CHANGING HEARTS AND MINDS: IMAGINED INTERGROUP CONTACT'S EFFECT ON
WARMTH AND COMPETENCE STEREOTYPES

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ABSTRACT

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Imagined intergroup contact was introduced as an easy and efficient method of improving the quality of intergroup interactions allowing better prejudice reduction. It has proven effective at improving many intergroup outcomes, however some previous research points to limitations of the method and suggest that perhaps imagined intergroup contact is more effective at reducing certain types of prejudice than others. The Stereotype Content Model posits distinct types of prejudice directed at different social groups based on perceptions of the group members' warmth and competence. In the current study, I sought to investigate whether imagined intergroup contact works equally well for groups that experience different types of prejudice based on their differences on the dimensions of warmth and competence. Additionally, I examined the duration of the effects of intergroup contact by comparing outcomes both immediately after and one week later. Results indicated that imagined intergroup contact was not successful at creating more positive stereotype perceptions for any groups, regardless of their previous standing on warmth and competence. Unsurprisingly, patterns for intergroup emotions and behavioral tendencies predicated on these stereotype differences were not observed either. However, select behavioral tendencies were higher following imagined interactions with some social groups, indicating that part of intergroup contact's influence on behavior is independent of its influence on stereotypes and emotions. Furthermore, many intergroup outcomes deteriorated over the period of a week, especially in the control condition. Results are discussed in terms of their implications for the theories of both imagined intergroup contact and the Stereotype Content Model.

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Introduction

Since the early half of the last century, theorists have proposed that prejudice can fester when members of different social groups are isolated from each other (Pettigrew & Tropp, 2006). Without real-life examples from which to draw, inaccurate and often negative stereotypes can flourish in the social conscious leading to negative intergroup attitudes. Thus, the father of modern prejudice research, Gordon Allport (1954), proposed intergroup contact theory as a method of prejudice reduction. He argued that when people from different social groups (e.g., racial groups) had meaningful interactions, they would feel less prejudice toward the social groups the members represented. This theory spawned decades of research and remains perhaps the most ubiquitous and well-founded prejudice reduction technique.

However, the theory ran into a roadblock when further research demonstrated that sometimes intergroup interactions actually led to increased prejudice. Researchers posited that when interacting with minorities, majority group members were worried about appearing non-prejudiced and concerned about the interaction going smoothly (Stephan & Stephan, 1985). In a pattern of self-fulfilling prophecies, the minority group member in the interaction perceived this anxiety and misinterpreted any odd behavior resulting from the anxiety as being due to prejudiced attitudes, leading the minority group member to act less friendly in the interaction. Thus, overall the interactions did not go well and the majority group member came away from the encounters more convinced of any prejudice attitudes they previously held. Therefore, it was necessary to develop methods of reducing this intergroup anxiety to allow intergroup interactions to proceed positively.

Imagined intergroup contact was proposed as such a method. In imagined intergroup contact, one imagines a short interaction with a member of another social group (Crisp & Turner,

2009). Participants are given very few instructions about what to imagine. All they are told is to imagine that they learn some "new, positive, and unexpected things" about the other person (Crisp, Stathi, Turner, & Husnu, 2008). More than 70 studies have reported that after imagined interactions participants report a number of positive intergroup outcomes, including more positive attitudes toward that person and the social group to which they belong (for a review, see Miles & Crisp, 2014). However, the limits of the imagined intergroup contact interventions have been questioned (e.g., Bigler & Hughes, 2010; Lee & Jussim, 2010). For example, in one study imagined intergroup contact only decreased preference for interacting with a majority group member, but did not increase preference for interacting with the minority group member (Turner Crisp, & Lambert, 2007). In another, imagined intergroup contact was only successful at changing majority group members' attitudes toward the minority group, but not the other way around (Crisp & Turner, 2009). These limitations suggest that perhaps imagined intergroup contact is more effective at reducing certain types of prejudice than others.

Prejudice is multidimensional. Fiske, Xu, Cuddy, and Glick (1999) identified four distinct types of prejudice directed at different social groups: admiration, contempt, paternalism, and envy. These different types of prejudice are theorized to be based on societal perceptions of the group members' warmth and competence. Researchers who propose prejudice reduction techniques, such as imagined intergroup contact, do not specify what type of prejudice they aim to reduce. It is possible that imagined intergroup contact may be more effective for certain types of prejudice than others. Therefore, in the current study, I sought to investigate whether imagined intergroup contact worked equally well for groups that experience different types of prejudice based on their differences on the dimensions of warmth and competence.

Stereotypes, Prejudice, and Discrimination

Categorization of people by their social group membership is a spontaneous and common social process (Turner, Oakes, Haslam, & McGarty, 1994), and spurs other social processes that are pivotal to intergroup relations. Upon categorization into a group, individuals are no longer perceived by their idiosyncratic attributes, but instead through comparison of the individual to a prototypical group member (Hogg, 2006). Stated differently, social comparison compels people to rely on exaggerated stereotypes to judge others. Stereotypes are defined as "a set of beliefs about the personal attributes of a social group" (Ashmore & Del Boca, 1981, p. 21). Stereotypes are the attributes or characteristics that people are assumed to have because of their membership in a particular social group. Regardless of whether stereotypes are accurate or rational generalizations (see Jussim, Cain, Crawford, Harber, & Cohen, 2009), they can lead to prejudice.

In addition to categorizing others, people categorize themselves into social groups. People seek to identify with social groups that are perceived positively to serve self-enhancement motives, satisfy a need to belong, and define the self and distinguish the self from others (Brewer, 1991; Brewer, 2003). Prejudice and discrimination can bolster these benefits of social group membership (Hogg, 2006). Through ingroup favoritism and outgroup derogation, people can enhance the perceived comparative positivity and uniqueness of their social groups, achieving what Brewer (2003) describes as a state of optimal distinctiveness, wherein people feel that they belong to a valued and exclusive group that reflects favorably on their own self-worth. Prejudice consists of attitudes, beliefs, and emotions that people hold towards others based on their social group membership. Allport (1954) defined prejudice as "antipathy based upon faulty and inflexible generalization. It may be felt or expressed. It may be directed toward a group as a whole or toward an individual because he is a member of that group" (pg. 9). Prejudice occurs

when people discount individualizing information about an individual, instead relying on stereotypes based on the target's social group membership. Discrimination is the behavioral manifestation of prejudice (Allport, 1954). Discrimination occurs when members of different social groups are treated differently, and often unequally.

Although most prejudice and stereotypes that have been of concern to society and studied by researchers consists of negative group perceptions, positive group perceptions can also have important social consequences. A recent review suggested that favoritism toward groups that are perceived positively accounts for more discrimination than hostility toward groups that are perceived negatively (Greenwald & Pettigrew, 2014). Furthermore, positive attitudes, such as attitudes of chivalry and adulation toward women, can cast minority group members in submissive roles and lead to unrealistic and restrictive social attitudes (Glick & Fiske, 2001a). Thus, some stereotypes may be desirable attributes, such as being perceived warmly, but when those positive perceptions are used to disparage other groups by comparison or cast groups into lesser social roles, the negative impact of even positively valenced prejudice is apparent. Thus, it is important to study the full spectrum of social perceptions that may occur and how they impact intergroup relations.

Intergroup Contact Theory

Contact theory was created as a method of prejudice reduction (Allport, 1954; Brown & Hewstone, 2005). Prejudice reduction is defined as a "causal pathway from some intervention to a reduced level of prejudice" (Paluck & Green, 2009, p. 349). Intergroup contact theory proposed that under certain conditions, simple interactions between members of two different social groups would lead to reduced prejudice (Paluck & Green). Allport identified certain conditions that optimize interactions for the reduction of prejudice: meaningful contact, equal status, lack of

competition, common goals, and institutional support (1954). However, Pettigrew and Tropp's (2006) meta-analysis showed that intergroup contact significantly predicted reduced prejudice, regardless of whether all of Allport's conditions were met. Another meta-analysis also indicated mediating mechanisms: increased knowledge, reduced anxiety, and perspective taking (Pettigrew & Tropp, 2008).

However, sometimes intergroup contact interventions fail. Some have argued a lack of ecological validity when using laboratory-created interventions to reduce prejudice between groups that are grounded in long and complicated sociohistorical contexts (Schmuckler, 2001). Others have argued that concerns about appearing prejudiced and intergroup anxiety can prevent prejudice reduction and actually lead to self-fulfilling prophecies, thereby increasing prejudice (Plant & Devine, 2003; Plant, Devine, & Peruche, 2010; Shelton, 2003; Shelton, Richeson, Salvatore, & Trawalter, 2005; Stephan & Stephan, 1985). Increased anxiety may lead individuals to behave poorly or even offensively (Islam & Hewstone, 1993; Stephan & Stephan, 1985) causing the overall interaction to proceed poorly. Researchers have found that increased intergroup anxiety results in decreased quality of communications (Gudykunst & Nishida, 2001; Gudykunst & Shapiro, 1996; Hubbert, Gudykunst, & Guerrero, 1999), increased reliance on stereotypes (Stephan & Stephan, 1985; Wilder, 1993), and more negative outgroup evaluations (Stephan & Stephan, 1985). Because of these concerns and anxiety, intergroup contact requires a lot of self-regulation, which can be cognitively and emotionally taxing. The effortful nature of intergroup contact reduces not only the subjective interest in intergroup contact, but also reduces its effectiveness at promoting positive interracial attitudes (Richeson & Shelton, 2007).

Other critiques of contact theory revolve around concerns for its practicality. Direct intergroup contact may be difficult in highly segregated settings, as most of the United States is

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(Hewstone et al., 2008). Furthermore, negative intergroup contact may be more prevalent than positive intergroup contact (Paolini, Harwood, & Rubin, 2010), limiting its potential for prejudice reduction.

Imagined Contact Hypothesis

Imagined intergroup contact was developed as a direct response to criticisms of intergroup contact theory. Crisp and Turner (2009) proposed imagined intergroup contact to help relieve intergroup anxiety that can derail intergroup contact attempts at reducing prejudice. They define imagined intergroup contact as "the mental simulation of a social interaction with a member or members of an outgroup category" (p. 234). Variants of the exact instructional set for the imaginary scene have been studied; however theorists argue that the manipulation is robust as long as the instructions contain the key elements of interaction simulation and positivity (Crisp et al., 2008; Miles & Crisp, 2014). Additionally, studies have eliminated alternative explanations for improvement in attitudes following imagined intergroup contact, including increased cognitive load (Turner et al., 2007, Experiment 1), stereotype priming (Turner et al., 2007, Experiment 2), positive affect priming, and general social interaction benefits (Stathi & Crisp, 2008, Experiment 2), indicating that there is a unique prejudice reduction effect of imagining a positive intergroup interaction. Furthermore, imagined intergroup contact is distinguishable from other previous research of imagined contact (i.e., Honeycutt, 2003) by its explicit focus on intergroup rather than interpersonal interactions and consequences (Crisp & Turner, 2010). Accordingly, Pagotto and colleagues (2013) found that imagined contact at the intergroup level compared to the interpersonal level was more successful at promoting positive attitudes toward and cooperation with Muslim immigrants.

This technique has been shown to be successful at: (a) improving implicit and explicit intergroup attitudes (Vezzali, Capozza, Giovanni, & Stathi, 2012; Turner & Crisp, 2010; Turner et al., 2007); (b) increasing outgroup trust; (c) reducing infrahumanization (i.e., beliefs that outgroup members lack an essential human essence); (d) enhancing future contact intentions (Crisp & Husnu, 2011; Vezzali, Capozza, Stathi, & Giovanni, 2012); (e) promoting stereotype change (Brambilla, Ravenna, & Hewstone, 2012); (f) decreased use of negative stereotypes (Turner et al., 2007; Stathi, Tsantila, & Crisp, 2012); (g) decreasing physical interpersonal distance (Turner & West, 2012); and (h) decreased perceived outgroup homogeneity (Turner et al., 2007). Importantly, the positive effects of imagined intergroup contact on attitudes toward one member of an outgroup generalize to other members of that outgroup (Stathi & Crisp, 2008; Stathi, Crisp, & Hogg, 2011), as well as to other similar outgroups (Harwood, Paolini, Joyce, Rubin, & Arroyo, 2011), nominating it as a simple intervention with the potential to create broad attitude changes. Furthermore, the technique has been demonstrated among both adult and child perceivers (Cameron, Rutland, Turner, Holman-Nicolas, & Powell, 2011; Vezzali, Capozza, Giovanni, & Stathi, 2012; Vezzali, Capozza, Stathi, & Giovanni, 2012). A recent meta-analysis of more than 70 studies of 5,282 participants, indicated an overall moderate effect size of imagined contact, $d_+ = 0.35$, indicating that it has a moderate effect on a variety of attitudinal, emotional, intention, and behavioral measures (Miles & Crisp, 2014).

Imagined intergroup contact may produce these positive impacts on intergroup attitudes and behavior by reducing intergroup anxiety (Turner et al., 2007; Crisp, Husnu, Meleady, Stathi, & Turner, 2010). For example, Birtel and Crisp (2012) found that even though imagined intergroup contact was more difficult and cognitively effortful for people who were higher in intergroup anxiety, it was still successful at improving communication quality with a member of

an outgroup. Other potential mediators of the effect rely on behavioral attribution processes, wherein individuals attribute their positive behavior in the imagined scenario to their own positive attitude toward intergroup contact (Crisp & Husnu, 2011). Yet another explanation hinges on the demonstrated positive relationship between mental simulation and behavioral intentions (Marks, 1999; Husnu & Crisp, 2010a).

The imagined form of intergroup contact has been shown to have similar emotional and motivational effects of direct contact (Dadds, Bovbjerg, Redd, & Cutmore, 1997; Giacobbe, Stukas, & Farhall, 2013) and shares the same neurological mechanism as direct contact (Kosslyn, Ganis, & Thompson, 2001). However, there is some skepticism about the strength and duration of the prejudice-reduction effect of imagined intergroup contact (Bigler & Hughes, 2010). Thus, although direct intergroup contact may have stronger attitudinal effects (Fazio, Powell, & Herr, 1983; Stangor, Sullivan, & Ford, 1991), imagined contact's most valuable contribution may be in making positive direction interactions possible by reducing intergroup anxiety and promoting intentions to engage in intergroup contact (Crisp et al., 2010; Crisp & Turner, 2009; 2010).

