (Bonferroni, with equal variances across groups) were consistent with predictions in that scenario descriptions written by participants about the *elderly* man contained fewer *competence* related words as compared with the descriptions written by participants in the other conditions ($ps < .05$; $M_{elderly} = 54.85$, $SD_{elderly} = 10.08$; $M_{homeless} = 58.44$, $SD_{homeless} = 8.55$; $M_{businessman} = 64.54$, $SD_{businessman} = 8.74$; $M_{student} = 66.00$, $SD_{student} = 8.55$).

Similarly, predictions based on stereotype content were supported in that descriptions written by participants about the *businessman* and *student* contained more *competence* related words than descriptions written by participants in the *elderly* and *homeless* man conditions ($ps < .001$).

An analysis of *uniquely human emotions* used in the writing task also confirmed significant differences among group conditions, $F(3, 490) = 6.13$, $p < .001$. Figure 3 presents means and statistical comparisons between groups. Although no specific predictions were made for this attribute, post-hoc analyses (Bonferroni) show interesting evidence for group stereotype content. Scenario descriptions written by participants about the *student* (ingroup) contained more *uniquely human emotions* as compared with the descriptions written by participants in the *homeless* and *elderly* man conditions ($ps < .01$; $M_{student} = 4.67$, $SD_{student} = 2.48$; $M_{homeless} = 3.64$, $SD_{homeless} = 2.07$; $M_{elderly} = 3.65$, $SD_{elderly} = 2.15$), and marginally more than the *businessman* condition ($p = .061$; $M_{businessman} = 3.96$, $SD_{businessman} = 2.10$). Word percentages of participants in the *businessman*, *homeless*, and *elderly* man did not significantly differ from each other ($p > .05$).

Action Identification

First, a mixed ANOVA (target condition x level of action identification) was conducted to assess differences among the 3 within-subjects dependent variables (accuracy for low, high, and non-related action statements). A significant main effect was found for level of action

identification indicating that subjects had higher accuracy distinguishing the non-related statements ($M = .827, SD = .01$) across all target group conditions compared to the low ($M = .676, SD = .01$) and high ($M = .671, SD = .01$) level action statement trials (i.e., subjects were better able to distinguish when a statement didn't match than when it did), $F(2, 490) = 87.406, p < .001, \text{partial } \eta^2 = .151$. A marginally significant main effect was also found for the target group, showing that subjects viewing the homeless target ($M = .683, SD = .02$) were less accurate than those viewing the student target ($M = .753, SD = .02$) across all levels of action identification, $F(3, 490) = 2.546, p = .055, \text{partial } \eta^2 = .015$. In order to assess between-subjects differences among target groups, a series of one-way ANOVAs were conducted, one for each type of identification (low, high, and non-related). As hypothesized, analysis of the high level statements revealed significant differences among group conditions, $F(3, 490) = 2.95, p = .033$. Figure 4 presents means and statistical comparisons between groups. Post-hoc analyses (Bonferroni) showed a marginally significant higher accuracy for matching high level actions with corresponding behavior statements (i.e., responding "Yes" when asked if the high level action statement matched the behavior) when the told to imagine the *UCI student* (ingroup) performing those actions compared to participants imagining the *homeless* man performing those actions ($p = .064; M_{\text{student}} = .70, SD_{\text{student}} = .29; M_{\text{homeless}} = .60, SD_{\text{homeless}} = .31$). Accuracy on matching high level actions did not significantly differ among the other conditions, ($ps > .05$). There were no group differences found in accuracy for the non-related or low level action statements, $F(3, 490) = 1.86, p = .136, F(3, 490) = 1.30, p = .285$ respectively.

Positive Implicit Attitude

A one-way ANOVA reported significant differences among group conditions, $F(3, 490) = 6.15, p < .001$. Figure 5 presents means and statistical comparisons between groups. Post-hoc

analyses (Bonferroni) partially confirmed the hypothesized differences, with participants showing the lowest levels of positive implicit attitude towards the *homeless* target category ($ps < .01$; $M_{\text{homeless}} = -.19$, $SD_{\text{homeless}} = .95$; $M_{\text{businessman}} = .19$, $SD_{\text{businessman}} = .95$; $M_{\text{student}} = .20$, $SD_{\text{student}} = .98$; $M_{\text{elderly}} = .30$, $SD_{\text{elderly}} = 1.08$). Contrary to expectations, positive implicit attitude did not significantly differ among the other conditions, ($ps > .05$).

Moral Consequences

Unwillingness to Harm. A one-way ANOVA reported significant differences among group conditions, $F(3, 490) = 15.14$, $p < .001$. Figure 6 presents means and statistical comparisons between groups. Post-hoc analyses (Bonferroni) partially confirmed the hypothesized differences, with participants showing more unwillingness to harm the *homeless* and *elderly* group members compared to the *student* and *businessman* targets ($ps < .05$; $M_{\text{homeless}} = 18.90$, $SD_{\text{homeless}} = 5.65$; $M_{\text{elderly}} = 17.77$, $SD_{\text{elderly}} = 5.05$; $M_{\text{student}} = 15.74$, $SD_{\text{student}} = 5.43$; $M_{\text{businessman}} = 14.92$, $SD_{\text{businessman}} = 5.36$). Contrary to expectations, unwillingness to harm did not significantly differ between the *homeless* and *elderly* group members or between the *student* and *businessman* targets, ($ps > .05$).

Willingness for Closeness. Significant differences among group conditions were found, $F(3, 490) = 24.54$, $p < .001$. Figure 7 presents means and statistical comparisons between groups. Post-hoc analyses (Games-Howell) show a predicted pattern, with participants showing the least willingness for closeness towards the *homeless* target compared to targets in all other conditions ($ps < .001$; $M_{\text{homeless}} = 17.05$, $SD_{\text{homeless}} = 4.81$; $M_{\text{student}} = 20.16$, $SD_{\text{student}} = 3.55$; $M_{\text{elderly}} = 20.49$, $SD_{\text{elderly}} = 3.87$; $M_{\text{businessman}} = 20.82$, $SD_{\text{businessman}} = 3.53$). Willingness for closeness did not significantly differ between the *student*, *elderly*, group and *businessman* targets, ($ps > .05$).

Consequentialism. No significant group differences were found when analyzing the combined consequentialism score, $F(3, 490) = .603, p = .613$, nor when each item was analyzed separately.

Correlations Between Measures

Pearson correlations between all measures used are reported separately by group in Tables 1 and 2. Two ancillary measures, Social Dominance Orientation (SDO) scale (Pratto et al., 1994) and the Interpersonal Reactivity Index (Davis, 1980, 1983), were included as well for exploratory purposes. Warmth word percentages were negatively associated with competence word percentages in the Student and Elderly target conditions ($r = -.20, p = .02$; $r = -.35, p < .001$ respectively). Across all groups, warmth word percentages were positively correlated with uniquely human emotion word percentages (Student: $r = .56, p < .001$; Homeless: $r = .42, p < .001$; Businessman: $r = .40, p < .001$; Elderly: $r = .28, p = .005$). Warmth-related word usage was also associated with unwillingness to harm when describing the student target ($r = .25, p = .004$). Interestingly, unwillingness to harm was also positively associated with competence in the homeless condition ($r = .22, p = .01$). Accuracy for identifying high-level action statements was positively associated with willingness for closeness in the Student ($r = .23, p = .007$) and Elderly ($r = .30, p = .002$) conditions. Positive implicit attitude (GNAT scores) towards the student target was significantly correlated with uniquely human emotion word usage ($r = .23, p = .007$). Negative correlations were found between unwillingness to harm and willingness for closeness towards the student ($r = -.19, p = .02$), homeless ($r = -.28, p = .001$) and elderly targets ($r = -.24, p = .02$). Unwillingness to harm also had negative relationships with consequentialism towards the student ($r = -.37, p < .001$), homeless ($r = -.22, p = .01$) and elderly targets ($r = -.22, p = .03$). Consequentialism was positively associated with social dominance orientation in the

student ($r = .23, p = .008$), homeless ($r = .22, p = .01$), and businessman ($r = .23, p = .01$) target conditions. Consequentialism towards the student ($r = -.27, p = .01$) and businessman targets ($r = -.28, p = .001$) was negatively correlated with interpersonal reactivity.

Study 1: Discussion

The results of Study 1 produced several findings supporting the previous predictions. Overall, the types of mind attributions produced in the writing samples reflected the stereotype content of the targeted groups. Group members shown to be perceived as low (homeless) or high (elderly) on warmth elicited corresponding levels of warmth-related words in the spontaneous writing task. Targets perceived to be low (elderly and homeless) and high (businessman and ingroup) on competence were also accurately reflected in competence-related word percentages. Since the four specific social groups used in this study had not been assessed for capability of uniquely human emotions prior to this research, I did not have any firm predictions on how participants would portray them in the writing task, other than to assume that the group previously associated with dehumanization (homeless) may be described using the least amount of uniquely human emotions. However, it was the ingroup target, with the highest uniquely human emotion word percentages, that showed the only difference from the rest of the conditions. This supports the infrahumanization theory that the usage of uniquely human emotions is reserved solely for the ingroup, or groups seen as closer to ourselves.

By adapting the Action Identification Task from a paper and pencil version to a speeded computerized task, I intended on making the identifications more implicit and less subject to conscious processing. The differences were in the predicted direction, with the UCI student target being more accurately matched on high level, complex action statements compared to the homeless target. This indicates that participants were more easily able to imagine the ingroup

member performing these complex tasks which require higher levels of agency and motivation. This suggests promising potential for this task, which can be fine-tuned in the future to assess more subtle differences in categorizing actions as high or low depending on the designated target performing the action.

The analyses on willingness to harm the target group members showed unexpected differences where subjects' were less willing to harm homeless and elderly group members for money, compared to the student and businessman targets. Prior research has demonstrated that perceived warmth earns groups assistance from other groups and shields them from active harm (Cuddy, Fiske, & Glick, 2004), which explains the elderly target being protected in this task. However, the same research has found groups perceived as not warm and not competent (e.g., poor and homeless people) are targets of negative intergroup behaviors including social exclusion and sometimes even active harm. Based on these findings, the homeless target was predicted to be the most susceptible to harm for monetary gain, however this was not the case. Although there were no differences found in willingness to harm the homeless vs. elderly target, it is clear that these two groups were not similarly perceived on all dimensions. Participants showed the least willingness for closeness with the homeless target, but not the elderly, indicating that this group in particular prompted feelings of distance and rejection. It is possible that this sample viewed the homeless target as harmless but pathetic, which typically elicits pity, a paternalistic response, and occasionally admiration. Pity is usually shown towards people whose bad life situations are viewed as uncontrollable (Weiner, 1985; Weiner, Graham, & Chandler, 1982; Weiner, Perry, & Magnusson, 1988) and tends to be directed at lower-status groups (Smith, 2000). This would explain a hesitance to harm but a motivation to still keep personal distance from this target group.

Surprisingly, target group membership did not seem to have any impact on consequentialist actions, contradicting previous research in this domain. One explanation could be that consequentialism in this sample was determined more by individual differences than study conditions, since analyses showed consequentialism towards the target was significantly positively correlated with Social Dominance Orientation scores and negatively correlated with Interpersonal Sensitivity scores.

STUDY 2

Study 2: Overview

Study 1 explored spontaneous mind perception within an intergroup context containing stereotype content, as is the case with most “real world” group relations. Study 2 seeks to further explore the mechanisms behind the mind perception process by examining spontaneous mental state attributions in a less stereotype rich context—namely, the minimal group paradigm. By manipulating group entitativity—the degree to which groups can be seen as well-defined social entities (Campbell, 1958)—this study tests the minimum threshold at which mind perception differences can occur. Previous research has shown that group entitativity influences linguistic discrimination, such that linguistic bias was not elicited by mere categorization and occurred only in a higher entitativity condition (Moscatelli & Rubini, 2011). One study has also shown that infrahumanization occurred only where the group categorization was meaningful (Demoulin, 2009). Ingroup identification mediated the impact of the categorization criteria on the tendency to infrahumanize. In the same study, data also showed that ingroup favouritism, but not infrahumanization, was observed in the situation where group membership was based on random assignment. In other words, for infrahumanization to occur, mere categorization is not enough; meaningfulness is also needed. For ingroup favouritism to arise, the knowledge of being part of any group is sufficient. In Demoulin’s (2009) study, infrahumanization was demonstrated by examining the discrepancy between attributions of primary vs. secondary emotions. The current study improves upon this design by assessing attributions of various types of mind capacities, in spontaneous language instead of an experimentally forced selection of group characteristics. It also tests whether minimal group membership has influence over potential moral behavior towards targeted groups.