However, to date only a handful of studies have actually systematically studied the impact of imagined intergroup contact over time. Husnu and Crisp (2010b) had participants engage in multiple instances of imagined contact during a single experimental session, resulting in greater intentions to engage in future contact than a single imagined contact scenario. In another set of studies, a three-session intervention program over the course of three weeks with elementary school children demonstrated improved explicit attitudes toward immigrant peers one week after the final intervention session, including increased self-disclosure, more outgroup trust, greater attribution of uniquely human emotions to members of the outgroup, and more positive behavioral intentions in potential future meetings with members of the immigrant group

(Vezzali, Capozza, Giovannini, & Stathi, 2012; Vezzali, Capozza, Stathi, & Giovannini, 2012).

Thus, there is some evidence of a short-term impact of imagined intergroup contact. However,

these studies are limited in their ability to demonstrate the long-term impact of imagined contact.

First, all of these studies examined multiple imagined contact sessions and did not compare

multiple instantiations to a single imagined contact manipulation. Thus, time and repeated

imagined contact are conflated. Furthermore, these researchers only measured their respective

dependent variables at one point in time, preventing analysis of the strength of the imagined

contact effect on the same outcomes over time. In the current study, I sought to examine the

effect of a single imagined contact session on intergroup outcomes at multiple time points.

Although the effectiveness of imagined contact has been demonstrated with many

different social groups, including immigrants (Harwood et al., 2011), senior citizens and gay

men (Turner et al., 2007); Muslims (Turner & Crisp, 2010), and people with mental health

disorders (Giacobbe et al., 2013; West, Holmes, & Hewstone, 2011; Stathi et al.,, 2012), little

research has systematically examined whether imagined intergroup contact is effective for all

outgroups or whether only attitudes toward certain outgroups are affected.

Stereotype Content Model

The dimensions of competence and warmth originated in early trait descriptions by

Solomon Asch (1946). Decades later, research confirmed that warmth and competence are the

two dimensions that are more often employed when describing others (Rosenberg, Nelson, &

Vivekanathan, 1968). The Stereotype Content Model utilizes these person descriptions to

describe basic components of common stereotypes (Fiske et al., 1999; Fiske, Cuddy, Glick, &

Xu, 2002). A warm person or group is one that is "good-natured, trustworthy, tolerant, friendly,

and sincere" (Cuddy, Fiske, & Glick, 2008, p. 65). A competent person or group is one that is "capable, skillful, intelligent, and confident" (Cuddy et al., p. 65).

In the model, structural relationships between social groups result in differential perceptions of groups' warmth and competence. Namely, groups' relative status in society predicts their perceived degree of competence, whereas their interdependence (i.e., competitive or cooperative nature) predicts their perceived degree of warmth. Fiske and colleagues (1999) argued that only one's own group and model majority groups are seen as both competent and warm. Also, few groups (e.g., welfare recipients and criminals) are viewed as both incompetent and cold. Rather, most stereotypes of social groups are ambivalent, meaning that they are high on warmth and low on competence or high on competence and low on warmth. Supporting the earlier statement that positively valenced prejudice can be consequential, the authors argue that positive stereotypes act in complimentary nature with negative stereotypes to justify systematic inequality (Fiske et al., 2002; Kervyn, Yzerbyt, & Judd, 2010). Groups, such as Asian Americans, are perceived as competent due to their relatively high educational and occupational status in society, but are not perceived to be warm so as to justify competition with them. Conversely, groups, such as housewives, are seen as friendly and warm because we depend on them to fulfill important social roles, but also viewed as incompetent to maintain a relationship of exploitation and domination.

The four types of groups formed by the two dimensions of warmth and competence encounter different kinds of prejudice and are the targets of different intergroup emotions (Fiske et al., 2002). Table 1 describes the type of prejudice, emotions, and behavior predicted for different group based on the warmth and competence dimensions. Groups that are seen as low in competence but high in warmth, such as elderly people, disabled people, and housewives, are the

targets of paternalistic prejudice. They are viewed as incapable and even lazy, but also as nice people who are in need of and deserving of care, protection, and help. Paternalistic prejudice enforces the majority groups' higher societal status by insinuating the minority groups' dependency. These groups receive emotions such as pity and sympathy (Cuddy & Fiske, 2002; Glick & Fiske, 1996, 2001a, 2001b; Haddock & Zanna, 1994; Cuddy, Norton, & Fiske, 2005). Groups that are seen as low in warmth but high in competence, such as Asians, Jews, rich people, and feminists, are the targets of envious prejudice. These groups are seen as highly capable, hardworking, and ambitious, but not friendly or well-meaning. Because of their antisocial nature, they are viewed as competition rather than potential cooperation partners. These groups receive emotions such as envy and jealousy (Cuddy et al., 2009; Glick & Fiske, 2001a, 2001b; Eagly, 1987; Hurh & Kim, 1989; Lin, Kwan, Cheung, & Fiske, 2005). Less common are groups that are seen as low in both warmth and competence. Such groups include welfare recipients and poor people (Harris & Fiske, 2006). These groups are the targets of contemptuous prejudice. Contemptuous prejudice is the most severe and wholly negative type of prejudice. Groups that receive this type of prejudice are not believed to have any redeeming qualities, and are not liked for their personality or respected for their abilities. These groups receive emotions such as contempt, disgust, anger, and resentment. Finally, one's relative ingroup and close allies are perceived as high in both competence and warmth. These groups encounter admiration. Groups that are admired are viewed as pleasant and righteous people who are also capable of great achievements. Because of their proficiency their social status is high and because of their amiable nature they are not seen as a competitive threat. These groups receive emotions such as pride.

Table 1

Type of prejudice, emotions, and behavior predicted by stereotype content model.

		Competence	
		Low	*High*
Warmth	*High*	**Prejudice:** Paternalistic **Emotions:** Pity, Sympathy **Behavior:** Active facilitation, Passive harm	**Prejudice:** Admiration **Emotions:** Pride **Behavior:** Active facilitation, Passive facilitation
	Low	**Prejudice:** Contemptuous **Emotions:** Contempt, disgust, anger, resentment **Behavior:** Active harm, Passive harm	**Prejudice:** Envious **Emotions:** Envy, Jealousy **Behavior:** Active harm, Passive facilitation

The BIAS model extends the Stereotype Content Model to explain differential discriminatory behaviors toward outgroups (Cuddy, Fiske, & Glick, 2007). Central to the model's suppositions is the principle that emotions mediate the relationship between cognitions about a group and behaviors toward the groups (Dovidio, Brigham, Johnson, & Gaertner, 1996; Dovidio, Esses, Beach, & Gaertner, 2002; Esses & Dovidio, 2002; Esses, Haddock, & Zanna, 1993; Schutz & Six, 1996; Stangor et al., 1991; Talaska, Fiske, & Chaiken, 2007). The BIAS describes four patterns of intergroup behavior based on two dimensions: active-passive and harm-facilitation. Active harm describes harassing behavior, active facilitation describes helping behavior, passive harm describes neglectful behavior, and passive facilitation describes convenient cooperative behaviors. These four patterns of behavior are predicted by the warmth and competence dimensions of the Stereotype Content model. Warmth predicts active facilitation and harm (i.e., help and attack respectively); groups high in warmth receive active forms of

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facilitation, whereas groups low in warmth receive active forms of harm. Competence predicts passive facilitation and harm (i.e., obligatory association and ignoring respectively); groups high in competence receive passive facilitation, whereas groups low in competence receive passive harm. The four patterns of behavior are also related to the emotions elicited by different combinations of the warmth-competence dimensions. Admired groups (high on warmth and competence) receive both active and passive forms of facilitation (i.e., help and association). Resented groups (low on warmth and competence) receive both active and passive forms of harm (i.e., attack and neglect). Pitied groups (high on warmth, low on competence) receive active facilitation, but also passive harm. In contrast, envied groups (low on warmth, high on competence) receive passive facilitation, but active harm.

Thus, given the distinct emotions and behavioral tendencies elicited by different groups, when studying prejudice towards outgroups it is important to specify the exact nature of the prejudice being reduced and differentiate the stereotype content that is being affected. Although imagined contact research has examined prejudice reduction among a variety of social groups, only one study systematically studied differentially stereotyped groups. Brambilla and colleagues (2012) investigated warmth and competence stereotypes following imagined intergroup contact with different immigrant groups in Italy. The authors found that imagined intergroup contact was effective at increasing competence and/or warmth stereotypes along the dimension on which the group was perceived to be low: no difference in stereotypes was observed for the group that was previously perceived as both warm and competent; both warmth and competence were greater for the group that was perceived as cold and incompetent; and the two ambivalent groups demonstrated positive differences on their respective negative dimensions.

Although the study by Brambilla and colleagues (2012) made an important contribution by incorporating the Stereotype Content Model into Imagined Contact Hypothesis research, further investigation is necessary to delineate the role of imagined contact on stereotype change and subsequent behavioral responses. Specifically, the article did not measure the associated emotional or behavioral responses predicted to accompany differences in stereotype content. Furthermore, Brambilla and colleagues (2012) did not directly compare the degree of difference in warmth and competence stereotypes. Although Brambilla et al. observed high scores on both dimensions, they did not test the possibility that one of the two stereotype dimensions was affected more by the intervention or more responsible for scores on subsequent intergroup measures. Previous research suggests that warmth may be the primary mechanism by which imagined intergroup contact affects stereotype, emotional, and behavioral change.

First, much research supports the primacy of warmth in interpersonal judgments (Cuddy et al., 2008). Warmth is judged before competence and is more influential on affective and behavioral reactions (Cuddy et al., 2008). Because it is more consequential for interpersonal behavior decisions, warmth-related information is recognized, categorized, inferred, and mentioned faster than competence-related information (Abele & Bruckmüller, 2011; Ybarra, Chan, & Park, 2001). Furthermore, warmth-related traits have higher chronic accessibility and better predict and are utilized more in the formation of global impressions of people (Wojciszke, Bazinska, & Jaworski, 1998). Thus, efforts to change stereotype content and improve overall attitudes toward groups may be most consequential for warmth-related judgments.

Second, the type of behavior often imagined in imagined intergroup contact most fits the active-passive dimension of behavior described by the BIAS model and predicted by the warmth dimension of the Stereotype Content model (Cuddy et al., 2007). The behavior described in the

classic imagined intergroup contact scenario is simply to speak to an outgroup member (an active

behavior) rather than ignore them (a passive behavior), behaviors that are predicted by the

warmth dimension. Participants are not asked to imagine any behaviors that would harm or help

the outgroup member, which are usually determined by perceived competence. Similarly,

warmth judgments determine approach-avoidance tendencies (Cacioppo, Gardner, & Berntson,

1997; Peeters, 2001). Crisp and Turner (2009) argued that the primary benefit of imagined

intergroup contact was to facilitate future intergroup contact, empowering people to seek out

intergroup interactions. In other words, the goal of imagined intergroup contact is to move from

passive to active types of behavior. Thus, differences in warmth perceptions may be the strongest

predictor of commonly measured behavioral outcomes of imagined intergroup contact, such as

intentions to engage in future contact.

Pilot Study

A pilot study with undergraduate students was conducted to determine which social

groups would represent each of the four combinations of warmth and competence stereotypes.

Participants rated a number of groups using the measures of warmth and competence described

in the methods below. Groups were chosen that represented each of the four quadrants of the

Stereotype Content Model. In the four groups that were chosen, a within-subjects ANOVA with

a Greenhouse-Geisser correction indicated that warmth ratings were significantly different,

$F(3,39) = 16.94$, $MSE = .63$, $p < .001$. Competence ratings were also significantly different,

$F(3,39) = 19.08$, $MSE = .41$, $p < .001$.

Following previous findings that in-group members are perceived most positively (Fiske

et al, 1999), undergraduate students rated young adults as both highly competent ($M = 4.31$, SD

$= .91$) and very warm ($M = 4.05$, $SD = .67$). Conversely, people with a criminal background were

perceived as incompetent ($M = 2.82$, $SD = .70$) and cold ($M = 3.96$, $SD = .73$). Previous studies have corroborated these perceptions: people describe criminals in terms like lazy, dirty, weird, bad, immoral, cruel, undeserving, inhuman, irrational, violent, angry, and antisocial (MacLin & Herrera, 2006; Madriz, 1997). Other research revealed that criminals are thought to be working class, unskilled workers with little education (MacLin & Herrera, 2006; O'Connor, 1984).

One of the ambivalent groups in the pilot study was rich people, who were perceived as competent ($M = 3.90$, $SD = .80$) but not warm ($M = 3.04$, .67), consistent with previous research (Fiske et al., 1999). Studies reveal that wealthy people are perceived as more competent in a range of academic subjects, have higher self-esteem, and as more intelligent than poor people (Woods, Kurtz-Costes, & Rowley, 2005; Orpen, 2004). Their wealth is also often attributed to the competence-related traits of ability and effort (Sigelman, 2012). In contrast, poor people were thought to make friends more easily than rich people, demonstrating that rich people are not perceived as warm (Orpen, 2004). Other research demonstrates the existence of the "rich but miserable" stereotype, indicating that successful people are often viewed as unhappy and lonely to justify the status quo (Kay & Jost, 2003).

The other ambivalent group in the pilot was physically disabled people, who were rated as warm ($M = 3.96$, $SD = .73$) but not competent ($M = 2.88$), $SD = .70$). This finding is consistent with previous research showing people with disabilities are rated as incompetent and warm (Cuddy et al., 2007; Fiske et al., 2002; Louvet & Rohmer, 2010; Louvet, Rohmer, & Dubois, 2009).