Specific Predictions

All study tasks from Study 1 are replicated in Study 2 with the exception of the implicit attitude measure, which was changed to the Implicit Association Task instead of the Go/No-Go Association Task for the purposes of comparing between ingroup and outgroup members. Based on the previous research discussed, mental state attribution should differ depending on the entitativity of the group condition. Since group identification increases as the entitativity of the ingroup increases (Yzerbyt et al., 2000), group identification will be used as a check of the effectiveness of the group entitativity manipulation. As a result, I expect to see a main effect of group entitativity across all conditions, with participants who formed groups based on their personal preferences showing more explicit and implicit ingroup identification than those who were assigned to a group at random. Group entitativity should also have an effect on positive attitudes towards the ingroup, meaning the artist-preference condition should have more favorable explicit and implicit attitude towards the ingroup. Specific hypotheses regarding are:

H1 (writing task): In the mere-categorization condition, I do not expect to see significant differences in warmth, competence, or uniquely human emotion word percentages when writing about the ingroup target compared to the outgroup target. Conversely, in the artist-preference condition, I expect to see subjects producing higher word percentages in these three categories when writing about the ingroup target compared to the outgroup target.

H2: (action identification): Similarly, for participants in mere-categorization condition, I do not expect to see significant differences in action identification when describing the ingroup target compared to the outgroup target. However, participants in the artist-preference condition who are describing an ingroup member are expected to respond more accurately in the high action identification trials.

Hypothesis 3: (unwillingness to harm). Due to a higher sense of favoritism and identification with the ingroup, participants in the more meaningful group may require more money to commit taboo acts towards the ingroup member, compared to the outgroup target. No significant differences are expected between ingroup and outgroup targets in the mere-categorization condition.

Hypothesis 4: (closeness). The same sense of favoritism and identification in the more meaningful condition should also cause participants to be more willing to engage in activities that require a certain sense of closeness with the ingroup individual versus the outgroup target. As with the other dependent variables, no significant differences are expected between ingroup and outgroup targets in the mere-categorization condition.

Hypothesis 5 (consequentialism). Higher group entitativity may also cause outgroup members to seem more fungible, resulting in more consequentialist actions towards the outgroup target. This pattern is not expected in the mere-categorization condition.

Hypothesis 6 (implicit and explicit attitudes and identification). Overall, a main effect of group entitativity is expected, reflecting higher positive implicit and explicit attitude and identification towards the ingroup in the more meaningful group compared to the randomly assigned condition. Among participants enrolled in the more meaningful group, positive implicit attitude towards the ingroup is predicted to be positively correlated with warmth, competence, and uniquely human emotion word percentages, as well as accuracy on high action identification when describing an ingroup member, and negatively correlated with these scores when describing an outgroup member. Higher group entitativity should also result in positive implicit attitude towards the ingroup being positively correlated with hesitance to harm and willingness to engage in close behaviors with the ingroup target and negatively correlated with these scores

when describing an outgroup member. Again, in the more meaningful group, consequentialism is the only variable expected to operate in the reverse direction, to be negatively correlated with positive implicit association towards the ingroup and positively correlated when the consequentialist behaviors are directed towards the outgroup. This same pattern of results should be paralleled in relationships with implicit ingroup identification scores, as well as explicit ingroup attitudes and explicit ingroup identification.

Study 2: Method

Participants

University of California, Irvine, undergraduates (N = 390; 76.2% female; Age 18-24 = 91.3%; 37.2% East Asian, 22.5%, European American, 14.1% Hispanic, 8.5% Filipino, 7.2% South Asian, 4.1% Asian Indian, 2.1% African American, 4.4% other/unspecified) were recruited from the UCI Social Science Human Subject Pool to participate in a study about “Creativity and Social Reasoning” in exchange for course credit. The only requirement for participation was English fluency.

Procedures and Materials

Similar to Study 1, Study 2 was conducted through an online survey. The experimental design was a 2 (Group entitativity: mere categorization vs. artistic preference) x 2 (Target’s group membership: ingroup vs outgroup).

Minimal group induction. Minimal group induction procedures and instructions were all adopted from Pinter and Greenwald (2011). After completing a short demographic questionnaire, participants were randomly categorized into one of two conditions: the mere-categorization group or the artist-categorization group. Participants in the mere-categorization group were told that they were randomly assigned into either the “Gold” or “Blue” group (all

participants were actually always be assigned to the Gold group). Participants in the artist-categorization group were given commonly used minimal group procedure (Ashburn-Nardo, Voils, & Monteith, 2001), consisting of a computer survey which involves rating paintings and receiving false feedback identifying them as having a preference towards a particular type of art. Participants were assigned to the Gold group and given the following feedback after the art rating task:

*“Previous research has shown that people who prefer such paintings tend to process perceptual information in a **bottom-up** fashion. **That is, you tend to examine the finer details of new stimuli, and then form an overall impression.**”*

Perceptual processing is directly related to our formation of attitudes and behaviors. As a result, people who process information in the same way show remarkable similarities to each other. Members of this group tend to come from similar backgrounds and have the same opinions, similar important beliefs, and similar personalities. Across a variety of situations, members of this group will often act in a similar manner.”

This information was evaluatively meaningless but served to highlight the meaningful distinction between the two groups.

An additional task was adopted from Pinter and Greenwald (2011) which was shown to increase group identification and positive attitude towards the ingroup. Subjects were told they would be participating in a competitive puzzle task towards the end of the study, during which they would cooperate with fellow Gold team members, against opposing Blue team members. Next, subjects read the following instructions: “For this purpose, it is important that you memorize and remember your fellow Gold teammate’s names. It is critical that you know who is on your team and who is not. On the next page, you will have 45 seconds to memorize the names

of your fellow teammates. After that, you will be given a categorization task to test how well you remember your team.” The next page presented four names (Lisa, Daniel, Ryan, and Kimberly) in a block centered on the screen, below the instruction: “You have 45 seconds to memorize your teammate’s names.” The group member’s names were chosen to be common, familiar names. To help them think of themselves as members of the group, subjects next completed a self-group association task for which they practiced classifying the names of the members of both groups along with words representing self (I, me, myself) or other (other, them, they). Because subjects had not been exposed to any names of the opposing Blue group members in the memorization task, they were told that any name presented that did not belong to the Gold group was to be assumed to belong to the Blue group. Names for the Blue group were matched to be the same number of letters as those for the Gold group (Erin, Jeremy, Adam, and Patricia). For 2 blocks of 48 trials, subjects classified singly presented names and words from the two categories, using left-side (‘E’) and right-side (‘I’) computer keys. For all subjects, the pairings were Gold+self and Blue+others. Category-pairing labels remained on the display for the entire task and their leftside-rightside position switched on the second block of trials to disrupt consistent associations of response keys with the categories. Subjects were instructed to respond quickly, but to avoid errors. Response errors required correction for the program to continue.

Using the same procedures as Study 1, participants were then randomly chosen to be presented with an ambiguous photo of a scene involving either an ingroup or outgroup member, and asked to write for 5 minutes on a story describing the scene. This was followed by the action identification task and the same Unwillingness to Harm and Willingness for Closeness scales, with the corresponding ingroup or outgroup member kept as the target of the tasks. Instead of the Go/No-Go Association Task used in Study 1, subjects performed two IATs (Implicit Association

Task) assessing attitude and group identification. Following the implicit measures, subjects completed several items that assessed explicit attitude and identification, as well as a manipulation check to assess knowledge of group membership and assignment.

Finally, subjects were asked to complete a series of individual difference measures, after which they were debriefed and given contact information in case of questions or withdrawal of data. Appendix B provides an overview and examples of study procedures.

Writing Task. All instructions and LIWC word processing were conducted similarly to Study 1 with a different photograph and target group members. Participants were randomly assigned to write about a Gold (ingroup) group member or Blue (outgroup) group member. The same photograph was presented in both conditions showing an ambiguous scene of a table in a coffee shop with a cup and empty chairs. Participants in the ingroup condition were given the following instructions “Imagine Lisa, a Gold group member, was sitting at this table a moment ago...” The outgroup condition instructions read “Imagine Erin, a Blue group member, was sitting at this table a moment ago...” They were asked to spend 5 minutes writing a story explaining 1) what she was doing before she came here, 2) what she was doing while she was here, 3) what she is doing now that she is gone. *Warmth, competence, and uniquely human emotions* word percentages were calculated using the same LIWC dictionaries as Study 1.

Action Identification Task. Following the writing task, participants were given the same speeded action identification task as described in Study 1, however instead of being given a photograph, they were told to imagine Lisa, a Gold group member (ingroup condition) or Erin, a Blue group member (outgroup condition) performing each action. The corresponding group name and member name was shown at the top of the screen throughout all the trials.

Unwillingness to Harm, Unwillingness for Closeness, and Consequentialism Scales.

Instructions and procedures for these three scales were kept the same as Study 1, with the only difference being the target of the task was determined by condition: Lisa, a Gold group member or Erin, a Blue group member.

Implicit Attitude and Identification Measures. Subjects in all conditions completed two seven block IATs designed to measure implicit attitude and implicit identification towards the ingroup and outgroup. The IAT target categories and stimuli were represented by the group names, Gold and Blue, and the eight names of the group members (4 Gold group names and 4 Blue group names). The attribute categories and stimuli for the attitude IAT were good (beautiful, celebrating, cheerful, excellent, excitement) and bad (angry, terrible, brutal, destroy, humiliate) and for the identification IAT, self (I, me, mine, my, self) and other (other, their, themselves, them, they). IAT response latencies were transformed into the standard D metric (Greenwald, Nosek, & Banaji, 2003) prior to analysis. Higher values reflect greater association of self (versus other) and good (versus bad) with the ingroup than with the outgroup.

Explicit Attitude and Identification Measures. Following the implicit measures, subjects completed several items that assessed explicit attitude and identification. Using a 7-item scale (strongly disagree-strongly agree), subjects responded to 4 items measuring attitude (“I like the Gold group,” “I like the Blue group,” “The Gold group is good,” and “The Blue group is good”) and identification (“I feel attached to the Gold group,” “I feel attached to the Blue group,” “I identify with the Gold group,” and “I identify with the Blue group”). The four items of each type were combined to create difference scores for which positive values indicate preference for and identification with the ingroup relative to the outgroup.

Manipulation Checks. Finally, subjects responded to two questions intended to validate the manipulation. The first item was “I was a member of the...” Subjects had three response

options, 1=Gold group, 2=I don't remember, and 3=Blue group. The second item was "The way I became a member of the group was..." which also had three response options, 1=on the basis of my test performance, 2=I don't remember, and 3=I was randomly assigned to the group. Examination of the manipulation check results showed error rates of 4% and 18%, respectively, on the knowledge of group membership and basis for group assignment questions. Eight participants who failed to identify their correct group were excluded from analyses as well as 67 participants who failed to correctly identify their method of assignment (these 67 participants were assigned by condition as follows: meaningful/ingroup target N = 21; meaningful/outgroup target N = 23; random/ingroup N = 9; random/outgroup N = 14).

Ancillary Measures. As with Study 1, participants also completed several individual difference measures. These include: Rosenberg Self Esteem scale (Rosenberg, 1965), Social Dominance Orientation (SDO) scale (Pratto et al., 1994), and the Interpersonal Reactivity Index (Davis, 1980, 1983). These measures are included for exploratory purposes only and no specific predictions are made regarding their relationship to mind perception for the ingroup or outgroup.

Study 2: Results

Warmth, Competence, and Uniquely Human Emotions

A series of two-way ANOVAs were conducted to examine the effects of group meaningfulness and target's group membership on word percentages of the three dimensions: *warmth*, *competence*, and *uniquely human emotions*. Contrary to predictions, there were no significant interaction effects found for any of the dependent variables, $F(1, 345) = .413, p = .521$, partial $\eta^2 = .001$, $F(1, 345) = .068, p = .795$, partial $\eta^2 < .001$, $F(1, 345) = .138, p = .711$, partial $\eta^2 < .001$, respectively. An unexpected main effect of target's group membership emerged when analyzing *competence* related words, $F(1, 345) = 4.095, p = .044$, partial $\eta^2 = .012$,

indicating that overall, participants used more competence related words when writing about the outgroup member ($M = 57.09$, $SD = 0.62$) than the ingroup member ($M = 55.34$, $SD = 0.60$).