Among the four groups, warmth ratings of young adults and physically handicapped people were not significantly different from each other, but warmth ratings of rich people were more than people with a criminal background. Young adults were rated the most competent,

followed by rich people, and then physically handicapped people and people with a criminal background were not significantly different from each other.

The Current Study

In the current study, I sought to further elucidate the relationship between imagined intergroup contact and the stereotype content model. Following the model set forth by Brambilla and colleagues (2012), I manipulated imagined intergroup contact with four groups that represent the four quadrants formed by differentiation on the warmth-competence dimensions and made comparisons both between these four groups as well as with a non-social control scenario. There were four main objectives of the current research. First, I measured differences in participants' emotional responses to the different groups following imagined intergroup contact. Increases in perceptions of warmth and competence following imagined contact were also expected to correspond to decreased feelings of contempt and pity and increased feelings of pride and admiration. Second, I examined differences in behavioral tendencies. Imagined intergroup contact and increases in perceptions of warmth were expected to correspond to more active behaviors and less passive behaviors regarding future interactions; whereas increased perceptions of competence were expected correspond to more facilitation and less harm behaviors. Third, I examined the relative degree of difference between warmth and competence dimensions of social group judgment following imagined intergroup contact. This included comparisons of the magnitude of difference in the two dimensions as well as their associated behavioral tendencies, as well as comparisons of the mediating effects of differences in warmth and competence on intentions to engage in future contact. Finally, I measured the intergroup outcomes immediately following the manipulation and then again one week later to determine if the effects of a single instantiation of imagined contact were lasting or relatively short in duration.

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Hypotheses

1. Imagined intergroup contact compared to a control imagination scenario will be associated with more positive perceptions of groups' warmth and competence-related stereotypes.

   a. For the group that is high in both warmth and competence (young adults), there will be no difference in stereotypes between the control and imagined contact conditions.

   b. For the group that is low in both warm and competence (people with a criminal background), perceptions of both the groups' warmth and competence will be higher in the imagined contact condition compared to the control condition.

   c. For the groups that are perceived to have mixed warmth and competence (physically disabled people and rich people), perceptions of the dimension on which they are perceived negatively will be higher in the imagined contact condition compared to the control condition. There will be no difference between the imagined contact condition and the control condition for the stereotype on which they are perceived positively. Physically disabled people will be seen as more competent, but no warmer, in the imagined contact condition compared to the control. Rich people will be seen as warmer, but no more competent, in the imagined contact condition compared to the control.

   d. There will be a greater difference between the control condition and the two conditions that are perceived to be low in warmth (people with a criminal background and rich people) on warmth perceptions than between the control condition and the conditions that are perceived to be low in competence

(physically disabled people and people with a criminal background) on competence perceptions.

2. Imagined intergroup contact compared to a control imagination scenario will be associated with specific emotions.

   a. For the group that is perceived to be high in both warmth and competence (young adults), there will be no difference in emotions between the imagined contact and control conditions.

   b. For the group that is perceived to be low in both warmth and competence (people with a criminal background), feelings of contempt will be lesser in the imagined contact condition compared to the control condition. There will be no difference in feelings of pride, pity, and envy between the two conditions.

   c. For the group that is perceived to be high in warmth but low in competence (physically disabled people), feelings of pity will be lesser in the imagined contact condition compared to the control condition. There will be no difference in feelings of pride, contempt, and envy between the two conditions.

   d. For the group that is perceived to be high in competence but low in warmth (rich people), feelings of envy will be lesser in the imagined contact condition compared to the control condition. There will be no difference in feelings of pride, contempt, and pity between the two conditions.

   e. There will be a greater difference between the control condition and the two conditions that are perceived to be low in warmth (people with a criminal background and rich people) on their respective emotions (contempt and envy)

than between the control condition and the condition that is perceived to be low in competence (physically disabled people and pity).

3. Imagined intergroup contact compared to a control imagination scenario will be associated with specific behavioral tendencies.

   a. Future contact intentions will be more positive in the imagined contact conditions compared to the control condition.

   b. For the group that is high in both warmth and competence (young adults), there will be no difference in either active or passive harm or facilitation between the imagined contact and control condition.

   c. For the group that is low in both warmth and competence (people with a criminal background), active harm and passive harm will be lesser in the imagined contact condition compared to the control condition. There will be no difference in active or passive facilitation between the two conditions.

   d. For the group that is high in warmth but low in competence (physically disabled people), active facilitation will be greater passive harm will be lesser in the imagined contact condition compared to the control condition. There will be no difference in passive facilitation or active harm between the two conditions.

   e. For the group that is high in competence but low in warmth (rich people), passive facilitation will be greater and active harm will be lesser in the imagined contact condition compared to the control condition. There will be no difference in active facilitation or passive harm between the two conditions.

   f. There will be a greater difference between the control condition and the two conditions that are perceived to be low in warmth (people with a criminal

background and rich people) on future behavioral intentions than between the control condition and the condition that is perceived to be low in competence (physically disabled people).

    g. There will be a greater difference between the control condition and the two conditions that are perceived to be low in warmth (people with a criminal background and rich people) on their respective behavioral tendencies (active and passive harm for people with a criminal background and active harm and passive facilitation for rich people) than between the control condition and the condition that is perceived to be low in competence (physically disabled people and active facilitation and passive harm).

4. Differences in stereotype perceptions and perceived differences in specific intergroup emotions will mediate the relationship between imagined intergroup contact and behavioral tendencies.

    a. For the group that is high in both warmth and competence (young adults), no mediation by differences in stereotypes or intergroup emotions is predicted.

    b. For the group that is low in both warmth and competence (people with a criminal background), the imagined contact manipulation will lead to differences in warmth and competence stereotypes which will lead to less feelings of contempt which will lead to less active and passive harm.

    c. For the group that is high in warmth but low in competence (physically disabled people), the imagined contact manipulation will lead to differences in warmth and competence stereotypes which will lead to less feelings of pity which will lead to more active facilitation and less passive harm.

d. For the group that is low in warmth but high in competence (rich people), the imagined contact manipulation will lead to differences in warmth and competence stereotypes which will lead to less feelings of envy which will lead to more passive facilitation and less active harm.

e. Across all four imagined contact conditions, warmth stereotype perceptions will be a stronger mediator than competence stereotype perceptions, but especially for groups that were originally perceived to be low in warmth (people with a criminal background and rich people).

5. One week after the imagined intergroup contact intervention, engaging in imagined intergroup contact will still be significantly but more weakly related to warmth and competence stereotypes, intergroup emotions, and future contact intentions, and behavioral tendencies. The relationships described in the previous hypotheses will still be predicted, but will be weaker at time 2 than at time 1.

Method

Participants

Participants were undergraduate students drawn from the Human Research Pool at Michigan State University, and participated in the experiment online via Qualtrics software. Participants were offered 2 credits for completion of two half-hour long experiment sessions. Additionally, participants were entered into a raffle for Amazon gift cards for completion of both parts of the study. Because perceptions of social groups are influenced by the social context, only U.S. citizens were recruited. Also, to ensure that the condition with "young adults" was also an in-group for the mostly college-aged participant pool, only participants aged 18-29 were recruited.

The full sample had 458 participants who responded to the first part of the study and 354 who took the second part of the study and included enough data that they could be matched to their initial responses, for a response rate of 77% at time 2. Careless responding questions that asked participants to give specific responses were included to ensure that participants were engaged and paying attention throughout the study. Participants who got six or more of the eight careless responding questions right were retained, for a final total sample of 329.

Each participant was randomly assigned to one of five experimental conditions. The conditions consisted of two control condition and four contact conditions. In the contact conditions participants imagined an interaction with one of four social groups selected to represent each of the four Stereotype Content Model quadrants (Rich People, $n = 67$; People with a Criminal Background, $n = 57$; Young Adults, $n = 64$; Physically Disabled People, $n = 71$). In the control condition participants imagined a nature scene ($n = 70$).

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Procedure

Participants signed up for the experiment through the Human Research Pool website. They were first prompted to click a link to a survey powered by Qualtrics. The text of the survey explained the study's purpose and format (see Appendix A). They were told that the study was concerned with perceptions of social groups. The instructions explained that the session consisted of two parts.

In the first part of the study, the experimental manipulation was implemented. In each condition, participants were asked to imagine a scene. The imagined scene varied by condition in whether participants were asked to imagine a non-social control condition or imagine interacting with an outgroup member. Furthermore, there were four contact conditions that varied by which outgroup member participants were asked to imagine: rich person, person with a criminal background, physically disabled person, or young adult. In the control condition participants were asked to "please take a minute to imagine you are walking in the outdoors. Try to imagine aspects of the scene about you (e.g. is it a beach, a forest, are there trees, hills, what's on the horizon). In the contact condition, participants were asked to "please take a minute to imagine yourself meeting a (rich person/person with a criminal background /physically disabled person/young adult) for the first time. While imagining this, think of *when* (e.g. next Thursday) and *where* (e.g. the bust stop) this conversation might occur. During the conversation imagine you find out some interesting, positive, and unexpected things about the (rich person/person with a criminal background /physically disabled person/young adult) person." A timer was set so that participants could not proceed to the next page of the survey for at least one minute to encourage participants to actually take time to imagine the scenario. To reinforce the imagery task, participants were then instructed to "Describe as many aspects of the scenario you just imagined

as possible." Again, a timer was set so that participants must spend at least one minute describing their scene.

Participants were then told that they are moving on to the second part of the session which consisted of an ostensibly unrelated study concerning the relations between social groups in the United States. Participants were then asked to complete several measures about their attitudes, emotions, and behaviors toward members of social groups in the United States. Participants in all conditions, including the control condition, were asked to rate their perceptions of all of the four groups used in the contact conditions (rich people/ people with a criminal background/physically disabled people/young adults). Specifically, participants were asked to rank the perceived warmth and competence of the given group. They also reported their emotions toward that social group and their intentions to engage in future contact with members of that group. Measures of the amount and quality of prior contact were collected to serve as a potential covariate. Previous research indicated that participants' with more prior contact with the target outgroup had more vivid imagined scenarios and subsequently had greater impact on dependent intergroup measures (Husnu & Crisp, 2010a). Presentation of the four groups within each measure were randomized to minimize order and comparison effects.

Next, participants were asked to give some basic demographic information and complete a measure of socially desirable responding and motivation to respond without prejudice. They were also asked to complete several measures that were unrelated to the current study in order to minimize suspicion about the true purpose of the study. Additionally, throughout there were questions included to check that participants were paying attention and to detect careless responding (e.g., "Please answer "C" for this question"). They were then be reminded that they would be completing a follow-up to the study in a week.

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One week after completion, participants were prompted via email to complete a follow-up survey. The follow-up survey prompted participants to complete the same measure of warmth/competence, emotions, and intentions to engage in future contact that they completed in the first session. Additionally, participants were asked if they interacted with members of the given social group during the past week, and, if so, how positive was the interaction.

Measures

Dependent measures.

Warmth and competence. Participants' stereotypic beliefs about social groups were measured using the 8-item trait subscale of the Stereotype Content Model measure (Cuddy et al., 2007; Fiske et al., 1999, 2002). The scale was designed to capture how warm and competent different social groups were perceived (see Appendix B). Participants were asked to rate how warm (warm, nice, friendly, sincere) and competent (competent, confident, skillful, able) they perceived a given social group on a scale from 1 (not at all) to 5 (extremely). Items were presented in random order, and each subscale (warmth, competence) was averaged such that higher scores on each subscale indicated greater perceptions of that stereotype.

Intergroup emotions. Emotions toward social groups were measured using a scale adapted from Cuddy et al. (2007; see Appendix C). Participants were asked to rate how much they felt eight emotions toward a given social group on a scale from 1 (*not at all*) to 5 (*extremely*). The emotions were presented in random order. Four emotion variables were created with two items per emotion variable, designed to reflect the four different emotions predicted toward the four kinds of social groups according to the Stereotype Content Model (contempt, admiration, pity, envy). Higher scores on each variable indicated more of that emotion.

Future contact intentions. Participants' intentions to interact positively with members of social groups were measured using a scale adapted from Crisp and Husnu (2011; see Appendix D). Participants were asked to rate the likelihood that they would engage in conversation with and learn about members of a given social group. Participants were asked to "Think about the next time you find yourself in a situation where you could interact with a 'social group member' (e.g. waiting for a bus, with friends in a coffee shop, etc.)." Then nine items asked participants to indicate the likelihood of given behaviors in such an interaction on a scale of 1 (*not at all)* to 9 (*extremely).* Sample questions included, "How likely do you think it is that you would strike up a conversation?" and "How much time do you think you might spend learning about the problems the 'social group member' face?" Items were presented in random order and averaged such that higher scores on the scale indicated more positive future contact intentions.

Behavioral tendencies. To test the proposed behavioral reactions posited by the BIAS model, participants' tendency to exhibit specific types of behaviors toward social groups were measured with a behavioral tendencies scale, adapted from Cuddy et al. (2008; see Appendix E). Participants were asked to imagine they were partaking in a community service project. The project involved assembling care packages that would be sent to soldiers serving overseas. Participants would be assigned another person as a teammate (specifically a member of the same group from the imagined contact scenario). Each pair of partners would be judged by how many care packages they assembled within a week. Each team who assembled at least 500 care packages would win a $100 Amazon gift card. In addition, individual productivity would be tracked and the person who assembled the most care packages overall would win an additional $50 gift card. They were then asked to rate how likely it was that they would perform eight behaviors toward their partner using a scale from 1 (*not at all likely*) to 5 (*extremely likely*). Each

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of the four categories of behavior theorized by the BIAS model were intended to be represented by two behavior items; however, an error while programming the survey into the online software resulted in only one item being presented for passive harm. An example of an active facilitation item was "do more work to help my partner." An example of an active harm item was "take undue credit for my partner's work." An example of a passive facilitation item was "accept my partner's ideas." The passive harm item was "avoid meeting with my partner." Each of the two items representing one category of behavior were averaged such that higher scores on that subscale represented a greater tendency for that type of behavior.

Potential covariates.

Prior contact. Participants' *amount* of prior interaction with members of a given social group were measured using a four-item Likert scale (Husnu & Crisp, 2010a; see Appendix F). Participants were asked to rate how often they interacted with a given social group on a scale from 1 (*none*) to 7 (*a lot*). Sample questions included, "How many 'members of social group' do you know?" and "In everyday life, how frequently do you interact with 'members of social group'?" Items were presented in random order, and recoded so that responses were on a scale from 0 to 6. The recoded items were then averaged for each participant such that higher scores indicate more prior contact. The *quality* of participants' prior contact with members of a given social group were measured using a five-item semantic differential scale (Husnu & Crisp, 2010a). Participants were asked to rate how much the following five adjective pairs described their prior contact with members of a social group: *superficial-deep; natural-forced; unpleasant-pleasant; competitive-cooperative; intimate-distant* on bipolar scales ranging from 1 to 7. Items were presented in random order and appropriate items were reverse-scored such that, when averaged, higher scores on the scale represented deeper, more meaningful, higher-quality prior

contact. Prior to averaging, the quality of prior contact items were recoded so that responses were on a scale from -3 to +3. The measures of quantity and quality of prior contact were then combined by multiplying scores on the two prior contact subscales to create a composite measure of participants' prior contact with outgroup members ranging from -18 to 18. Participants were also be asked if they were a member of any of the social groups featured in the four contact conditions.

Socially desirable responding. Participants' tendency to respond in a socially-desirable manner was measured using a shortened version of the Marlow-Crowne Social Desirability Scale (Ballard, 1992; see Appendix G). Participants indicated the degree to which they agreed or disagreed with 11 statements on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Sample items included "I'm always willing to admit when I make a mistake," and "I have never deliberately said something that hurt someone's feelings." Items were presented in random order and higher scores indicated more socially desirable responding.

Motivation to respond without prejudice. The extent to which participants seek to respond in a non-prejudiced manner was measured using the Motivation to Control Prejudice Reactions scale (see Appendix H; Dunton & Fazio, 1997). The measure was designed to examine how important it is to participants to control expressions of prejudice. Participants indicated the degree to which they agreed or disagreed with 17 statements about themselves on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Sample items included "It's important to me that other people not think I'm prejudiced," and "It's never acceptable to express one's prejudices." Items were presented in random order and were averaged such that higher scores indicated greater motivation to respond without prejudice.

Demographics. Participants were asked to report on several demographic variables including their age, gender, and hometown zip code (see Appendix I). Participants were asked to report their socioeconomic status by responding to the question, "How would you describe your economic situation growing up?" on a scale from 1 (*very poor, not enough to get by*) to 6 (*extremely well to do*). These two socioeconomic status questions were averaged to get an overall measure of participants' socioeconomic experience. Participants were also asked to report their parents' current household income. They reported their mother's and father's level of education on a scale from 1 (*less than high school*) to 8 (*professional/graduate degree*). Mother's and father's level of education were averaged to create the parent's education level variable; higher scores on this variable indicated more educated parents. Political orientation were measured with a single item in which participants rated their political beliefs from 1 (*extremely liberal*) to 7 (*extremely conservative).* Religiosity was measured with a single item, in which participants reported how important religion was in their life from 1 (*not at all important*) to 7 (*extremely important*); higher scores on this variable indicated greater religiosity. Participants also reported their year in school on a scale from 1 (*first year*) to 4 (*senior*).

Results

Descriptives

Demographic information as well as scores on three individual difference measures (prior contact, socially-desirable responding, and motivation to respond without prejudice) for the sample is reported in Table 2. Table 2 also presents the results of a one-way ANOVA (for continuous variables) or chi-square tests (for categorical variables) examining differences on these demographic and individual difference variables between the six conditions. None of the conditions significantly differed on any of these demographic or individual difference variables, indicating that random assignment to condition was successful at producing relatively equivalent groups. Thus, the demographic and individual difference variables were not included as control variables in the main analyses. The overall sample means, standard deviations, and Cronbach's alpha for all of the main study variables are presented in Table 3. Tables 4 through 7 present the correlations between the main study variables for each of the four social groups across all conditions at time 1.

Almost 80% of the sample were women ($n = 261$), and 68 participants were men. The majority of the sample (82%) identified as white ($n = 273$), with 18 individuals identifying as Black, 18 as Asian or Pacific Islander, 5 as Hispanic/Latino/Latina, 13 as Multiracial/multiethnic, and 2 as another race. All but 7 participants reported being born in the U.S.; all of these participants had moved to the U.S. between the ages of 1 and 10 years old. About half (50.8%) of the sample reported being currently employed.

Table 2

Means, standard deviations, and condition differences for demographic variables.

	Scale Range	Overall M	Overall SD	F or χ^2	df	p
Age	18-27	19.60	1.56	0.12	4, 324	0.98
Year in School	1-6	2.17	1.29	0.35	4, 324	0.84
Religiosity	1-7	4.01	2.18	0.40	4, 324	0.81
Political Orientation	1-7	3.74	1.52	0.21	4, 324	0.94
Socioeconomic Status	1-6	4.13	0.92	0.15	4, 324	0.96
Parents Education	1-7	4.43	1.30	1.07	4, 324	0.37
Socially Desirable Responding	1-5	4.95	0.55	2.08	4, 324	0.08
Motivation to Control Prejudice	1-5	6.39	0.45	0.80	4, 324	0.53
Prior Contact with Rich People	-18-18	0.68	4.26	0.17	4, 324	0.95
Prior Contact with Physically Disabled People	-18-18	1.60	2.63	0.17	4, 324	0.95
Prior Contact with People with a Criminal Background	-18-18	-0.25	1.87	1.15	4, 324	0.33
Prior Contact with Young Adults	-18-18	4.90	6.27	0.63	4, 324	0.64
Gender	-	-	-	1.97	4	0.74
Race	-	-	-	18.65	20	0.55
Born in US	-	-	-	3.82	4	0.43
Employed	-	-	-	4.52	4	0.34

Table 3

Means, standard deviations, and alphas for all main study variables across all conditions at time

1 and time 2.

		Time 1			Time 2		
	Scale Range	*α*	*M*	*SD*	*α*	*M*	*SD*
Rich People							
Warmth	1-5	0.89	2.86	0.71	0.90	2.98	0.68
Competence	1-5	0.80	2.98	0.68	0.85	3.90	0.71
Admiration	1-5	0.65	2.35	0.93	0.71	2.36	0.93
Contempt	1-5	0.61	1.72	0.79	0.54	1.79	0.78
Pity	1-5	0.64	1.48	0.63	0.70	1.49	0.70
Envy	1-5	0.89	2.82	1.15	0.85	2.74	1.07
Future Contact Intentions	1-5	0.89	2.49	0.81	0.90	2.53	0.81
Active Harm	1-5	0.28	2.13	0.86	0.34	2.17	0.85
Active Facilitation	1-5	0.63	3.30	0.98	0.63	3.23	0.91
Passive Harm	1-5	-	1.41	0.79	-	1.55	0.89
Passive Facilitation	1-5	0.91	3.91	0.86	0.90	3.83	0.92
Physically Disabled People							
Warmth	1-5	0.89	3.97	0.67	0.92	3.83	0.69
Competence	1-5	0.76	3.12	0.73	0.83	3.08	0.73
Admiration	1-5	0.66	2.97	1.11	0.73	2.77	1.09
Contempt	1-5	0.25	1.36	0.57	0.66	1.45	0.68
Pity	1-5	0.49	3.23	0.90	0.64	2.91	0.99
Envy	1-5	0.75	1.14	0.46	0.82	1.21	0.57
Future Contact Intentions	1-5	0.91	3.36	0.85	0.86	3.45	0.60
Active Harm	1-5	0.35	1.74	0.79	0.41	1.81	0.80
Active Facilitation	1-5	0.64	4.03	0.79	0.77	3.83	0.89
Passive Harm	1-5	-	1.31	0.69	-	1.45	0.85
Passive Facilitation	1-5	0.83	3.99	0.81	0.90	3.85	0.90
People with a Criminal Background							
Warmth	1-5	0.86	2.41	0.74	0.91	2.45	0.72

Table 3 (cont'd)

	Scale Range	Time 1			Time 2		
		α	*M*	*SD*	*α*	*M*	*SD*
People with a Criminal Background							
Competence	1-5	0.79	3.22	0.75	0.86	3.08	0.78
Admiration	1-5	0.81	1.17	0.47	0.84	1.27	0.60
Contempt	1-5	0.52	2.04	0.85	0.53	1.92	0.83
Pity	1-5	0.61	2.10	0.82	0.66	1.99	0.79
Envy	1-5	0.78	1.10	0.42	0.93	1.17	0.55
Future Contact Intentions	1-5	0.91	2.46	0.87	0.93	2.33	0.90
Active Harm	1-5	0.28	2.07	0.86	0.22	2.13	0.83
Active Facilitation	1-5	0.71	3.19	0.99	0.73	3.03	1.04
Passive Harm	1-5	-	2.00	1.07	-	2.02	1.06
Passive Facilitation	1-5	0.90	3.41	1.01	0.91	3.33	1.10
Young Adults							
Warmth	1-5	0.85	3.30	0.66	0.90	3.35	0.69
Competence	1-5	0.73	3.62	0.64	0.82	3.64	0.64
Admiration	1-5	0.76	2.58	1.00	0.67	2.56	0.99
Contempt	1-5	0.47	1.73	0.76	0.54	1.76	0.80
Pity	1-5	0.58	2.05	0.88	0.63	2.02	0.88
Envy	1-5	0.85	1.63	0.86	0.88	1.72	0.87
Future Contact Intentions	1-5	0.90	3.46	0.85	0.91	3.40	0.87
Active Harm	1-5	0.22	2.05	0.80	0.23	2.08	0.81
Active Facilitation	1-5	0.58	3.60	0.88	0.56	1.38	0.79
Passive Harm	1-5	-	1.38	0.79	-	1.43	0.78
Passive Facilitation	1-5	0.88	3.94	0.82	0.93	3.90	0.88

Table 4

Correlations between all main study variables for rich people across all conditions at time 1.

		1	2	3	4	5	6	7	8	9	10
1	Warmth	-									
2	Competence	.37*	-								
3	Admiration	.23*	.27*	-							
4	Contempt	-.22*	-.07	.23*	-						
5	Pity	.14*	-.04	.31*	.33*	-					
6	Envy	-.04	.05	.36*	.32*	.07	-				
7	Future Contact Intentions	.26*	.15*	.37*	-.06	.15*	.01	-			
8	Active Harm	-.16*	-.03	-.01	.19*	.09	.04	.003	-		
9	Active Facilitation	.12*	.17*	.15*	-.10	.08	-.11	.30*	-.03	-	
10	Passive Harm	-.08	-.09	-.05	.20*	.09	-.02	.02	.46*	-.12*	-
11	Passive Facilitation	.09	.22*	.15*	-.12*	-.04	.02	.27*	-.07	.54*	-.33*

Note: * $p < .05$.

Table 5

Correlations between all main study variables for physically disabled people across all conditions at time 1.

	1	2	3	4	5	6	7	8	9	10
1 Warmth	-									
2 Competence	.41*	-								
3 Admiration	.16*	.02	-							
4 Contempt	-.34*	-.15*	.09	-						
5 Pity	.25*	.10	.22*	-.09	-					
6 Envy	.001	-.05	.72*	.15*	.03	-				
7 Future Contact Intentions	.37*	.24*	.21*	-.22*	.31*	.07	-			
8 Active Harm	-.08	-.07	.05	.18*	.06	.07	-.04	-		
9 Active Facilitation	.21*	.27*	.09	-.14*	.15*	-.04	.37*	-.01	-	
10 Passive Harm	-.23*	-.14*	-.10	.26*	-.10	.00	-.28*	.30*	-.29*	-
11 Passive Facilitation	.23*	.31*	.03	-.26*	.10	-.10	.41*	-.10	.65*	-.45*

Note: * $p < .05$.

Table 6

Correlations between all main study variables for people with a criminal background across all conditions at time 1.

	1	2	3	4	5	6	7	8	9	10
1 Warmth	-									
2 Competence	.41*	-								
3 Admiration	.16*	.02	-							
4 Contempt	-.34*	-.15*	.09	-						
5 Pity	.25*	.10	.22*	-.09	-					
6 Envy	.001	-.05	.72*	.15*	.03	-				
7 Future Contact Intentions	.37*	.24*	.21*	-.22*	.31*	.07	-			
8 Active Harm	-.08	-.07	.05	.18*	.06	.07	-.04	-		
9 Active Facilitation	.21*	.27*	.09	-.14*	.15*	-.04	.37*	-.01	-	
10 Passive Harm	-.23*	-.14*	-.10	.26*	-.10	.00	-.28*	.30*	-.29*	-
11 Passive Facilitation	.23*	.31*	.03	-.26*	.10	-.10	.41*	-.10	.65*	-.45*

Note: * *p* < .05.

Table 7

Correlations between all main study variables for young adults across all conditions at time 1.

	1	2	3	4	5	6	7	8	9	10
1 Warmth	-									
2 Competence	.49*	-								
3 Admiration	.29*	.23*	-							
4 Contempt	-.06	-.04	.26*	-						
5 Pity	.04	.01	.40*	.30*	-					
6 Envy	-.02	-.08	.36*	.44*	.29*	-				
7 Future Contact Intentions	.20*	.25*	.29*	-.05	.14*	.11*	-			
8 Active Harm	-.05	-.03	-.01	.11*	-.02	.07	-.02	-		
9 Active Facilitation	.22*	.17*	.17*	-.03	-.03	-.05	.30*	.04	-	
10 Passive Harm	-.16*	-.12*	.02	.13*	.06	.20*	-.09	.39*	-.25*	-
11 Passive Facilitation	.19*	.25*	.15*	-.16*	.04	-.13*	.37*	-.08	.61*	-.39*

Note: * *p* < .05.