Action Identification Task

Two-way ANOVAs were also used to examine any potential effects of group meaningfulness and target's group membership on accuracy of matching the three levels of action identification statements: *non-related*, *low*, and *high*. A marginal interaction was found for the high level action statements, $F(1, 345) = 3.734$, $p = .054$, partial $\eta^2 < .011$. Figure 8 presents means and statistical comparisons between groups. Simple effects analyses partially supported the group meaningfulness hypothesis. Participants who were imagining the outgroup member performing the high level action statements were less accurate when they had been meaningfully assigned to their group ($M = .83$, $SD = 0.21$) compared to those who were randomly assigned ($M = .90$, $SD = 0.13$), $F(1, 345) = 6.000$, $p = .015$, partial $\eta^2 = .017$, indicating that participants in the more meaningful group had more difficulty imagining the outgroup member performing the complex action statements. As predicted, there were no significant interaction effects found for either the non-related or low action levels, $F(1, 345) = .253$, $p = .615$, partial $\eta^2 = .001$, $F(1, 345) = .388$, $p = .534$, partial $\eta^2 < .001$, respectively.

Unwillingness to Harm, Willingness for Closeness, and Consequentialism Scales.

These three scales analyzed similarly to Study 1. Contrary to predictions, there were no significant interaction effects found for any of the dependent variables, $F(1, 345) = 1.710$, $p = .192$, partial $\eta^2 = .005$, $F(1, 345) = .326$, $p = .568$, partial $\eta^2 = .001$, $F(1, 345) = .003$, $p = .953$, partial $\eta^2 < .001$, respectively. A trending main effect occurred in the expected direction for the target's group membership when analyzing *willingness for closeness*, $F(1, 345) = 2.896$, $p = .090$, partial $\eta^2 = .008$, indicating that overall, participants were more willing to engage in

personal encounters with the ingroup member ($M = 21.91$, $SD = .26$) than the outgroup member ($M = 21.28$, $SD = .27$). An unpredicted main effect of group meaningfulness was reported when analyzing *willingness for closeness*, $F(1, 345) = 4.186$, $p = .042$, partial $\eta^2 = .012$, indicating that across ingroup and outgroup members, participants in the randomly assigned group ($M = 21.97$, $SD = .26$) showed more willingness to engage in close interactions than those in the more meaningful group ($M = 21.21$, $SD = .27$).

Implicit Attitude and Identification Measures.

As the revised algorithm of the IAT (Greenwald et al., 2003) specifies, subjects were excluded from analyses when 10% of responses were below 300ms. As a result, 33 subjects were removed from the attitude IAT analyses and 19 from the identity IAT analyses. The attitude IAT involved subjects sorting names referring to the Gold and Blue groups and words referring to the categories, good and bad. It was hypothesized that a main effect would be present across conditions, showing subjects in the more meaningful group would have stronger associations of the Gold ingroup (vs. the Blue outgroup) with good (vs. bad) than subjects in the randomly assigned group, however, this prediction was not supported $F(1, 312) = 2.247$, $p = .135$, partial $\eta^2 = .001$. Although no predictions were made on whether the target group member (ingroup vs. outgroup) of the previous tasks would influence the implicit measures, a significant group meaningfulness x target group member interaction was found for positive implicit attitude towards the ingroup, $F(1, 312) = 4.640$, $p = .032$, partial $\eta^2 = .015$. Figure 9 displays the mean implicit attitude scores by group entitativity and target group member. Simple effects analyses revealed that participants who had imagined an ingroup member while performing the writing, action identification and moral consequences study tasks showed higher positive implicit attitude towards the ingroup when enrolled in a meaningful group ($M = .50$, $SD = .04$) compared to those

who were randomly assigned ($M = .36$, $SD = .04$), $F(1, 312) = 6.876$, $p = .009$, partial $\eta^2 = .022$. Participants enrolled in the meaningful group also had marginally higher positive implicit attitude towards the ingroup when they had imagined an ingroup member while performing the study tasks ($M = .50$, $SD = .04$) compared to those who had imagined an outgroup member ($M = .40$, $SD = .04$), $F(1, 312) = 3.564$, $p = .060$, partial $\eta^2 = .011$.

The identification IAT involved subjects sorting names referring to the Gold and Blue groups and words referring to the categories, self and other. It was hypothesized that a main effect would be present across conditions, showing subjects in the more meaningful group would have stronger associations of the Gold ingroup (vs. the Blue outgroup) with self (vs. other) than subjects in the randomly assigned group, however, this prediction was not supported $F(1, 360) = .628$, $p = .429$, partial $\eta^2 = .002$. However, a main effect was present across conditions for the target group member imagined in the other study tasks, indicating that across group meaningfulness conditions, participants who imagined an ingroup member ($M = .76$, $SD = .02$) showed significantly higher implicit identification with the ingroup than those who imagined an outgroup member ($M = .69$, $SD = .02$), $F(1, 360) = 4.596$, $p = .033$, partial $\eta^2 = .013$.

Explicit Attitude and Identification Measures.

Subjects completed four items to assess explicit preference for the Gold and Blue groups. A one-sample test indicated that, across conditions, subjects favored the ingroup to the outgroup $t(348) = 14.219$, $p < .001$. Analyses confirmed that the meaningful group participants ($M = 3.04$, $SD = .26$) showed higher explicit preference for the ingroup than participants who were in the randomly assigned group ($M = 2.12$, $SD = .25$), $F(1, 345) = 6.383$, $p = .012$, partial $\eta^2 = .018$. Figure 10 displays group means and statistical comparisons. A marginal trend was also seen

showing that participants who had imagined the ingroup member in the other study tasks ($M = 2.91$, $SD = .25$) showed higher explicit preference for the ingroup than participants who had imagined the outgroup member ($M = 2.25$, $SD = .26$), $F(1, 345) = 3.349$, $p = .068$, partial $\eta^2 = .010$.

Subjects also completed four items to assess explicit identification with the Gold and Blue groups. A one-sample test indicated that, across conditions, subjects identified more with the ingroup than the outgroup $t(348) = 19.950$, $p < .001$. As with the explicit attitude measure, analyses confirmed that the meaningful group participants ($M = 5.02$, $SD = .32$) showed higher explicit identification with the ingroup than participants who were in the randomly assigned group ($M = 3.97$, $SD = .31$), $F(1, 345) = 5.528$, $p = .019$, partial $\eta^2 = .016$. Figure 11 displays means and group differences. Also, participants who had imagined the ingroup member in the other study tasks ($M = 5.05$, $SD = .31$), again showed higher explicit identification for the ingroup than participants who had imagined the outgroup member ($M = 3.93$, $SD = .32$), $F(1, 345) = 6.344$, $p = .012$, partial $\eta^2 = .018$.

Correlations Between Measures.

Table 3 and Table 4 report Pearson correlations between all measures used separated by : randomly assigned/ingroup target vs. randomly assigned/outgroup target conditions and meaningfully assigned/ingroup target vs. meaningfully assigned/outgroup target conditions, respectively. Two ancillary measures, Social Dominance Orientation (SDO) scale (Pratto et al., 1994) and the Interpersonal Reactivity Index (Davis, 1980, 1983), were included as well for exploratory purposes. In the randomly assigned/outgroup target condition, warmth-related word percentages were positively associated with competence-related percentages ($r = .44$, $p < .001$). As in Study 1, across all conditions, warmth and uniquely human emotion words were positively

correlated (randomly assigned/ingroup: $r = .45, p < .001$; randomly assigned/outgroup: $r = .73, p < .001$; meaningfully assigned/ingroup: $r = .49, p < .001$; meaningfully assigned/outgroup: $r = .59, p < .001$). As expected, a negative relationship was found between competence word percentages describing the outgroup target and implicit ingroup association among participants in the meaningfully assigned condition ($r = -.22, p = .046$). In the same condition, high level action accuracy was negatively correlated with consequentialism, meaning that participants who showed the outgroup target less high level action identification were more likely to perform consequentialist actions towards them ($r = -.23, p = .040$). Also in this condition, unwillingness to harm and consequentialism towards the outgroup member were negatively correlated ($r = -.41, p < .001$). In the meaningfully assigned condition, unwillingness to harm the outgroup member was negatively related to positive implicit ingroup attitude, meaning that participants who implicitly liked the ingroup more were more willing to harm the outgroup member ($r = -.22, p = .046$). Positive explicit ingroup attitude was negatively associated with consequentialism towards the outgroup member, showing that meaningfully assigned participants who explicitly liked the ingroup more were more willing to perform consequentialist actions towards the outgroup ($r = -.25, p = .023$). In all study conditions, positive implicit attitude and implicit ingroup identification were positively correlated (randomly assigned/ingroup: $r = .50, p < .001$; randomly assigned/outgroup: $r = .25, p = .035$; meaningfully assigned/ingroup: $r = .25, p = .032$; meaningfully assigned/outgroup: $r = .23, p = .042$). Similarly, in all conditions, positive explicit attitude and explicit ingroup identification were positively related (randomly assigned/ingroup: $r = .71, p < .001$; randomly assigned/outgroup: $r = .56, p < .001$; meaningfully assigned/ingroup: $r = .60, p < .001$; meaningfully assigned/outgroup: $r = .65, p < .001$). Social dominance orientation was positively associated with consequentialist actions towards the outgroup member in both the

randomly and meaningfully assigned conditions ($r = .43, p < .001$; $r = .24, p = .029$ respectively). In contrast, social dominance orientation was negatively associated with unwillingness to harm the ingroup member in meaningfully assigned conditions ($r = -.26, p = .022$).

Study 2: Discussion

Study 2 aimed to test Study 1's hypotheses in a minimal group context. Explicit and implicit measures of ingroup attitude and identification confirmed that the minimal group induction was successful at increasing positive attitude and identification towards the ingroup, particularly for the more meaningfully assigned group who took part in the artistic preference induction procedure. Although minimal groups seemed to be successfully established, this study's findings did not find much support for the group entitativity hypotheses.

One possible explanation is the writing task in this study may have inadvertently acted as a perspective taking manipulation, attenuating differences between target group member conditions. Without the stereotype rich content present in Study 1, subjects may have engaged in more self-other merging during the process of writing about the ingroup and outgroup member, leading to decreased essentialism for both groups, perceiving members of each group as having less of a shared underlying, common essence, and more similarities to members of the opposite group. Future studies can test for this effect using essentialism measures to assess how participants perceive the "groupy-ness" of each group.

In order to increase this group essentialism and further strengthen the minimal group induction, this study may have benefited from being conducted in a laboratory setting, where group differences could have felt more concrete and salient to participants. Although efforts were taken to strengthen group cohesion using the group name memorization task, it is possible that

the online nature of this study attenuated any feelings of “us vs. them”, which would be more present in a real-world live group situation.

GENERAL DISCUSSION

Strengths and Limitations

Study 1 introduced the novel usage of linguistic analysis to assess how spontaneous mental state attributions occur when the target is a member of a group associated with a preexisting stereotype. Overall, the various group member targets elicited differing levels of warmth, competence, and uniquely human related emotion words corresponding with the content of their associated group stereotypes. Study 1 utilized another novel measure, the speeded Action Identification Task, to assess a general degree of mind perception, or the extent to which a perceiver recognizes that a mind and mental states underlie the target's actions. Results confirmed that participants were more easily able to imagine the ingroup member performing complex actions, requiring higher levels of agency and motivation attributions. In terms of moral behavior consequences, subjects were more hesitant to harm the elderly and homeless target group members, compared to the student and businessman targets, possibly because of their protected or pitied status in American society. A resistance to harming the homeless target could also be explained by a general personal distancing, where subjects were reluctant to engage in any activity with the target, including engaging in behaviors requiring closeness or a sense of personal intimacy. Target group membership did not seem to have any impact on consequentialist actions, which were potentially confounded by individual differences not assessed in this study, such as political liberalism or conservatism.

Study 2 sought to further explore the mechanisms behind mind perception by replicating Study 1's procedures in a less stereotype rich context using the minimal group paradigm. Manipulating group entitativity failed to support previous literature on inhumanization in meaningful intergroup contexts when analyzing generated word samples. No distinct differences

were found in any linguistic reflections of warmth, competence or uniquely human emotion attributions. However, a marginal finding supported the infrahumanization theory when participants in the more meaningful group (compared to the randomly assigned group) attributed lower mental capacities to outgroup members, as indicated by less accuracy in the high level statements of the action identification task. Assessment of moral behavior consequences did not find support for group entitativity influence on harm, closeness, or consequentialist actions. These study findings could be interpreted as evidence that stereotype rich content is necessary to see target group differences in mind attribution, particularly for mind perception involving warmth, competence and uniquely human emotions. However, since infrahumanization and dehumanization have both been demonstrated to occur in minimal group paradigms, I would caution against making this conclusion, and instead suggest that further research be done using more meaningful groups than this study allowed. Both the ingroup and outgroup members portrayed in this study were perceived as UCI students and although this type of manipulation has been used in previous research to examine minimal group differences, a more distinct minimal outgroup (i.e., a non-student) in the meaningful condition may have increased group essentialism, potentially leading to differences in the linguistic mental state attributions and moral behavior consequences.