Hypothesis 1

The purpose of Hypothesis 1 was to examine whether imagined intergroup contact was associated with changes in stereotype content. I hypothesized that imagining an interaction with a member of a particular social group would lead to positive changes in warmth and competence stereotypes when groups were previously viewed as low on these dimensions. A series of one-way between-subjects ANOVAs were used to test whether warmth and competence differed as a function of imagined interaction condition. In each ANOVA, condition (two groups: the relevant imagined interaction condition versus the nature control condition) was the between-subjects independent variable, and warmth and competence were the dependent variables (in two separate ANOVAs). Cell means are presented in Table 8.

First, to ensure that the perceptions of the four groups' stereotype content was congruent with results from the pilot test and the selected groups adequately represented the four quadrants of the model (i.e., young adults=high warmth, high competence; people with a criminal background=low warmth, low competence; physically disabled people=high warmth, low competence; rich people=low warmth, high competence), I examined ratings of warmth and competence of all four groups within the nature control condition using a within-groups ANOVA with a Greenhouse-Geisser correction. In this condition, warmth ratings were significantly different for all four groups, $F(3,219) = 69.60$, $MSE = .39$, $p < .001$. Participants rated physically disabled people as the most warm ($M = 3.93$, $SD = .70$), followed by young adults ($M = 3.29$, $SD = .66$), rich people ($M = 2.93$, $SD = .80$), and people with a criminal background ($M = 2.48$, $SD = .78$). Post hoc tests revealed that all of the groups were significantly different from each other.

Competence ratings were also significantly different, $F(3,219) = 24.35$, $MSE = .42$, $p < .001$. Participants rated rich people as the most competent ($M = 3.96$, $SD = .74$), followed by

young adults ($M = 3.58$, $SD = .72$), people with a criminal background ($M = 3.24$, $SD = .80$), and physically disabled people ($M = 3.14$, $SD = .74$). Post hoc tests revealed that people with a criminal background and physically disabled people were the only two groups that did not significantly differ from each other. Thus, the results of the pilot ratings were replicated: young adults were in the top half of both warmth and competence ratings; people with a criminal background were in the bottom half of both warmth and competence ratings; physically disabled people were in the top half of warmth ratings, but lower half of competence ratings; and rich people were in the bottom half of warmth ratings, but top half of competence ratings.

Hypothesis 1a. For the group that was high in both warmth and competence (young adults), it was hypothesized that there would be no difference in stereotypes between the nature control condition and imagining interacting with a young adult. The ANOVA indicated no statistically significant difference in warmth, $F(1,131) = .425$, $MSE = .47$, $p = .52$, or competence, $F(1, 131) = .02$, $MSE = .45$, $p = .88$. Thus, warmth and competence did not differ as a function of imagined condition, and Hypothesis 1a was supported.

Hypothesis 1b. For the group that was low in both warmth and competence (people with a criminal background), it was hypothesized that perceptions of both warmth and competence would be higher when participants imagined an interaction with a person with a criminal background than when they imagined a nature scene. The ANOVA indicated no statistically significant difference in warmth, $F(1,125) = 2.86$, $MSE = .45$, $p = .09$, or competence, $F(1,125) = 1.13$, $MSE = .54$, $p = .29$. Thus, warmth and competence did not differ as a function of imagined condition, and Hypothesis 1b was not supported.

Hypothesis 1c. For the group that was low in competence but high in warmth (physically disabled people), it was hypothesized that perceptions of competence would be higher when

participants imagined interacting with a physically disabled person compared to when they imagined a nature scene, but that warmth perceptions would not differ between the two conditions. The ANOVA indicated no significant difference in warmth, $F(1,139) = 1.36$, $MSE = .45$, $p = .25$, or competence, $F(1,139) = 2.41$, $MSE = .47$, $p = .12$. Thus, the first part of Hypothesis 1c was partially supported as neither warmth nor competence differed between conditions.

For the group that was low in warmth but high in competence (rich people), it was hypothesized that perceptions of warmth would be higher when participants imagined interacting with a rich person compared to when they imagined a nature scene, but that competence perceptions would not differ between the two conditions. The ANOVA indicated no significant difference in warmth, $F(1,135) = .22$, $MSE = .60$, $p = .64$, or competence, $F(1, 135) = 2.54$, $MSE = .45$, $p = .11$. Thus, the second part of Hypothesis 1c was partially supported as neither competence nor warmth differed between imagined interaction conditions.

Hypothesis 1d. It was hypothesized that warmth perceptions would change more in the two conditions that were low in warmth (people with a criminal background and rich people) than competence perceptions would change in the two conditions that were low in competence (people with a criminal background and physically disabled people). In other words, the warmth effect sizes for people with a criminal background and rich people were compared to the competence effect sizes for people with a criminal background and physically disabled people. The effect size (Cohen's *d*) and a 95% confidence interval was calculated for each condition comparison. I then examined whether the warmth effect sizes were larger than the competence effect sizes, and if the confidence intervals overlapped. Overlapping confidence intervals

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indicates that the effect sizes are not significantly different from each other. Cohen's *d* and the confidence intervals are presented in Table 8.

The effect size for warmth for people with a criminal background (.30) was larger than confidence effect size for competence for people with a criminal background (.19) and the competence effect size for physically disabled people (.26). However, the effect size for warmth rich people (.08) was smaller than both of the competence effect sizes. Additionally, the confidence intervals around all four of the effect sizes of interest overlapped indicating that they were not significantly different. Thus, Hypothesis 1d was not supported.

Table 8

Means and standard deviations for stereotype content dimensions as a function of imagined condition.

	Imagined Interaction M (SD)	Nature Control M (SD)	d [95% CI]
Young Adults			
Warmth	3.37 (0.72)	3.29 (0.66)	0.11 [-0.23, 0.45]
Competence	3.58 (0.63)	3.60 (0.70)	-0.03 [-0.37, 0.31]
People with a Criminal Background			
Warmth	2.63 (0.56)	2.43 (0.75)	0.30 [-0.05, 0.65]
Competence	3.38 (0.63)	3.24 (0.82)	0.19 [-0.16, 0.53]
Physically Disabled People			
Warmth	4.07 (0.61)	3.94 (0.72)	0.20 [-0.13, 0.53]
Competence	3.32 (0.64)	3.14 (0.74)	0.26 [-0.07, 0.59]
Rich People			
Warmth	2.96 (0.75)	2.90 (0.80)	0.08 [-0.25, 0.42]
Competence	4.13 (0.57)	3.95 (0.75)	0.27 [-0.06, 0.61]

Hypothesis 2

The purpose of Hypothesis 2 was to examine whether imagined intergroup contact was associated with changes in intergroup emotions. I hypothesized that imagining an interaction with a member of a particular social group would lead to changes in the intergroup emotions of pity, admiration, envy, and contempt in accordance with how the groups were previously viewed on warmth and competence. A series of one-way between subjects ANOVAs were used to test whether these emotions differed as a function of imagined interaction condition. In each ANOVA, condition (two groups: the relevant imagined interaction condition versus the nature control condition) was the between-subjects independent variable, and admiration, contempt, pity, and envy were the dependent variables (in four separate ANOVAs). Cell means are presented in Table 9.

Again, to ensure that intergroup emotions toward the four groups were congruent with the pilot tests and the stereotype content model (i.e., young adults receive admiration the most, people with a criminal background receive contempt the most, physically disabled people receive pity the most, and rich people receive envy the most), I examined ratings of admiration, contempt, pity, and envy for all four groups within the nature control condition using a within-groups ANOVA with a Greenhouse-Geisser correction. For young adults, there was a significant main effect of emotion, $F(3,219) = 23.79$, $MSE = .45$, $p < .001$. Admiration was the emotion rated the highest for young adults ($M = 2.50$, $SD = 1.02$), followed by pity ($M = 2.04$, $SD = .86$), contempt ($M = 1.70$, $SD = .78$), and envy ($M = 1.70$; $SD = .91$). Post hoc tests indicated the mean for contempt and envy were the same, but the rest of the emotion ratings were different from each other. For people with a criminal background, the main effect of emotion was significant, $F(3,219) = 34.63$, $MSE = .43$, $p < .001$. Ratings for pity ($M = 2.07$, $SD = .87$) and contempt ($M =$

1.95, $SD = .85$) were the same, as were ratings of admiration ($M = 1.25$, $SD = .63$) and envy ($M = 1.22$, $SD = .67$). For physically disabled people, the effect of emotion was also significant, $F(3,219) = 120.39$, $MSE = .56$, $p < .001$. Pity was the most strongly felt emotion ($M = 3.14$, $SD = .88$), followed by admiration ($M = 2.76$, $SD = 1.04$), contempt ($M = 1.44$, $SD = .77$), and envy ($M = 1.22$, $SD = .70$). All of the emotions in this group were significantly different from each other. Finally, the main effect of emotion was also significant for rich people, $F(3,219) = 33.17$, $MSE = .60$, $p < .001$. Envy was the most strongly felt emotion ($M = 2.68$, $SD = 1.15$), followed by admiration ($M = 2.31$, $SD = .92$). Contempt ($M = 1.72$, $SD = .88$) and pity were felt equally as strong ($M = 1.57$, $SD = .75$). Thus, emotions toward the four groups were observed almost exactly as expected: young adults received admiration the most, physically disabled people received pity the most, and rich people received envy the most. The only difference was that people with a criminal background received pity as much as they received the predicted emotion of contempt.

Hypothesis 2a. For the group that was high in both warmth and competence (young adults), it was hypothesized that there would be no difference in any of the four emotions between the nature control condition and imagining interacting with a young adult. The ANOVA indicated no statistically significant difference in admiration, $F(1,132) = .06$, $MSE = 1.04$, $p = .812$, contempt, $F(1,132) = .03$, $MSE = .55$, $p = .87$, envy, $F(1,132) = .01$, $MSE = .78$, $p = .91$, and pity, $F(1,132) = .13$, $MSE = .72$, $p = .72$. Thus, none of the emotions differed as a function of condition, and Hypothesis 1a was supported.

Hypothesis 2b. For the group that was low in both warmth and competence (people with a criminal background), it was hypothesized that feelings of contempt would be lesser when participants imagined interacting with people with a criminal background compared to imagining

a nature scene. However, the ANOVA indicated no statistically significant difference between the two conditions on contempt, $F(1,125) = .28$, $MSE = .74$, $p = .60$. It was also hypothesized that there would be no difference between these two conditions in feelings of admiration, pity, and envy. The ANOVA indicated no significant difference in admiration, $F(1,125) = 1.69$, $MSE = .31$, $p = .20$, envy, $F(1,125) = .18$, $MSE = .26$, $p = .67$, or pity, $F(1,125) = 3.09$, $MSE = .64$, $p = .08$. Thus, none of the emotions functioned as a function of condition, and Hypothesis 2b was partially supported.

Hypothesis 2c. For the group that was high in warmth but low in competence (physically disabled people), it was hypothesized that feelings of pity would be lesser when participants imagined interacting with physically disabled people compared to imagining a nature scene. However, the ANOVA indicated no statistically significant difference between the two conditions on pity, $F(1,139) = .43$, $MSE = .76$, $p = .51$. It was also hypothesized that there would be no difference between these two conditions in feelings of admiration, contempt, and envy. The ANOVA indicated no significant difference in admiration, $F(1,139) = 1.42$, $MSE = 1.15$, $p = .24$, contempt, $F(1,139) = .21$, $MSE = .33$, $p = .65$, or envy, $F(1,139) = .03$, $MSE = .19$, $p = .87$. Thus, none of the emotions differed as a function of condition, and Hypothesis 2c was partially supported.

Hypothesis 2d. For the group that was low in warmth but high in competence (rich people), it was hypothesized that feelings of envy would be less when participants imagined interacting with rich people compared to imagining a nature scene. However, the ANOVA indicated no statistically significant difference between the two conditions, $F(1,135) = .68$, $MSE = 1.46$, $p = .41$. It was also hypothesized that there would be no difference between these two conditions in feelings of admiration, contempt, and pity. The ANOVA indicated no significant

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difference in admiration, $F(1,135) = 2.62$, $MSE = .87$, $p = .12$, contempt, $F(1,135) = .51$, $MSE = .47$, $p = .48$, or pity, $F(1,135) = 2.04$, $MSE = .37$, $p = .16$. Thus, none of the emotions differed as a function of condition, and Hypothesis 2d was partially supported.

Hypothesis 2e. It was hypothesized that the difference in associated emotions between the imagined interaction and control condition would be more in the two conditions that were low in warmth (people with a criminal background/contempt and rich people/envy) than associated emotions would be different in the condition that is perceived to be low in competence (physically disabled people/pity). The effect size (Cohen's *d*) and a 95% confidence interval were calculated for each condition comparison. I then examined whether the contempt and envy effect sizes were larger than the pity effect size, and if the confidence intervals overlapped. Cohen's *d* and the confidence intervals are presented in Table 9.

The effect size for envy for rich people (.14) was larger than the effect size for pity for physically disabled people (.11), as predicted. However, the effect size for contempt for people with a criminal background (.09) was smaller than the effect size for pity for physically disabled people. Furthermore, the confidence intervals around all three effect sizes of interest overlapped indicating they were not significantly different. It should also be noted that each of these three emotions was greater (although not significantly so) in the imagined contact condition than the nature control, contrary to predictions. Thus, Hypothesis 2e was not supported.

Table 9

Means and standard deviations for intergroup emotions as a function of imagined condition.