Implications for Future Research

Although stereotyping has long been a prominent topic in social psychology, until recently, very little attention has been paid to the role of language in the transmission and maintenance of stereotypes. In order to fully understand how stereotypes function and how they are shared in society, it is important to examine not only the cognitive and motivational processes by which they are driven but also the way in which they are transmitted. Previous

research has mainly focused on one aspect of language, language abstraction, which is the basis for theory of linguistic intergroup bias (LIB; Maass et al., 1989). LIB refers to the hypothesis that desirable behaviors of ingroup members and undesirable behaviors of outgroup members are described at a relatively high level of language abstraction, which is more abstract and vague (e.g., the ingroup member is helpful; the outgroup member is aggressive). In contrast, to describe an outgroup member showing desirable behavior and an ingroup member showing undesirable behavior, relatively low levels of language abstraction are used, which are more specific and observable (e.g., the ingroup member hits somebody; the outgroup member opens the door for someone; Maass et al., 1989). Abstract statements are generally vague and harder to prove wrong, while concrete statements are specific, and easier to brush off as singular exceptions to the rule, contributing to the maintenance of existing stereotypes (Whitley & Kite, 2010).

Although these distinctions are useful in analyzing how general stereotype expectancies are maintained, this research does not examine the actual content or attributes of stereotypes being transmitted. By assessing language specifically related to different mental state attributions, Study 1 of this dissertation demonstrates that stereotype content is transmitted through spontaneous linguistic descriptions of stereotyped targets. This alternate method to measure stereotyping implicitly allows researchers to analyze any written source (e.g., social media and news articles) for potential differences in mental state attributions towards stereotyped targets. This dissertation specifically assessed warmth, competence, and uniquely human emotions, but this process could be conducted with words related to any stereotypic attribute (e.g., aggression and laziness). Further, this analysis can be designed to pick up more subtle differences in word usage by assigning weights to words that indicate a greater degree of an attribute. For example, although the words “friendly” and “devoted” can both be considered warmth-related, “devoted”

may imply *more* warmth, and therefore could be more heavily weighted in linguistic analyses for warmth. Word count analyses are currently most commonly used to assess attributes of the self (i.e., the writer); however, by expanding this to address attributes made towards others, this assessment shows great potential for future researchers not only in the stereotype and prejudice domain but any other area of psychology which examines interpersonal processes.

The speeded Action Identification Task used in this dissertation also has potential as implicit measure of mind perception in future studies. The current version uses “yes/no” matching accuracy to determine whether subjects can easily imagine a single target performing various levels of actions, however, this task can be restructured to allow subjects to choose which, among several targets, would be most likely to perform actions given high or low levels of complexity. This allows each subject to provide an assessment of more than one target at a time, generating more statistical power for this analysis. This task can also provide an alternate method to test theories of linguistic abstraction, by using statements related to specific domains (e.g., positive versus negative actions) to examine whether subjects are more easily able to imagine ingroup members performing complex positive actions or outgroup members performing simple positive actions and vice versa for negative actions.

Future assessments of the moral behavior consequences of mind perception can be improved upon based on the findings of this dissertation. Although group differences were found for unwillingness to harm and willingness for closeness in Study 1, they were only partially explained by the predicted stereotype content for each target. Furthermore, study results indicated that target group membership is not sufficient to influence consequentialist actions alone. Given the nature of these morally based behaviors, forthcoming research should account for individual differences in moral foundations, particularly those related to harm and purity, as

well as individual differences in trait levels of consequentialism. Areas of interest also include intersections of political identity (liberalism vs. conservatism), mind perception, and moral behaviors towards stereotyped targets.

CONCLUDING REMARKS

This dissertation aimed to explore ways in which individuals engage in spontaneous mind perception in intergroup relations. Significant differences were found in various mental state attributions of stereotyped targets. In addition, by using novel and unique measures, this research provided important methodological contributions to the domain of stereotyping, prejudice, and discrimination. A glimpse of potential moral consequences opened the door to future research on behavioral outcomes of mind perception. Group entitativity was not shown to be a critical factor in intergroup mind attribution among minimal groups, which prompts a deeper examination of the minimum threshold at which mind perception differences can occur.

Since mind perception is so critical to the relational capacities of empathy, compassion, trust, cooperation, and strategic interaction, it is especially important to continue to explore this domain of intergroup relationships. The distinction between more human or less human minds is the difference between us and them, and is applicable to not only everyday interactions among individuals or groups, but also to important societal concerns, such as debates on racial inequality, or the death penalty. Not all other minds are considered equal, nor are all other minds considered equally “other”. Further understanding of the processes that increase or decrease the perception of mind of different groups may provide insight to actively inform policies and ethical decisions on a global scale.

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APPENDIX A

Study 1: Overview of Procedures

- I. Online Survey
 - a. Writing Task
 - b. Action Identification Task
 - c. Go/No-Go Association Task
 - d. Unwillingness to Harm/Willingness for Closeness Scale
 - e. Consequentialism Scale
 - f. Ancillary Measures
 - i. Rosenberg Self Esteem scale
 - ii. Social Dominance Orientation (SDO) scale
 - iii. Interpersonal Reactivity Index

Example of Study 1 writing task (UCI student target condition).

04:43



Please write a short story about the subject in the photo. Try to include the following in your story:
What events have led up to the photograph shown?
What is currently happening to the subject in the photograph shown?
What happened to the subject afterwards?
Stop when the timer reaches 0:00

Next >>

Example of Study 1 Action Identification Task (UCI student target condition/High level Action Statement).



Locking a door

Securing the room

No

E

Yes

I

APPENDIX B

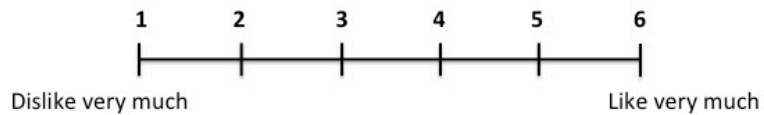
Study 2: Overview of Procedures

- I. Online Survey
 - a. Minimal Group Induction
 - i. Group Assignment (preceded by Art Preference Task in the meaningful condition)
 - ii. Group Member Name Memorization Task
 - b. Writing Task
 - c. Action Identification Task
 - d. Unwillingness to Harm/Willingness for Closeness Scale
 - e. Consequentialism Scale
 - f. Ingroup Attitude IAT
 - g. Ingroup Identification IAT
 - h. Explicit Attitude and Identification toward Ingroup and Outgroup Scale
 - i. Manipulation Check
 - j. Ancillary Measures
 - i. Rosenberg Self Esteem scale
 - ii. Social Dominance Orientation (SDO) scale
 - iii. Interpersonal Reactivity Index

Example of Study 2 Art Preference Task (meaningful group condition only).



Please use your keyboard to rate how much you like this painting by typing a number from the scale below.



Example of Study 2 Writing Task (Ingroup Target Condition).

04:35



Imagine Lisa, a Gold group member, was sitting at this table a moment ago.

Please write a brief story describing what she was doing:

1. Before she came here
 2. While she was here
 3. What she is doing now that she is gone
- Stop when the timer reaches 0:00

Next >>

Example of Study 2 Action Identification Task (Ingroup Target Condition/High Level Action Statement)

Lisa

(a fellow **GOLD** group member)

Picking an apple

Getting something to eat

No



Yes



APPENDIX C

Uniquely Human Emotions LIWC Dictionary Word List

abandon*	aversi*	compassion*	degrad*	ecsta*	fool*	grief
abuse*	avoid*	complain*	delectabl*	efficien*	forbid*	griev*
abusi*	award*	compliment*	delicate*	egotis*	forgave	grim*
accept	awesome	concerned	delicious*	elegan*	forgiv*	grin
accepta*	awful	confidence	deligh*	embarrass*	fought	grinn*
accepted	awkward*	confident	depress*	emotion	frantic*	grins
accepting	bad	confidently	depriv*	emotion	freak*	gross*
accepts	bashful*	confront*	despair*	emotional	friend*	grouch*
ache*	bastard*	confus*	desperat*	empt*	frustrat*	grr*
aching	battl*	considerate	despis*	encourag*	fuck	guilt*
active*	beaten	contempt*	destroy*	enemie*	fucked*	ha
admir*	beaut*	contented*	destruct*	enemy*	fucker*	haha*
ador*	beloved	contentment	determina*	energ*	fuckin*	handsom*
advantag*	benefic*	contradic*	determined	engag*	fucks	harass*
adventur*	benefit	convinc*	devastat*	enrag*	fume*	harm
advers*	benefits	cool	devil*	entertain*	fuming	harmed
aggravat*	benefitt*	courag*	devot*	enthus*	fun	harmful*
aggress*	benevolen*	crap	difficult*	envie*	funn*	harming
agitat*	benign*	crappy	digni*	envious	geek*	harmless*
agoniz*	best	craz*	disadvantage*	envy*	genero*	harmon*
agony	better	create*	disagree*	evil*	gentle	harms
agree	bitch*	creati*	disappoint*	excel*	gentler	hazy
agreeab*	bitter*	credit*	disaster*	excruciat*	gentlest	heartbreak*
agreed	blam*	cried	discomfort*	exhaust*	gently	heartbroke*
agreeing	bles*	cries	discourag*	fab	giggl*	heartfelt
agreement*	bold*	critical	disgust*	fabulous*	giver*	heartless*
agrees	bonus*	critici*	dishearten*	fail*	giving	heartwarm*
alarm*	bore*	crude*	disillusion*	faith*	glad	heaven*
alone	boring	cruel*	dismay*	fake	gladly	heh*
alright*	bother*	crushed	dissatisf*	fantastic*	glamor*	hell
amaz*	brave*	cry	distract*	fatal*	gloom*	hellish
amor*	bright*	cunt*	distraught	fatigu*	glori*	helper*
amus*	brillian*	cut	distrust*	fault*	glory	helpful*
anguish*	broke	cute*	disturb*	favor*	goddam*	helping
annoy*	brutal*	cutie*	divin*	favour*	good	helpless*
antagoni*	burden*	cynic	domina*	feroc*	goodness	helps
anxi*	casual	damag*	doom*	festiv*	gorgeous*	hero*
aok	casually	damn*	dork*	feud*	gossip*	hesita*
apath*	certain*	danger*	doubt*	fiery	grace	hilarious
appall*	challeng*	daring	dread*	fiesta*	graced	hoho*
appreciat*	champ*	darlin*	dull*	fine	graceful*	homesick*
apprehens*	charit*	daze*	dump*	fired	graces	honest*
argh*	charm*	dear*	dwel*	flatter*	graci*	honour*
argu*	cheat*	decay*	dynam*	flawless*	grand	honour*
arrogan*	cheer*	defeat*	eager*	flexib*	grande*	hope
asham*	cherish*	defect*	ease*	flirt*	gratef*	hoped
assault*	chuckl*	defenc*	easie*	flunk*	grati*	hopeful
asshole*	clever*	defens*	easily	foe*	grave*	hopefully
assur*	comed*	definite	easiness	fond	great	hopefulness
attachment*	comfort*	definitely	easing	fondly	greed*	hopeless*
attack*	commitment*		easy*	fondness		hopes