	Imagined Interaction M (SD)	Nature Control M (SD)	d [95% CI]
	Young Adults		
Admiration	2.49 (1.03)	2.45 (1.01)	0.04 [-0.30, 0.38]
Contempt	1.66 (0.74)	1.64 (0.72)	0.03 [-0.31, 0.37]
Envy	1.63 (0.94)	1.61 (0.83)	0.02 [-0.32, 0.36]
Pity	2.02 (0.88)	1.97 (0.82)	0.06 [-0.28, 0.40]
	People with a Criminal Background		
Admiration	1.31 (0.61)	1.18 (0.50)	0.23 [-0.12, 0.58]
Contempt	2.02 (0.89)	1.94 (0.84)	0.09 [-0.26, 0.44]
Envy	1.17 (0.55)	1.13 (0.47)	0.08 [-0.27, 0.42]
Pity	2.27 (0.76)	2.02 (0.83)	0.31 [-0.04, 0.66]
	Physically Disabled People		
Admiration	2.93 (1.11)	2.71 (1.04)	0.20 [-0.13, 0.53]
Contempt	1.39 (0.56)	1.34 (0.59)	0.08 [-0.25, 0.41]
Envy	1.14 (0.40)	1.13 (0.48)	0.03 [-0.30, 0.36]
Pity	3.25 (0.85)	3.16 (0.90)	0.11 [-0.22, 0.44]
	Rich People		
Admiration	2.51 (0.99)	2.25 (0.87)	0.28 [-0.06, 0.61]
Contempt	1.56 (0.55)	1.64 (0.78)	-0.12 [-0.46, 0.21]
Envy	2.81 (1.29)	2.64 (1.13)	0.14 [-0.19, 0.48]
Pity	1.37 (0.54)	1.52 (0.67)	-0.24 [-0.58, 0.09]

Hypothesis 3

The purpose of Hypothesis 3 was to examine whether imagined intergroup contact was associated with changes in intergroup behaviors. I hypothesized that imagining an interaction with a member of a particular social group would lead to changes in future contact intentions, and the behavioral tendencies of active harm, passive harm, active facilitation, and passive

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facilitation in accordance with how the groups were previously viewed on warmth and competence. A series of one-way between subjects ANOVAs were used to test whether these behaviors differed as a function of imagined interaction condition. In each ANOVA, condition (two groups: the relevant imagined interaction condition versus the nature control condition) was the between-subjects independent variable, and future contact intentions, active harm, passive harm, active facilitation, and passive facilitation were the dependent variables (in five separate ANOVAs). Cell means are presented in Table 10.

Hypothesis 3a. For all of the four groups, it was hypothesized that future contact intentions would be more positive when imagining interacting with a group member compared to imagining a nature scene. The ANOVA indicated no significant difference in future contact intentions for young adults, $F(1,132) = 1.08$, $MSE = .79$, $p = .30$ or physically disabled people, $F(1,139) = 3.25$, $MSE = .71$, $p = .07$. Future contact intentions were higher in the imagined contact condition for criminals, $F(1,125) = 6.85$, $MSE = .74$, $p = .01$, and rich people, $F(1,135) = 6.72$, $MSE = .60$, $p = .01$. Thus, future contact intentions were higher in the imagined contact condition for two of the four groups, and Hypothesis 3a was partially supported.

Hypothesis 3b. For the group that was high in both warmth and competence (young adults), it was hypothesized that there would be no difference in all of the four behavioral tendencies between the nature control condition and imagining interacting with a young adult. The ANOVA indicated no significant difference for active facilitation, $F(1,132) = 2.68$, $MSE = 2.45$, $p = .10$, active harm, $F(1,132) = .02$, $MSE = .01$, $p = .88$, passive facilitation, $F(1,132) = 1.23$, $MSE = .73$, $p = .27$, or passive harm, $F(1,132) = .01$, $MSE = .58$, $p = .91$. Thus, none of the behavioral tendencies differed as a function of condition and Hypothesis 3b was supported.

Hypothesis 3c. For the group that was low in both warmth and competence (people with a criminal background), it was hypothesized that active harm and passive harm would be lesser when imagining interacting with a person with a criminal background compared to imagining a nature scene. The ANOVA indicated no significant difference for active harm, $F(1,124) = .13$, $MSE = .85$, $p = .72$, or passive harm, $F(1,124) = 3.06$, $MSE = 1.03$, $p = .08$. It was also hypothesized that there would be no difference between these two conditions in active facilitation and passive facilitation. The ANOVA indicated no significant difference passive facilitation, $F(1,124) = 3.51$, $MSE = 1.09$, $p = .06$, but active facilitation was higher in the imagined interaction condition compared to the control condition, $F(1,124) = 8.67$, $MSE = .90$, $p = .004$. Thus, only passive facilitation was observed as predicted, and Hypothesis 3c was only partially supported.

Hypothesis 3d. For the group that was high in warmth but low in competence (physically disabled people), it was hypothesized that active facilitation would be greater when imagining interacting with a physically disabled person compared to imagining a nature scene. However, the ANOVA did not indicate a significant difference between the two conditions, $F(1,138) = 2.13$, $MSE = .66$, $p = .15$. It was also hypothesized that passive harm would be less when imagining interacting with a physically disabled person compared to imagining a nature scene. However, the ANOVA also did not indicate a significant difference between the two conditions, $F(1,138) = .01$, $MSE = .49$, $p = .93$. Finally, it was hypothesized that there would be no difference between these two conditions in passive facilitation or active harm. The ANOVA indicated no significant difference for active harm, $F(1,138) = .003$, $MSE = .66$, $p = .96$, but passive facilitation was higher in the imagined interaction condition compared to the control

condition, $F(1,138) = 3.90$, $MSE = .63$, $p = .05$. Thus, only active harm was observed as predicted, and Hypothesis 3d was partially supported.

  Hypothesis 3e. For the group that was low in warmth but high in competence (rich people), it was hypothesized that passive facilitation would be greater when imagining interacting with a rich person compared to imagining a nature scene. The ANOVA indicated that passive facilitation was higher in the imagined interaction condition than in the control condition, $F(1,135) = 7.91$, $MSE = .82$, $p = .01$. It was also hypothesized that active harm would be lesser when imagining interacting with a rich person compared to imagining a nature scene. However, the ANOVA indicated no significant difference between the two conditions, $F(1,135) = 1.43$, $MSE = .78$, $p = .26$. Finally, it was hypothesized that there would be no difference between these two conditions in active facilitation and passive harm. The ANOVA indicated no significant difference for passive harm, $F(1,135) = 1.30$, $MSE = .55$, $p = .25$, however, active facilitation was greater in the imagined interaction condition than in the control condition, $F(1,135) = 6.96$, $MSE = 1.03$, $p = .01$. Thus, passive harm and passive facilitation were observed as predicted, but active harm and active facilitation were not, and Hypothesis 3e was partially supported.

  Hypothesis 3f. It was hypothesized that the difference in future contact intentions would be greater between the control condition and the two conditions that were perceived to be low in warmth (people with a criminal background and rich people) than between the control condition and the condition that was perceived to be low in competence (physically disabled people). The effect size (Cohen's *d*) and a 95% confidence interval were calculated for each condition comparison. I then examined whether the effect sizes were larger in the two low warmth conditions than the effect sizes in the low competence condition and if the confidence intervals overlapped. Cohen's *d* and the confidence intervals are presented in Table 10.

The effect sizes for future contact intentions for people with a criminal background (.47) and rich people (.44) were larger than for physically disabled people (.30). However, all three of the confidence intervals overlap. Thus, although the two low warmth conditions had larger difference than the low competence condition, the difference was not statistically significant. Hypothesis 3f was not supported.

Hypothesis 3g. It was hypothesized that the difference in associated behavioral tendencies between the imagined interaction and control condition would be greater in the two conditions that were perceived to be low in warmth (people with a criminal background/active and passive harm and rich people/active harm and passive facilitation) than associated behavioral tendencies would be different in the condition that was perceived to be low in competence (physically disabled people/active facilitation and passive harm). The effect size (Cohen's *d*) and a 95% confidence interval were calculated for each condition comparison. I then examined whether the effect sizes for active and passive harm for people with a criminal background and active harm and passive facilitation for rich people were larger than the effect sizes for active facilitation and passive harm for physically disabled people, and if the confidence intervals overlapped. Cohen's *d* and the confidence intervals are presented in Table 10.

The effect size for active harm for people with a criminal background (.07) was larger than the effect size for passive harm for physically disabled people (-.01), but not the effect size for active facilitation for physically disabled people (.25). The effect size for passive harm for people with a criminal background (.31) was larger than both of the effect sizes for physically disabled people. For rich people, the effect sizes for active harm (.20) was also higher than the effect size for passive harm for physically disabled people, but not for active facilitation for physically disabled people. The effect size for passive facilitation for rich people (.48) was larger

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than both. Thus, the effect sizes for the low warmth conditions were not consistently larger than

the effect sizes for the low competence condition. Furthermore, many of the confidence intervals

overlapped, indicating the values are not significantly different from each other. Thus,

Hypothesis 3g was not supported.

Table 10

Means and standard deviations for future contact intentions and behavioral tendencies as a

function of imagined condition.

	Imagined Interaction *M (SD)*	Nature Control *M (SD)*	*d [95% CI]*
Young Adults			
Future Contact Intentions	3.51 (0.82)	3.35 (0.95)	0.18 [-0.16, 0.52]
Active Harm	2.07 (0.79)	2.05 (0.78)	0.03 [-0.31, 0.36]
Passive Harm	1.34 (0.78)	1.33 (0.74)	0.02 [-0.32, 0.36]
Active Facilitation	3.66 (0.97)	3.39 (0.94)	0.28 [-0.06, 0.62]
Passive Facilitation	3.91 (0.76)	3.75 (0.94)	0.19 [-0.15, 0.53]
People with a Criminal Background			
Future Contact Intentions	2.67 (0.87)	2.27 (0.86)	0.47 [0.11, 0.82]
Active Harm	2.16 (0.88)	2.10 (0.95)	0.07 [-0.29, 0.42]
Passive Harm	1.77 (0.89)	2.09 (1.10)	-0.31 [-0.67, 0.04]
Active Facilitation	3.54 (0.88)	3.04 (1.01)	0.53 [0.17, 0.88]
Passive Facilitation	3.61 (0.94)	3.26 (1.12)	0.34 [-0.02, 0.69]
Physically Disabled People			
Future Contact Intentions	3.45 (0.71)	3.20 (0.96)	0.30 [-0.03, 0.64]
Active Harm	1.73 (0.83)	1.72 (0.80)	0.01 [-0.32, 0.34]
Passive Harm	1.34 (0.74)	1.35 (0.66)	-0.01 [-0.09, 0.00]
Active Facilitation	4.09 (0.70)	3.89 (0.92)	0.25 [-0.09, 0.58]
Passive Facilitation	4.12 (0.69)	3.86 (0.88)	0.33 [-0.001, 0.67]
Rich People			
Future Contact Intentions	2.65 (0.77)	2.30 (0.78)	0.44 [0.10, 0.78]
Active Harm	1.96 (0.90)	2.14 (0.87)	-0.20 [-0.54, 0.13]

Table 10 (cont'd)

	Imagined Interaction M (SD)	Nature Control M (SD)	d [95% CI]
	Rich People		
Passive Harm	1.28 (0.69)	1.43 (0.79)	-0.19 [-0.52, 0.00]
Active Facilitation	3.50 (0.90)	3.04 (1.11)	0.45 [0.11, 0.79]
Passive Facilitation	4.19 (0.77)	3.75 (1.02)	0.48 [0.14, 0.82]

Hypothesis 4

The purpose of Hypothesis 4 was to determine if stereotype perceptions and intergroup emotions mediated the relationship between imagined intergroup contact and behavioral tendencies. Using, the Process macro in SPSS (Preacher & Hayes, 2007), a series of path analyses were conducted with a serial mediation model. The independent variable was the imagined contact condition. The dependent variable was the measure of behavioral tendency associated with the specific group. The first mediating variable was warmth and competence (separate model for each). The second mediating variable was the appropriate intergroup emotion for the specific group.

Hypothesis 4a. A model testing warmth and admiration as mediators between imagining interacting with a young adult and active facilitation was tested (Figure 1). The path between warmth and admiration was significant, but the indirect effects were not. The same was true using passive facilitation as the dependent variable (Figure 2).

Figure 1 diagram components:

Stereotype: Warmth → **Intergroup Emotion: Admiration** (.31*)

Condition: Young Adult → Warmth (.08)

Warmth → Active Facilitation (.03)

Condition → Admiration (.28)

Admiration → **Behavioral Tendency: Active Facilitation** (.13)

Condition: Young Adult → Behavioral Tendency: Active Facilitation (.24)

	Indirect Effect	SE	95% CI
Young Adult → Warmth → Active Facilitation	.02	.04	(-.03, .14)
Young Adult → Warmth → Admiration → Active Facilitation	.003	.01	(-.003, 03)
Young Adult → Admiration → Active Facilitation	.004	.03	(-.04, .08)

Figure 1. The mediating role of warmth and admiration at time 1 in the relation between imagining a young adult vs. nature control and active facilitation.
Note. Coefficients are unstandardized.

Figure 2 diagram components:

Stereotype: Warmth → **Intergroup Emotion: Admiration** (.31*)

Condition: Young Adult → Warmth (.08)

Warmth → Passive Facilitation (.03)

Condition → Admiration (.13)

Admiration → **Behavioral Tendency: Passive Facilitation** (.09)

Condition: Young Adult → Behavioral Tendency: Passive Facilitation (.14)

	Indirect Effect	SE	95% CI
Young Adult → Warmth → Passive Facilitation	.01	.03	(-.02, .11)
Young Adult → Warmth → Admiration → Passive Facilitation	.002	.01	(-.002, .03)
Young Adult → Admiration → Passive Facilitation	.002	.02	(-.03, .07)

Figure 2. The mediating role of warmth and admiration at time 1 in the relation between imaging a young adult vs. nature control and passive facilitation.
Note. Coefficients are unstandardized.

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Another model tested competence and admiration as mediators of the relationship

between imagining interacting with a young adult and active facilitation (Figure 3). None of the

paths or the indirect effects were significant. Again the same was true when passive facilitation

was entered as the dependent variable (Figure 4).