hoping	laidback	mocking	phobi*	reward*	sob	sweetness*
horr*	lame*	mocks	piss*	rich*	sobbed	sweets
hostil*	laugh*	molest*	piti*	ridicul*	sobbing	talent*
hug	lazier*	mooch*	pity*	rigid*	sobs	tantrum*
hugg*	lazy	mood	pleasant*	risk*	sociab*	tears
hugs	liabilit*	moodi*	please*	ROFL	solemn*	teas*
humiliat*	liar*	moods	pleasing	romanc*	sorrow*	tehe
humor*	libert*	moody	poison*	romantic*	sorry	temper
humour*	lied	moron*	popular*	rotten	soulmate*	tempers
hurra*	lies	mourn*	positiv*	rude*	special	tender*
hurt*	livel*	murder*	prais*	ruin*	spite*	tense*
ideal*	LMAO	nag*	precious*	safe*	splend*	tensing
idiot	LOL	nast*	prejudic*	sarcas*	stammer*	tension*
ignor*	lone*	neat*	pressur*	satisf*	stank	terribl*
immoral*	longing*	needy	prettie*	savage*	startl*	terrific*
impatien*	lose	neglect*	pretty	save	steal*	terrified
impersonal	loser*	nerd*	prick*	sceptic*	stench	terrifies
impolite*	loses	nervous*	pride	scream*	stink*	terrify
importan*	losing	neurotic*	privileg*	screw*	strain*	terrifying
impress*	loss*	nice*	prize*	secur*	strange	terror*
improve*	lost	numb*	problem*	selfish*	strength*	thank
improving	lous*	nurtur*	profit*	sentimental*	stress*	thanked
inadequa*	love	obnoxious*	promis*	serious	strong*	thankf*
incentive*	loved	obsess*	protest	seriously	struggl*	thanks
indecis*	lovely	offence*	protested	seriousness	stubborn*	thief
ineffect*	lover*	offend*	protesting	severe*	stunk	thieve*
inferior*	loves	offens*	proud*	shake*	stunned	thoughtful*
inhib*	loving*	ok	puk*	shaki*	stuns	ticked
innocen*	low*	okay	punish*	shaky	stupid*	timid*
insecur*	loyal*	okays	radian*	shame*	stutter*	toleran*
insincer*	luck	oks	rage*	share	succeed*	tortur*
inspir*	lucked	openminded*	raging	shared	success*	tough*
insult*	lucki*	openness	rancid*	shares	suck	traged*
intell*	luckless*	opportun*	rape*	sharing	sucked	tragic*
interest*	lucks	optimal*	raping	shit*	sucker*	tranquil*
interrup*	lucky	optimi*	rapist*	shock*	sucks	trauma*
intimidat*	ludicrous*	original	readiness	shook	sucky	treasur*
invigor*	lying	outgoing	ready	shy*	sunnier	treat
irrational*	madly	outrag*	reassur*	sicken*	sunniest	trembl*
isolat*	magnific*	overwhelm*	rebel*	sigh	sunny	trick*
jaded	maniac*	palatabl*	reek*	sighed	sunshin*	trite
jealous*	masochis*	paradise	regret*	sighing	super	triumph*
jerk	melanchol*	paranoi*	reject*	sighs	superior*	trivi*
jerked	merit*	partie*	relax*	silli*	support	troubl*
jerks	merr*	party*	relief	silly	supported	true
joke*	mess	passion*	reliev*	sin	supporter*	trueness
joking	messy	pathetic*	reluctan*	sincer*	supporting	truer
joll*	miser*	peace*	remorse*	sinister	supportive*	truest
joy*	miss	peculiar*	repress*	sins	supports	truly
keen*	missed	perfect*	resent*	skeptic*	suprem*	trust*
kidding	misses	personal	resign*	slut*	sure*	truth*
kill*	missing	perver*	resolv*	smart*	suspicio*	turmoil
kind	mistak*	pessimis*	respect	smil*	sweet	ugh
kindly	mock	petrif*	restless*	smother*	sweetheart*	ugl*
kindn*	mocked	pettie*	revenge*	smug*	sweetie*	uncertain*
kiss*	mocker*	petty*	revigor*	snob*	sweetly	uncomfortabl*

uncontrol*	whore*
uneas*	wicked*
unfortunate*	willing
unfriendly	wimp*
ungrateful*	win
unhapp*	winn*
unimportant	wins
unimpress*	wisdom
unkind	wise*
unlov*	witch
unpleasant	woe*
unprotected	won
unsavo*	wonderf*
unsuccessful*	worr*
unsure*	worse*
unwelcom*	worship*
upset*	worst
uptight*	worthless*
useful*	worthwhile
useless*	wow*
vain	wrong*
valuabl*	yay
value	yays
valued	yearn*
values	
valuing	
vanity	
vicious*	
victim*	
vigor*	
vigour*	
vile	
villain*	
violat*	
violent*	
virtue*	
virtuo*	
vital*	
vulnerab*	
vulture*	
war	
warfare*	
warm*	
warred	
warring	
wars	
weak*	
wealth*	
weapon*	
weep*	
weird*	
welcom*	
well*	
wept	
whine*	
whining	

APPENDIX D

Action Identification Statements

For each action, a. = lower identification, b.= higher identification, c. = non-related statement.

1. **Picking an apple**
 - a. Pulling fruit off a branch
 - b. Getting something to eat
 - c. Stapling a paper
2. **Making a list**
 - a. Writing things down
 - b. Getting Organized
 - c. Peeling a banana
3. **Reading**
 - a. Looking at lines of print
 - b. Gaining knowledge
 - c. Drinking from a cup
4. **Washing clothes**
 - a. Putting clothes into a machine
 - b. Removing odors from clothes
 - c. Digging a hole
5. **Chopping down a tree**
 - a. Swinging an axe
 - b. Getting firewood
 - c. Pushing a box
6. **Painting a wall**
 - a. Applying brush strokes
 - b. Making the wall look nice
 - c. Driving a motorcycle
7. **Cleaning a mess**
 - a. Sweeping the floor
 - b. Being neat
 - c. Scratching an itch
8. **Locking a door**
 - a. Putting a key in the lock
 - b. Securing the room
 - c. Pulling out a chair
9. **Climbing a tree**
 - a. Holding on to branches
 - b. Getting a good view
 - c. Clipping fingernails
10. **Toothbrushing**
 - a. Moving a brush around in one's mouth
 - b. Preventing tooth decay
 - c. Putting on pants
11. **Greeting someone**
 - a. Saying hello
 - b. Showing friendliness
 - c. Folding clothes
12. **Resisting temptation**
 - a. Saying "no"
 - b. Showing moral courage
 - c. Picking up a pencil
13. **Eating**
 - a. Chewing and swallowing
 - b. Getting nutrition
 - c. Starting a car
14. **Pushing a doorbell**
 - a. Moving a finger
 - b. Seeing if someone is home
 - c. Lighting a match

Table 1.

Pearson Correlations Between Study 1 Measures: Student (Below the Diagonal) and Homeless Target (Above the Diagonal) Conditions

Measure	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) Warmth		-.11	.42***	.05	.01	.01	.08	.07	.08	-.06
(2) Competence	-.20*		-.03	-.02	-.08	.22**	.02	-.23**	.05	-.15
(3) Uniquely Human Emotions	.58***	-.06		.11	-.01	.09	-.02	-.04	.18*	-.05
(4) High Level Action Accuracy	.07	-.05	.05		-.08	-.16	.14	.20*	.10	.00
(5) GNAT	.13	-.04	.23**	.07		-.04	.06	-.06	.00	-.08
(6) Unwillingness to Harm	.25**	-.04	.12	.00	.16		-.28**	-.22*	.22*	-.24**
(7) Willingness for Closeness	-.03	.08	-.05	.23**	-.09	-.19*		-.01	.03	-.03
(8) Consequentialism	-.09	-.05	-.05	-.01	-.08	-.37***	.02		-.10	.22*
(9) IR	.10	-.05	.13	-.04	.06	.38***	.06	-.27**		-.32***
(10) SDO	-.05	-.10	.14	.00	-.03	-.14	-.16	.23**	-.30***	

Note: GNAT = Go/No-Go Association Task, IR = Interpersonal Reactivity, SDO = Social Dominance Orientation. Significant correlations are shown in bold, * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 2.

Pearson Correlations Between Study 1 Measures: Businessman (Below the Diagonal) and Elderly Target (Above the Diagonal) Conditions

Measure	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) Warmth		-.35***	.28**	-.04	.02	-.15	.15	.05	.11	.01
(2) Competence	-.16		.16	.00	-.04	-.08	-.10	.03	-.02	-.15
(3) Uniquely Human Emotions	.40***	-.10		-.02	-.11	.05	.14	-.06	-.06	.14
(4) High Level Action Accuracy	.07	.07	-.02		-.13	-.06	.30**	-.01	.00	-.05
(5) GNAT	-.08	.17	-.13	.12		.06	-.04	-.07	.00	-.17
(6) Unwillingness to Harm	.01	-.09	.09	.05	.04		-.24*	-.22*	.11	-.07
(7) Willingness for Closeness	.08	-.04	.10	.00	-.13	-.14		-.04	.13	-.01
(8) Consequentialism	-.05	.08	.08	-.07	.10	-.16	-.03		-.18	.11
(9) IR	-.02	.04	.05	.14	.02	.01	.26**	-.28***		-.28**
(10) SDO	.04	.10	-.08	.02	.06	-.05	-.16	.23*	-.42***	

Note: GNAT = Go/No-Go Association Task, IR = Interpersonal Reactivity, SDO = Social Dominance Orientation. Significant correlations are shown in bold, * p

< .05. ** p < .01. *** p < .001.

Table 3.

Pearson Correlations Between Study 1 Measures: Randomly Assigned/Ingroup Target (Below the Diagonal) and Randomly Assigned/Outgroup Target (Above the Diagonal) Conditions

Measure	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) Warmth		.44***	.73***	-.19	-.01	.11	.23	-.16	-.05	.13	-.05	-.12	.23
(2) Competence	.04		.50***	-.14	.16	.10	.01	-.12	.13	-.03	.13	-.11	.02
(3) Uniquely Human Emotions	.45***	.17		.02	-.03	.14	.18	-.11	.02	.04	-.06	-.15	.08
(4) High Level Action Accuracy	.04	-.08	.08		-.05	.09	.03	.07	-.02	-.04	.03	.00	-.11
(5) Unwillingness to Harm	.15	.09	.06	-.21		-.16	-.09	.01	-.13	-.21	-.25*	-.05	-.18
(6) Willingness for Closeness	-.03	.02	.04	.12	-.11		.04	-.03	.00	-.17	-.14	-.07	-.03
(7) Consequentialism	.08	.04	-.15	-.05	-.18	-.12		.22	.19	-.01	-.14	-.20	.43***
(8) Positive Implicit Ingroup Attitude	-.04	-.06	-.06	-.13	-.11	-.11	-.07		.25*	-.09	-.13	-.14	.21
(9) Implicit Ingroup Identification	-.04	-.02	-.02	-.19	-.16	.07	.01	.50***		-.02	.07	-.01	.07
(10) Positive Explicit Ingroup Attitude	-.06	-.07	-.09	.15	.01	.00	-.15	.08	.15		.56***	.05	.09
(11) Explicit Ingroup Identification	.01	-.09	-.03	.09	-.03	-.08	-.04	.18	.22*	.71***		.11	-.10
(12) IR	.01	.00	-.04	.06	.03	.22*	-.03	.16	-.06	.19	.31**		-.55***
(13) SDO	.10	-.07	-.12	-.14	-.19	-.08	.17	-.13	-.02	-.11	-.19	-.29**	

Note: IR = Interpersonal Reactivity, SDO = Social Dominance Orientation. Significant correlations are shown in bold, * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 4.

Pearson Correlations Between Study 1 Measures: Meaningfully Assigned/Ingroup Target (Below the Diagonal) and Meaningfully Assigned/Outgroup Target (Above the Diagonal) Conditions

Measure	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) Warmth		-.18	.59***	-.07	.17	-.03	-.15	.08	.02	.12	.27**	.09	-.09
(2) Competence	-.17		-.12	-.01	-.16	.09	.10	.07	-.22*	-.07	-.10	-.02	.03
(3) Uniquely Human Emotions	.49***	.12		-.11	-.02	.02	.03	.08	.18	.11	.24*	-.03	-.07
(4) High Level Action Accuracy	-.08	.01	.08		-.03	.05	-.23*	-.06	-.13	.04	-.02	-.24*	.04
(5) Unwillingness to Harm	-.05	.00	.03	.05		-.20	-.41***	-.22*	.05	.17	.16	.21	-.05
(6) Willingness for Closeness	-.12	.02	-.19	.10	-.26		-.06	.19	-.12	-.04	-.04	.26*	-.14
(7) Consequentialism	.14	-.20	.02	-.21	-.26	.07		.20	.13	-.25*	-.05	-.19	.24*
(8) Positive Implicit Ingroup Attitude	.02	.08	.08	.18	.05	-.05	-.09		.23*	.05	.20	.10	-.07
(9) Implicit Ingroup Identification	-.09	.05	.09	-.01	-.04	.13	.10	.25*		.01	.01	.01	-.08
(10) Positive Explicit Ingroup Attitude	.01	-.13	.16	-.18	.03	-.07	.15	-.10	-.08		.65***	.16	-.19
(11) Explicit Ingroup Identification	-.02	-.10	.15	-.11	.26*	-.12	-.04	-.04	.00	.60***		.29**	-.08
(12) IR	-.04	.00	.13	.23*	.27*	.01	-.23*	.09	-.07	.04	.19		-.37***
(13) SDO	.05	.02	.01	-.13	-.26*	-.07	.21	-.09	.03	-.04	-.12	-.37***	

Note: IR = Interpersonal Reactivity, SDO = Social Dominance Orientation. Significant correlations are shown in bold, * $p < .05$. ** $p < .01$. *** $p < .001$.