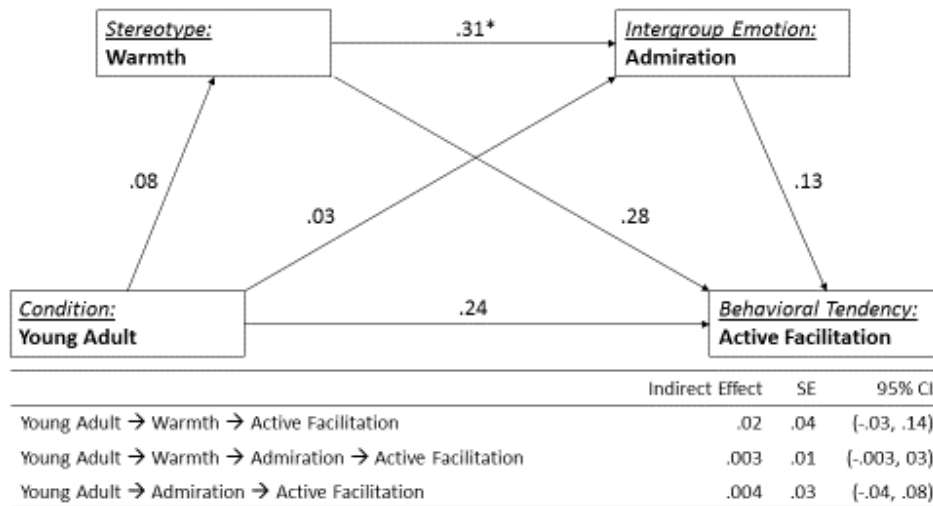|	Indirect Effect	SE	95% CI
Young Adult → Competence → Active Facilitation	-.004	.03	(-08, .05)
Young Adult → Competence → Admiration → Active Facilitation	-.001	.01	(-.02, 01)
Young Adult → Admiration → Active Facilitation	.01	.03	(-.04, .09)

Figure 3. The mediating role of competence and admiration at time 1 in the relation between imagining a young adult vs. nature control and active facilitation.
Note. Coefficients are unstandardized.
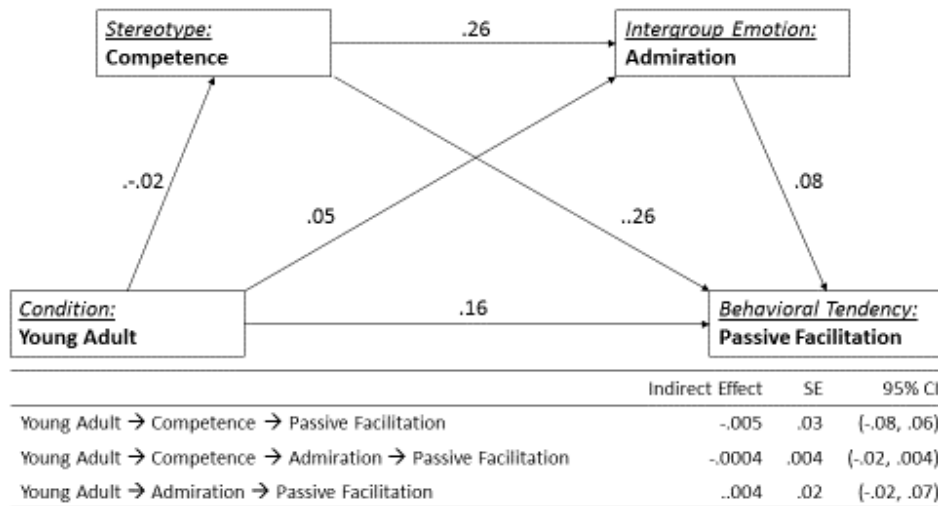
Figure 4. The mediating role of competence and admiration at time 1 in the relation between imagining a young adult vs. nature control and passive facilitation.
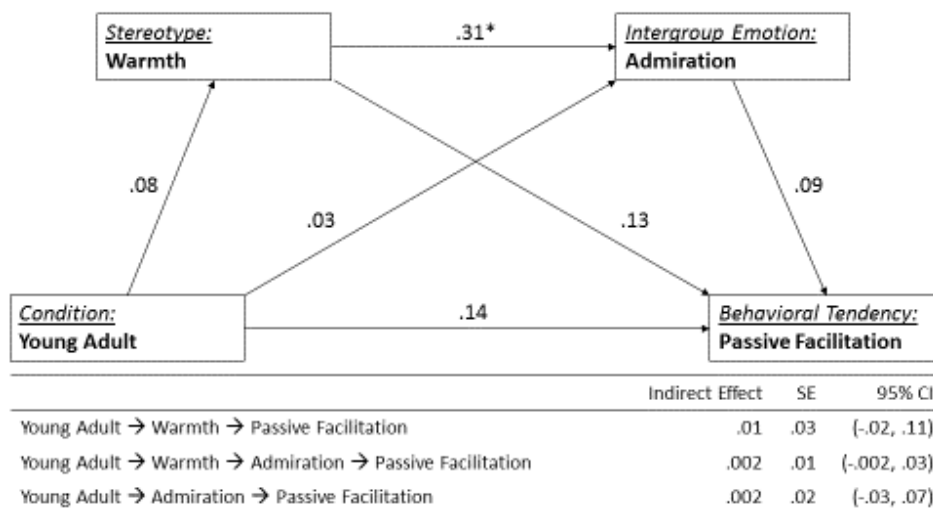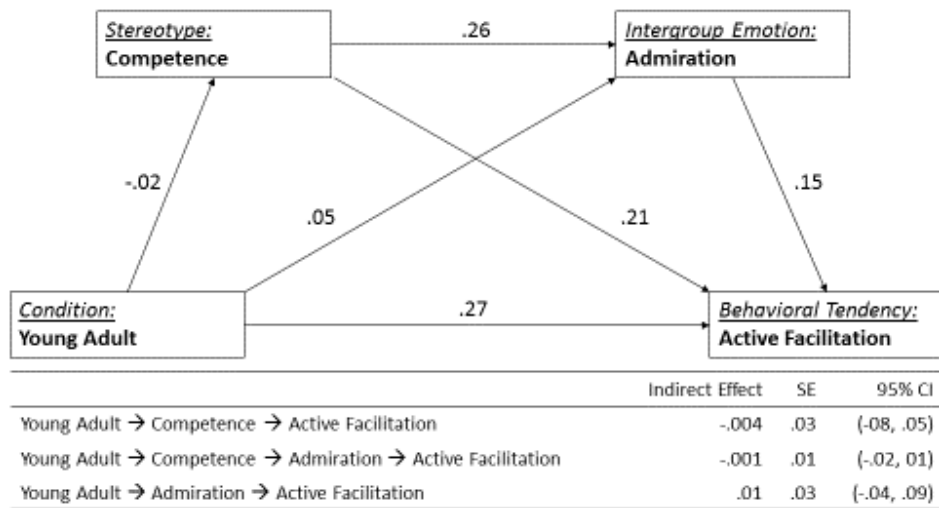*Note.* Coefficients are unstandardized.

Hypothesis 4b. It was predicted that warmth and contempt would mediate the

relationship between imagining interacting with a person with a criminal background and the

behavioral tendency of active harm (Figure 5). For this model, only the path between warmth

and contempt was significant and the indirect effects for both warmth and contempt were not

significant. This model was repeated with the behavioral tendency of passive harm as the

dependent variable (Figure 6). In addition to the path between warmth and contempt, the paths

between warmth and passive harm and contempt and passive harm were also significant. Further,

the indirect effects of both warmth and competence were significant.

Figure 5. The mediating role of warmth and contempt at time 1 in the relation between imaging a person with a criminal background vs. nature control and active harm.
Note. Coefficients are unstandardized.

Figure 6. The mediating role of warmth and contempt at time 1 in the relation between imagining a person with a criminal background vs. nature control and passive harm.
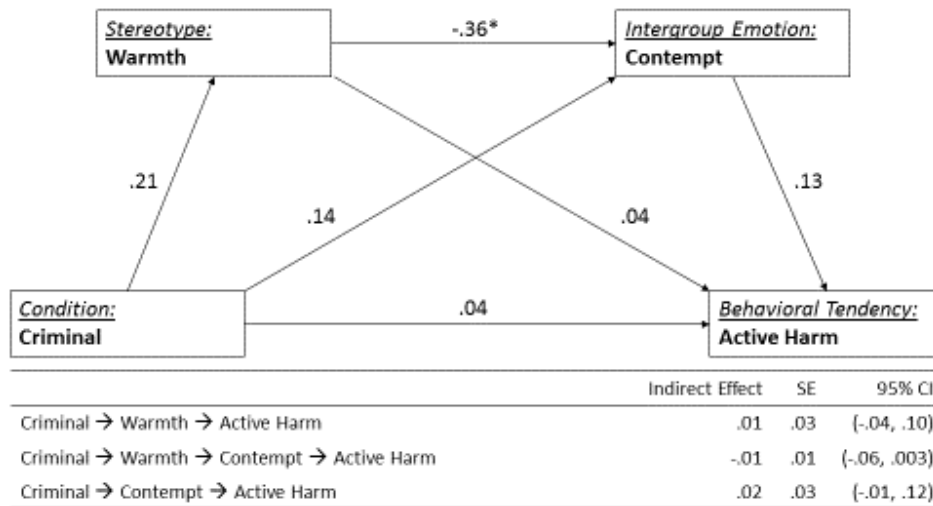*Note.* Coefficients are unstandardized.

In the next model, it was predicted that competence and contempt would mediate the relationship between imagining a person with a criminal background and active harm (Figure 7). Again, only the path between competence and contempt was significant, and the indirect effects for both competence and contempt were not significant. This model was also repeated with passive harm replacing active harm as the dependent variable (Figure 8). In addition to the path between competence and contempt, the path between contempt and passive harm was significant, but none of the indirect effects were significant.

	Indirect Effect	SE	95% CI
Criminal → Competence → Active Harm	-.02	.03	(-.11, .02)
Criminal → Competence → Contempt → Active Harm	-.004	.01	(-.04, .002)
Criminal → Contempt → Active Harm	.01	.03	(-.02, .10)

Figure 7. The mediating role of competence and contempt at time 1 in the relation between imagining a person with a criminal background vs. nature control and active harm.
Note. Coefficients are unstandardized.

```
Stereotype:          -.27*        Intergroup Emotion:
Competence                        Contempt

      .15                                          .33*
            .10                    -.07

Condition:            -.33         Behavioral Tendency:
Criminal                           Passive Harm
```

	Indirect Effect	SE	95% CI
Criminal → Competence → Passive Harm	-.01	.03	(-.12, .02)
Criminal → Competence → Contempt → Passive Harm	-.01	.02	(-.07, .002)
Criminal → Contempt → Passive Harm	.03	.05	(-.05, .18)
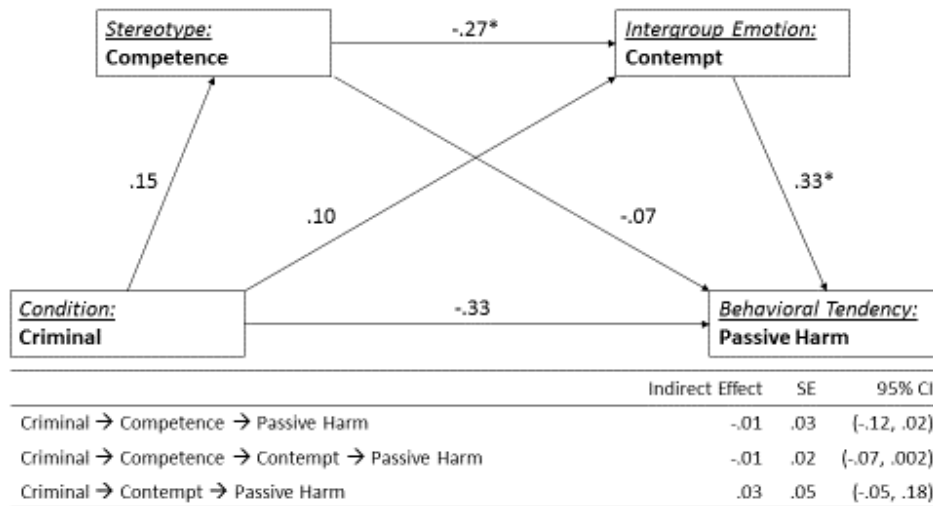
Figure 8. The mediating role of competence and contempt at time 1 in the relation between imagining a person with a criminal background vs. nature control and passive harm.
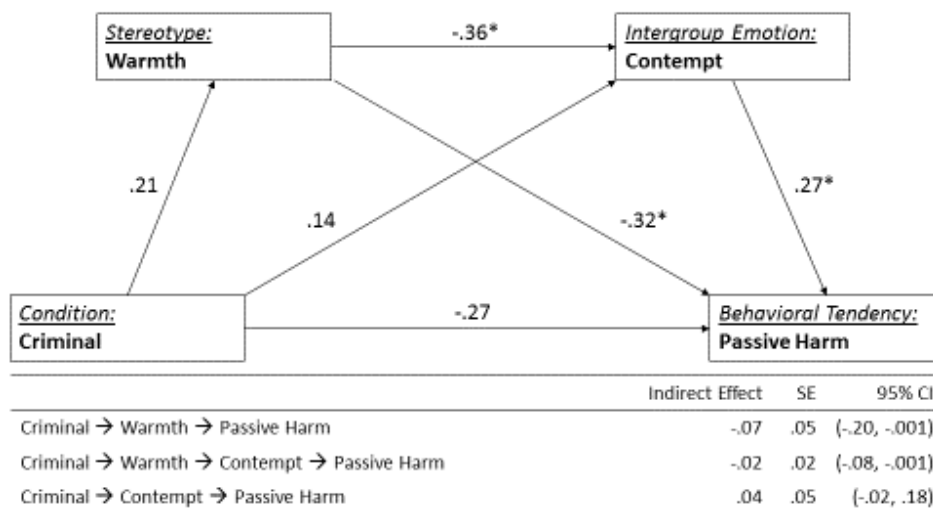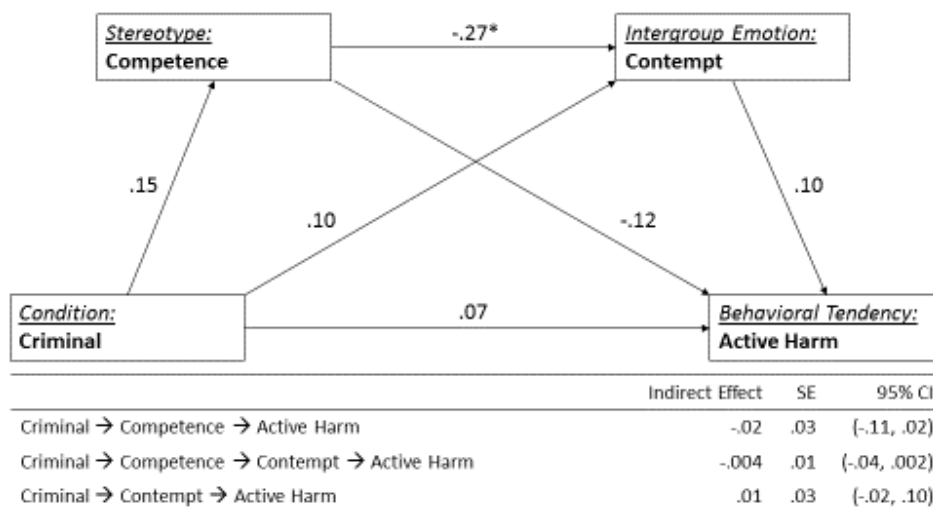*Note.* Coefficients are unstandardized.