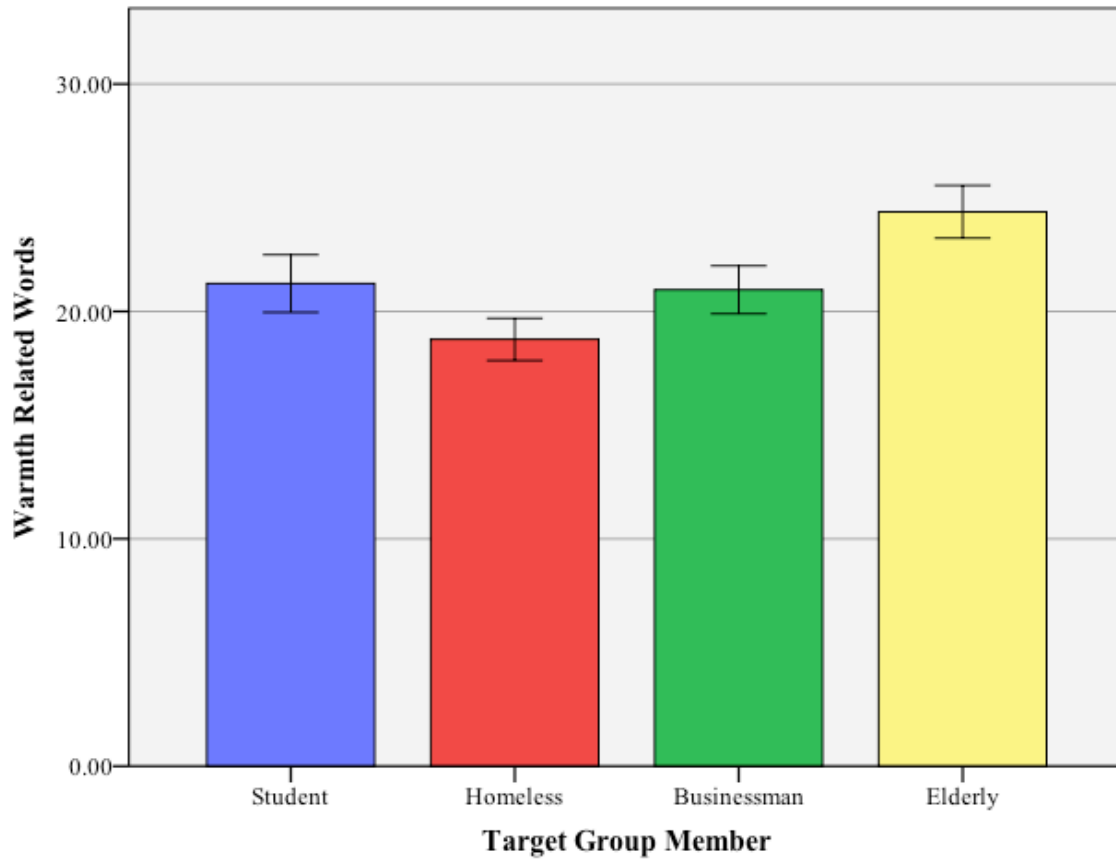


Figure 1. Study 1 mean warmth related word percentages by condition. Error bars represent 95% confidence intervals. Significant post-hoc contrasts were: Elderly > Student & Businessman > Homeless.

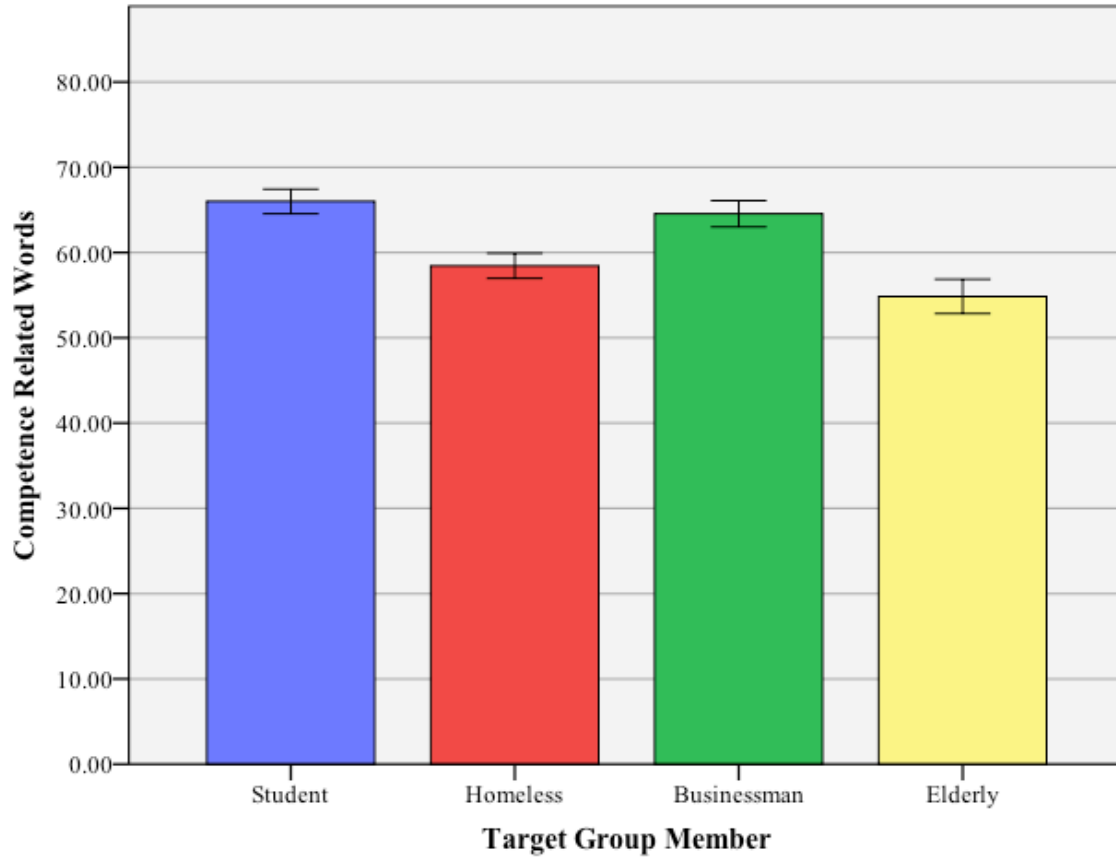


Figure 2. Study 1 mean competence related word percentages by condition. Error bars represent 95% confidence intervals. Significant post-hoc contrasts were: Student & Businessman > Homeless > Elderly.

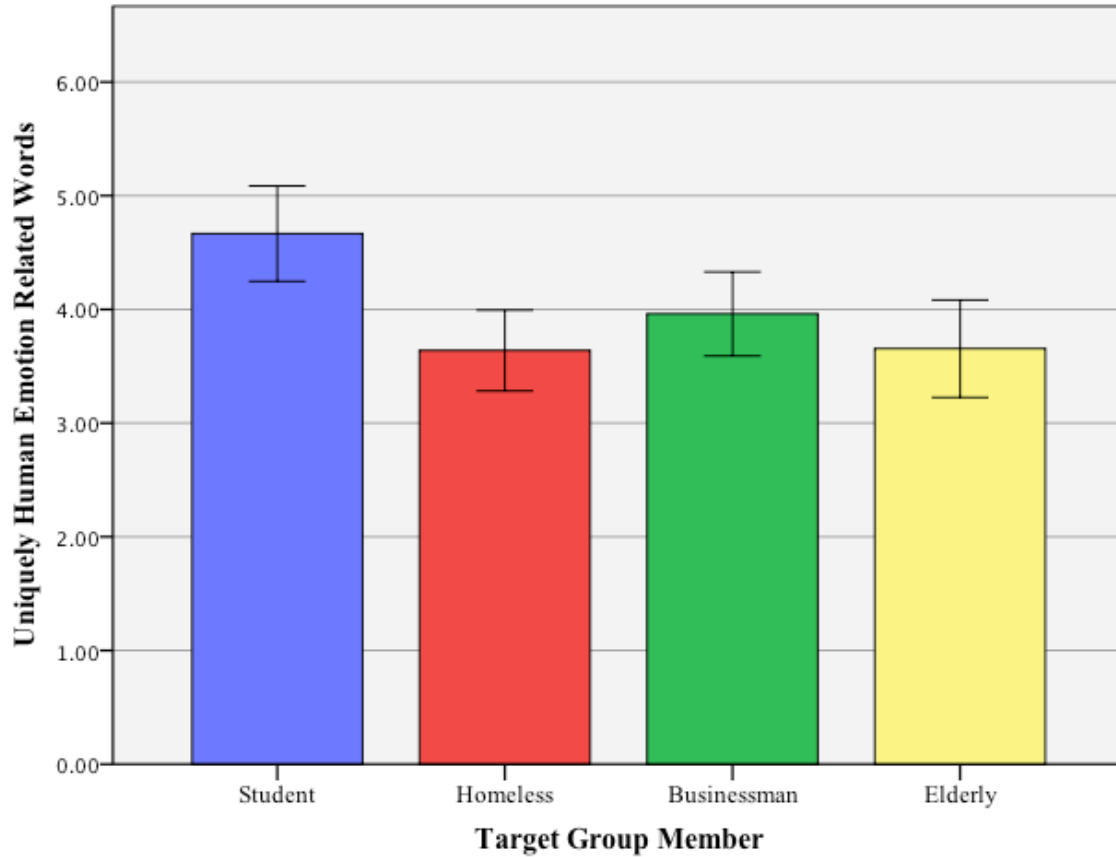


Figure 3. Study 1 mean uniquely human emotion related word percentages by condition. Error bars represent 95% confidence intervals. Significant post-hoc contrasts were: Student > Homeless & Elderly. In addition, Student > Businessman at $p = .061$.

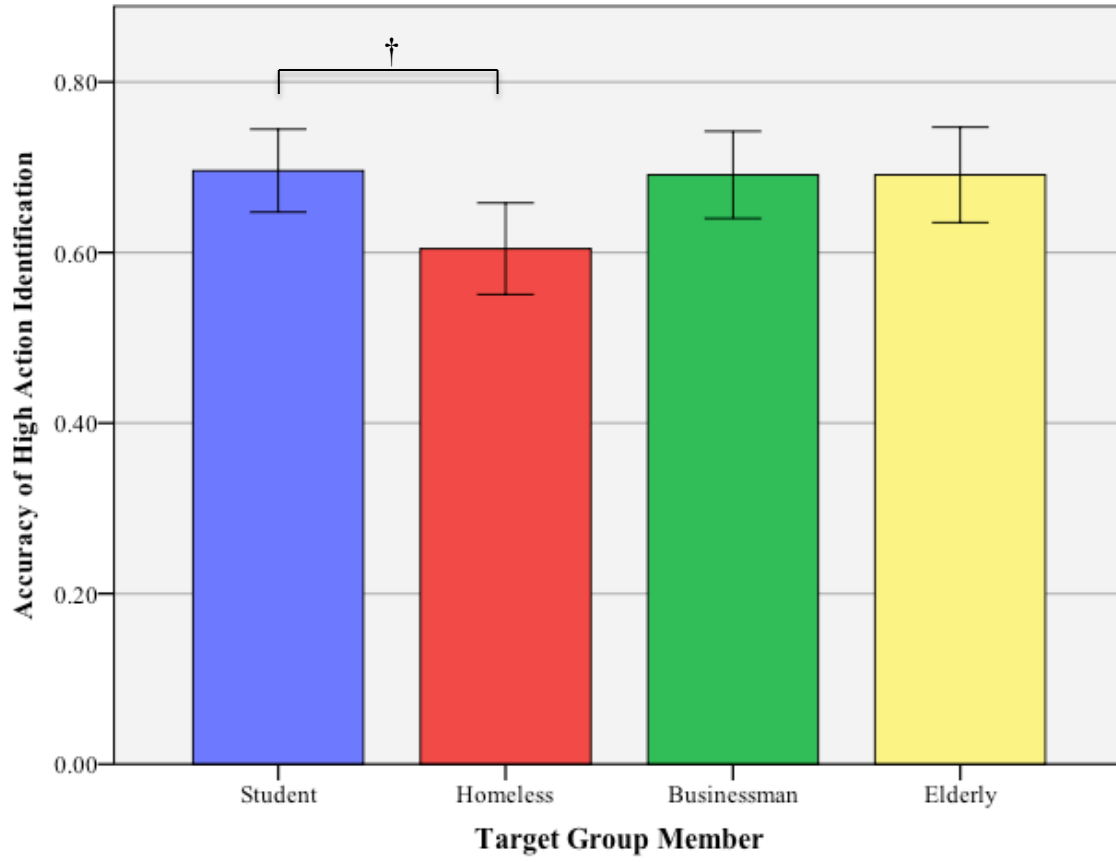


Figure 4. Study 1 mean accuracy of high action identification scores by condition. Error bars represent 95% confidence intervals, † $p = .064$.

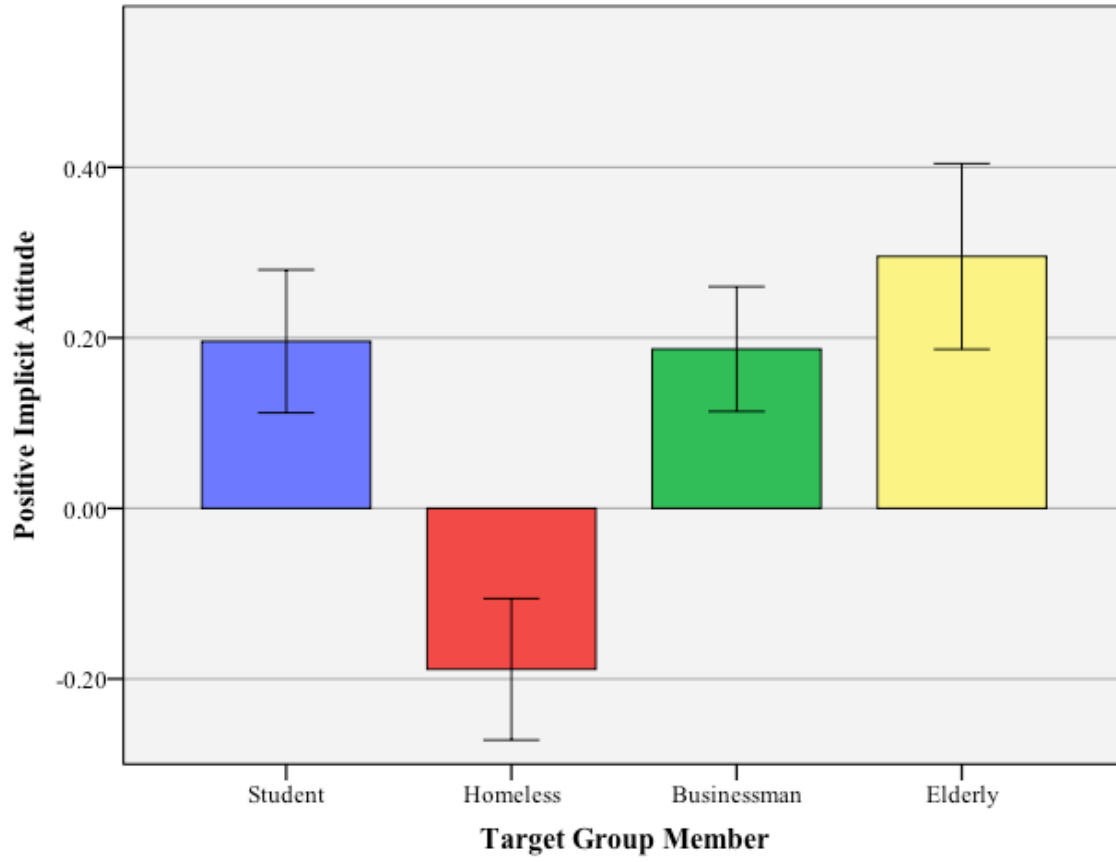


Figure 5. Study 1 mean GNAT positive implicit attitude scores by condition. Error bars represent +/-1 SE . Significant post-hoc contrasts were: Student & Businessman & Elderly > Homeless.

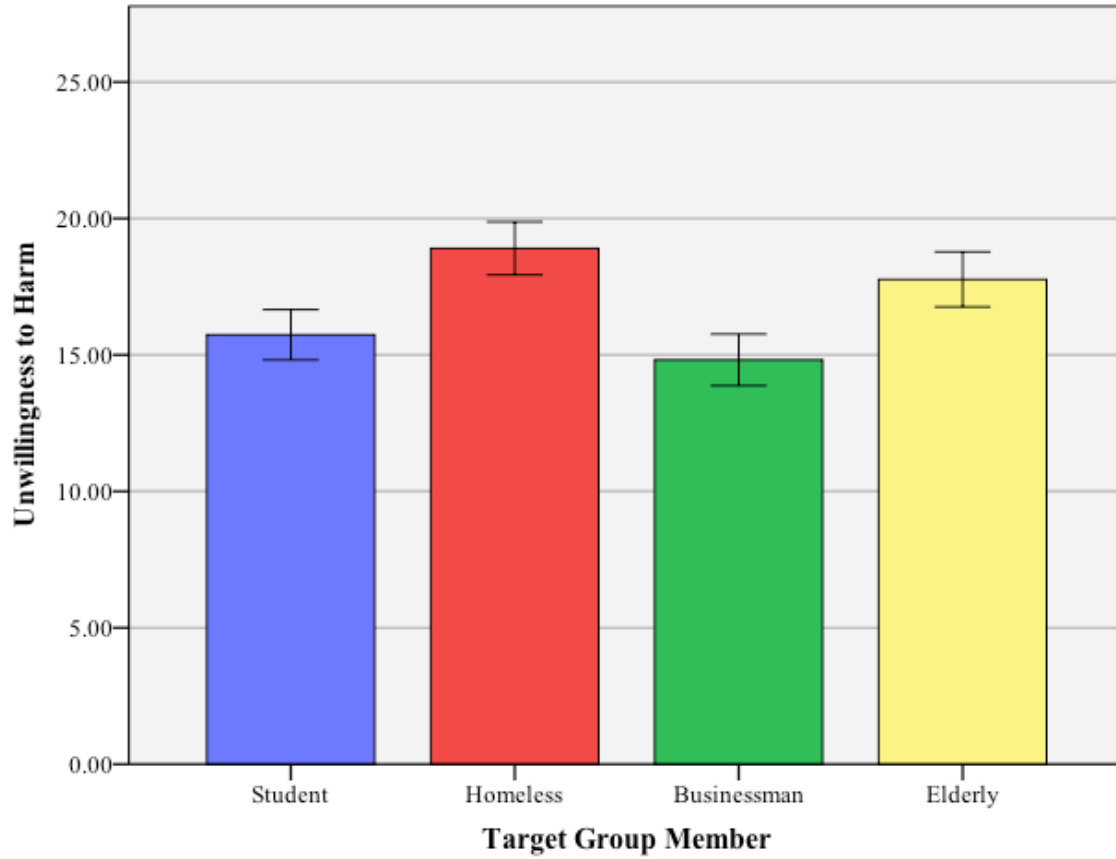


Figure 6. Study 1 mean unwillingness to harm scores by condition. Error bars represent 95% confidence intervals. Significant post-hoc contrasts were: Elderly & Homeless > Student & Businessman.

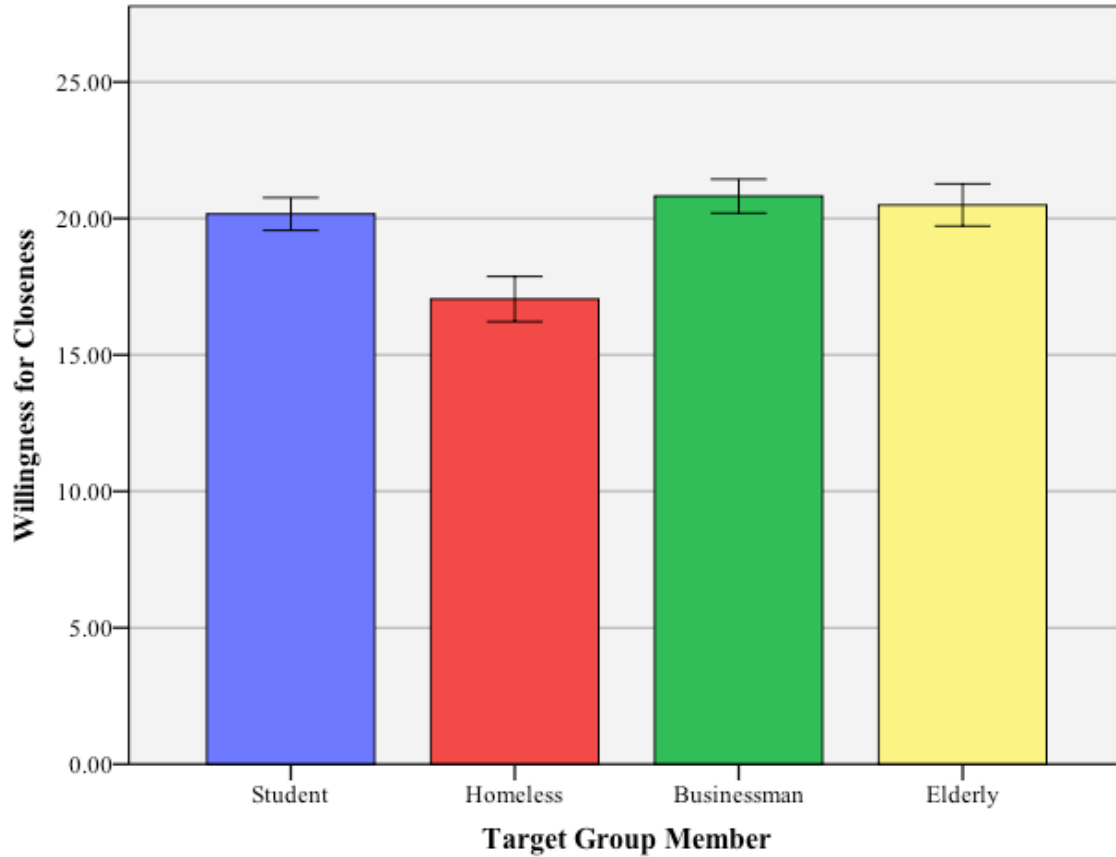


Figure 7. Study 1 mean willingness for closeness scores by condition. Error bars represent 95% confidence intervals. Significant post-hoc contrasts were: Student & Businessman & Elderly > Homeless.

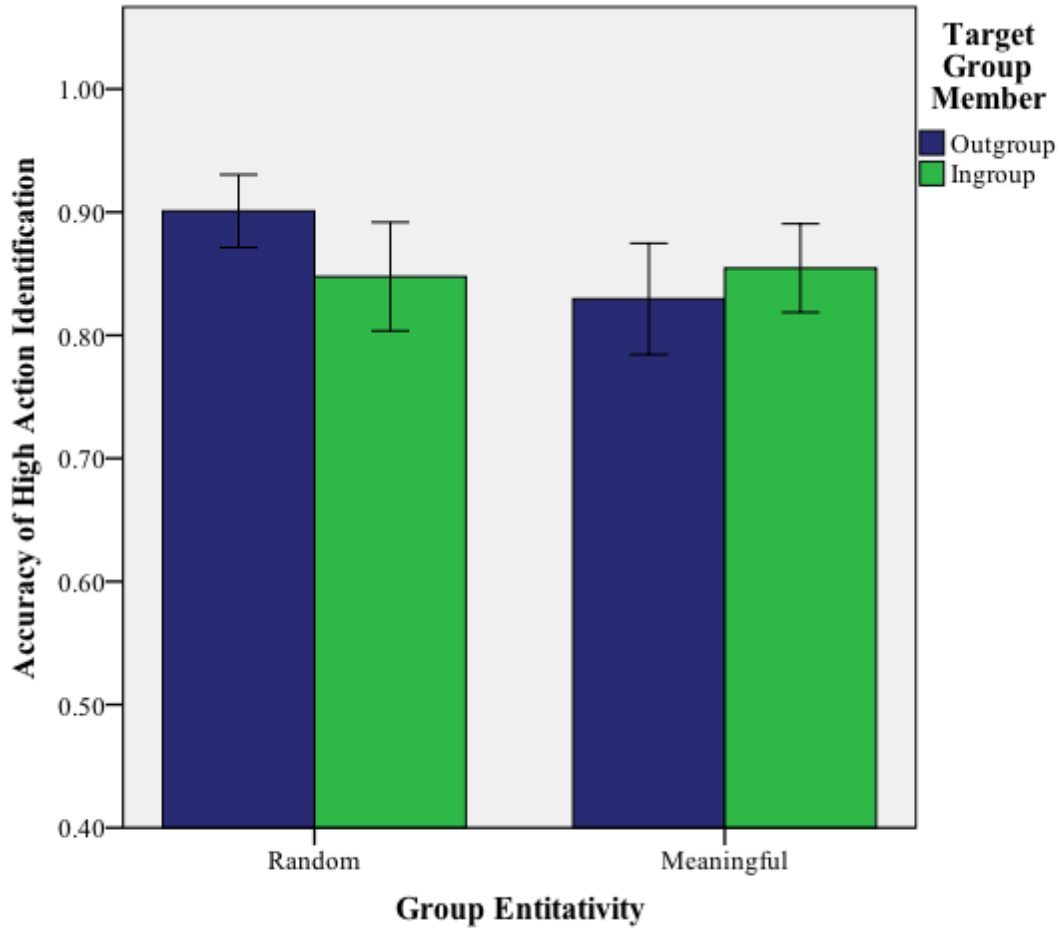


Figure 8. Study 2 mean accuracy of high action identification by group entitativity and target group member. Error bars represent 95% confidence intervals. Group entitativity by target group member interaction significance at $p = .054$.

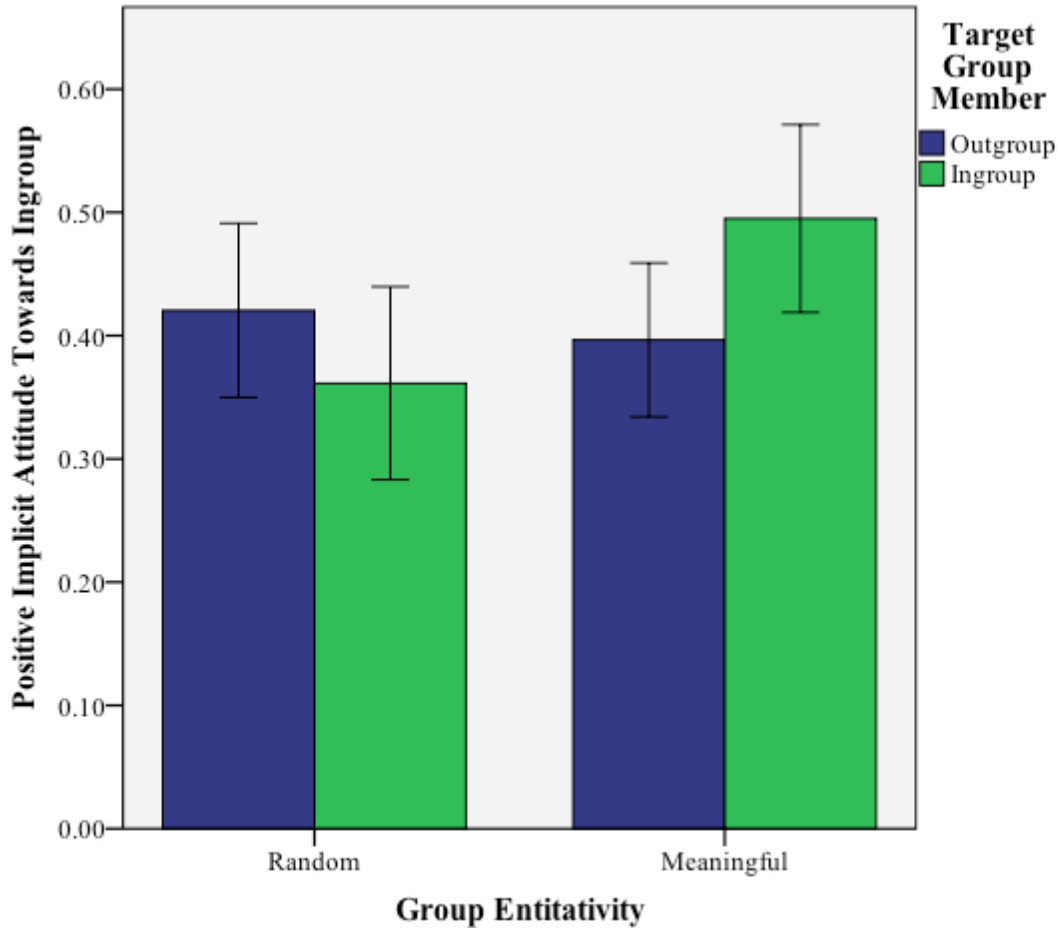


Figure 9. Study 2 mean positive implicit attitude towards ingroup by group entitativity and target group member. Error bars represent 95% confidence intervals. Group entitativity by target group member interaction significance at $p = .032$.

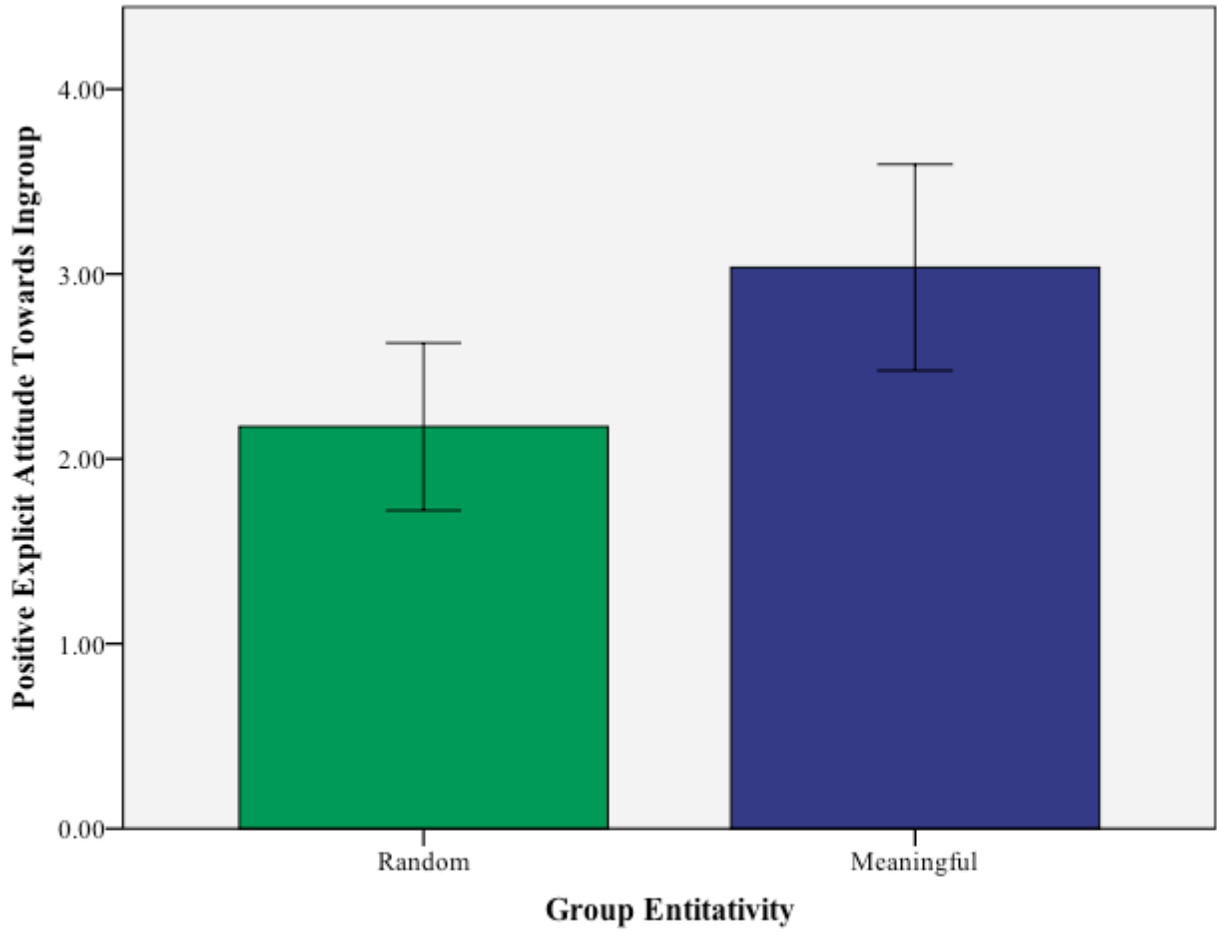


Figure 10. Study 2 mean positive explicit attitude towards ingroup by group entitativity. Error bars represent 95% confidence intervals, $p = .012$.

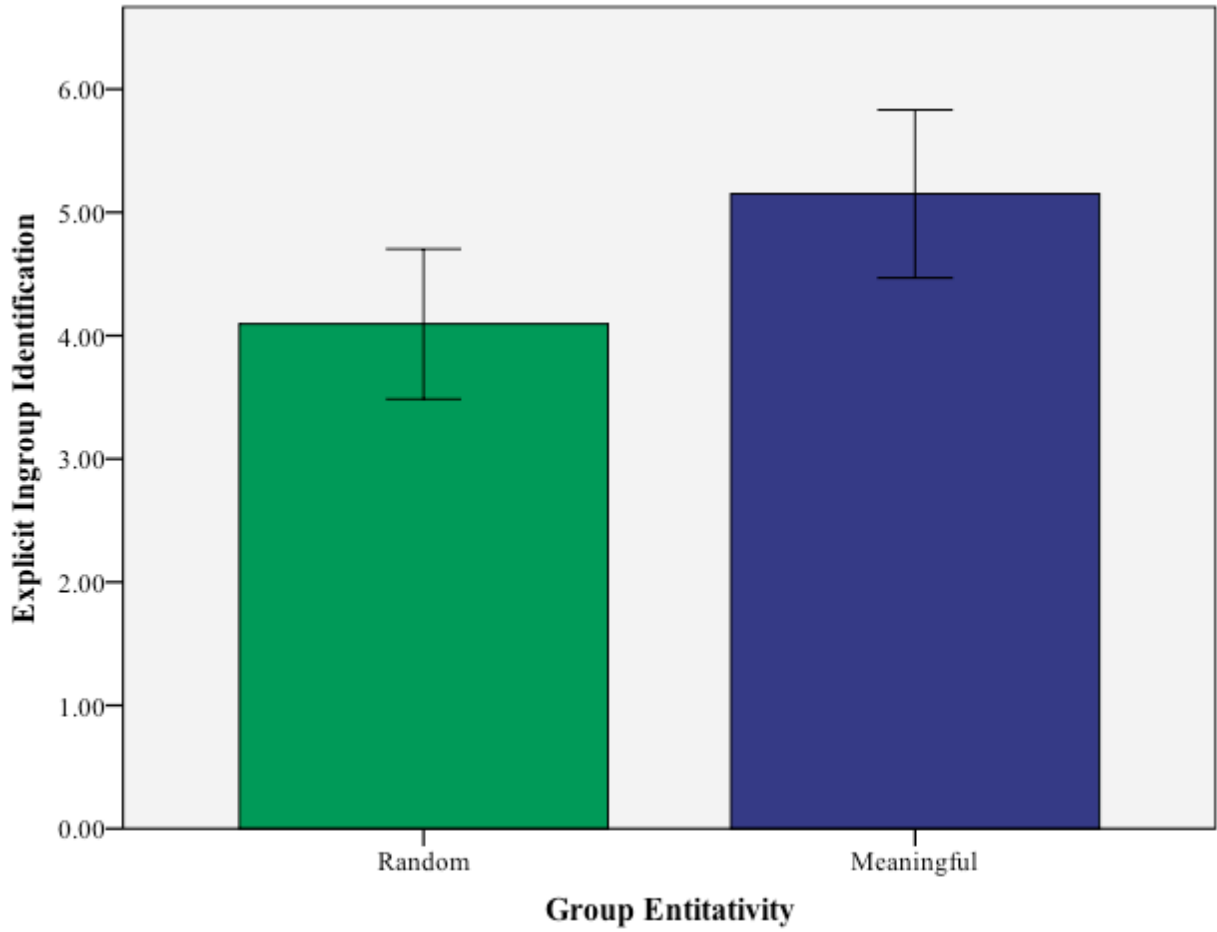


Figure 11. Study 2 mean explicit ingroup identification by group entitativity. Error bars represent 95% confidence intervals, $p = .019$.