Hypothesis 4c. It was predicted that warmth and pity would mediate the relationship between imagining interacting with a physically disabled person and the behavioral tendency of passive harm (Figure 9). For this model, only the path between warmth and passive harm was significant, and neither the indirect effect of warmth or pity was significant. This model was repeated with active facilitation as the dependent variable (Figure 10). Here, the additional path of pity to active facilitation was significant, but the indirect effects remained non-significant.

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Figure 9. The mediating role of warmth and pity at time 1 in the relation between imagining a physically disabled person vs. nature control and passive harm.
Note. Coefficients are unstandardized.

Figure 10. The mediating role of warmth and pity at time 1 in the relation between imagining a physically disabled person vs. nature control and active facilitation.
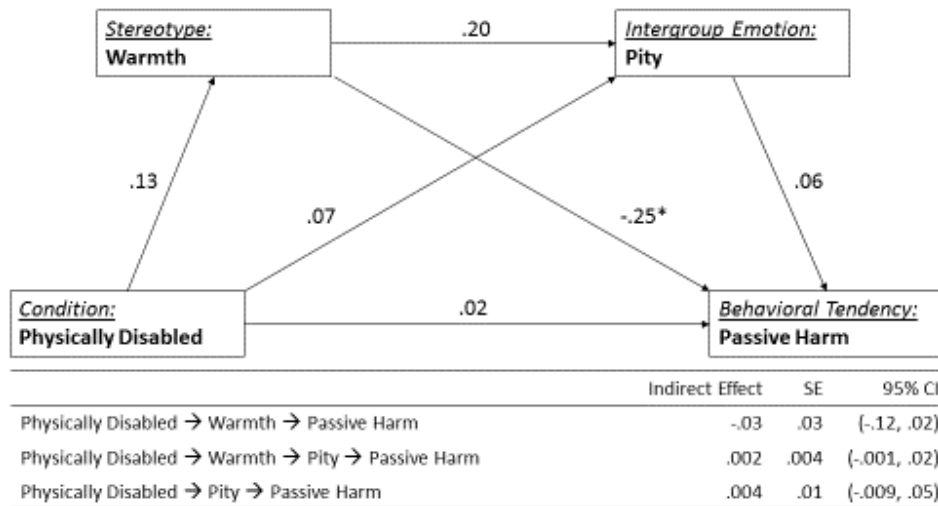*Note.* Coefficients are unstandardized.

In the next model, it was predicted that competence and pity would mediate the relationship between imagining a person with a criminal background and passive harm (Figure 11). None of the paths in this model were significant, nor were the indirect effects. Replacing, passive harm with active facilitation yielded a model with the path between pity and active facilitation significant, but no significant direct effects (Figure 12).

	Indirect Effect	SE	95% CI
Physically Disabled → Competence → Passive Harm	-.02	.02	(-.09, .004)
Physically Disabled → Competence → Pity → Passive Harm	-.0004	.003	(-.01, .002)
Physically Disabled → Pity → Passive Harm	.002	.01	(-.02, .04)

Figure 11. The mediating role of competence and pity at time 1 in the relation between imagining a physically disabled person vs. nature control and passive harm.
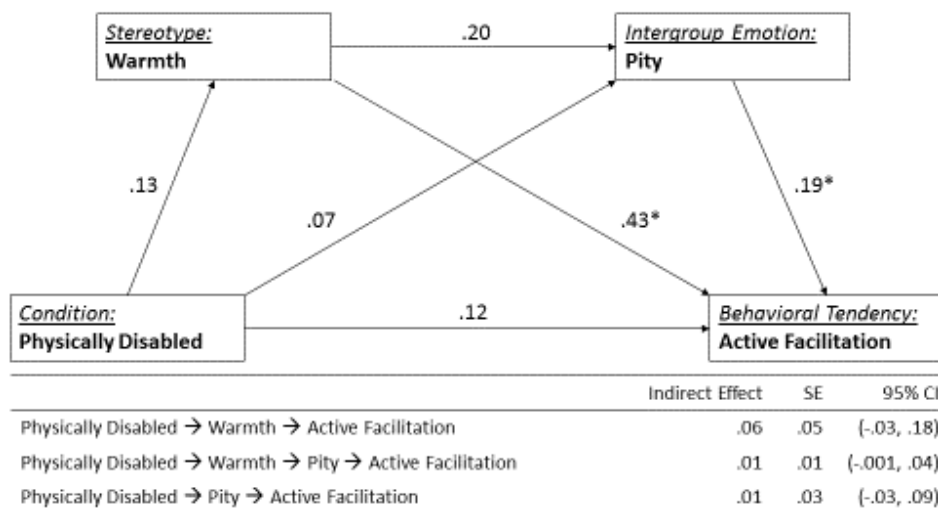*Note.* Coefficients are unstandardized.

Figure 12. The mediating role of competence and pity at time 1 in the relation between imagining a physically disabled person vs. nature control and active facilitation.
Note. Coefficients are unstandardized.

Hypothesis 4d. It was predicted that warmth and envy would mediate the relationship between imagining interacting with a rich person and the behavioral tendency of active harm (Figure 13). In this model, none of the paths nor the indirect effects were significant. When active harm was replaced with passive facilitation, the path between imagining rich people and passive facilitation was significant, but the indirect effects were not (Figure 14).

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Figure 13. The mediating role of warmth and envy at time 1 in the relation between imagining a rich person vs. nature control and active harm.
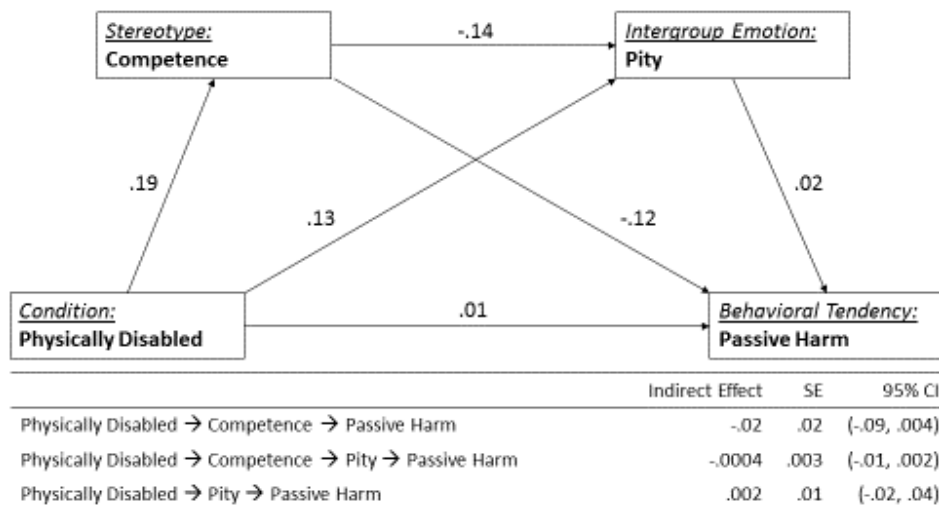*Note.* Coefficients are unstandardized.

Figure 14. The mediating role of warmth and envy at time 1 in the relation between imagining a rich person vs. nature control and passive facilitation.
Note. Coefficients are unstandardized.

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In the next model, it was predicted that competence and envy would mediate the relationship between imagining interacting with a rich person and the behavioral tendency of active harm (Figure 15). However, none of the paths in this model, nor the indirect effects were significant. Again, replacing active harm with passive facilitation revealed a significant path between imagining rich people and passive facilitation, but no significant indirect effects (Figure 16).

		Indirect Effect	SE	95% CI
Rich → Competence → Active Harm		-.003	..02	(-.06, .04)
Rich → Competence → Envy → Active Harm		-.0004	.003	(-.01, .002)
Rich → Envy → Active Harm		-.004	.02	(-.07, .01)

Figure 15. The mediating role of competence and envy at time 1 in the relation between imagining a rich person vs. nature control and active harm.
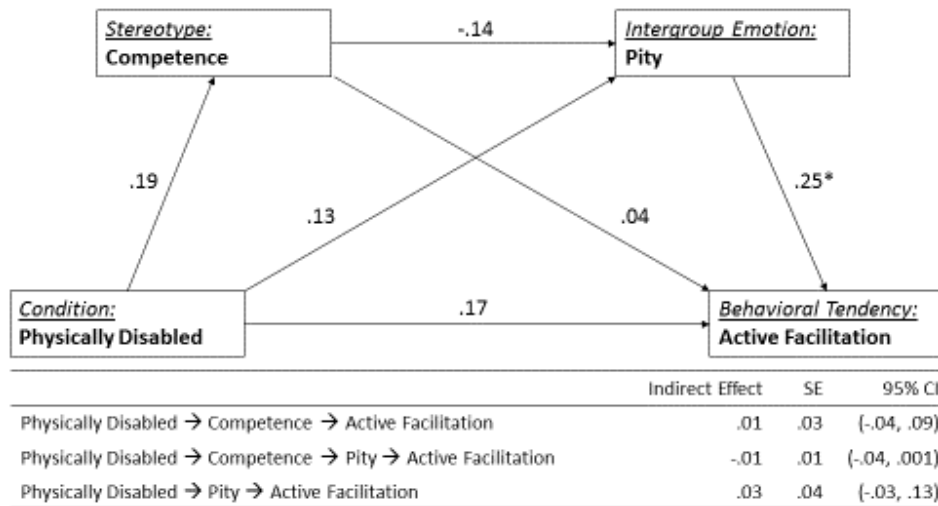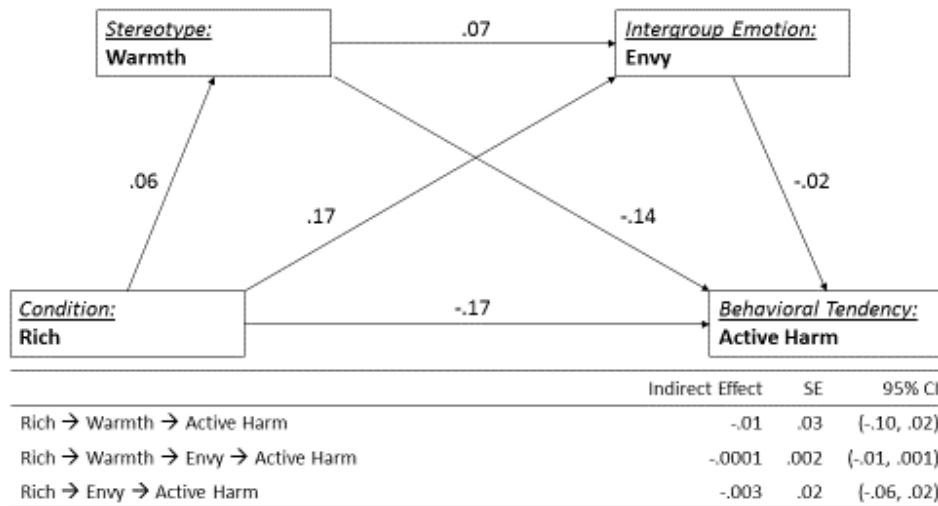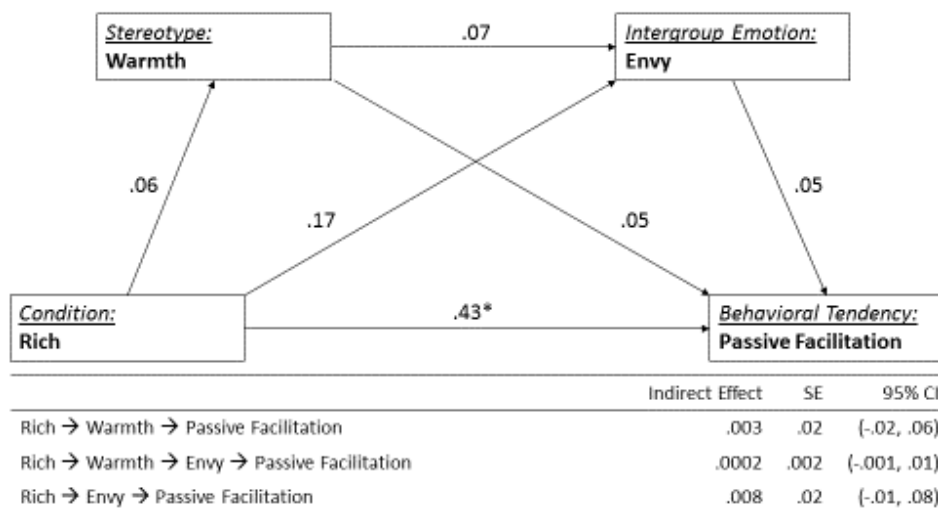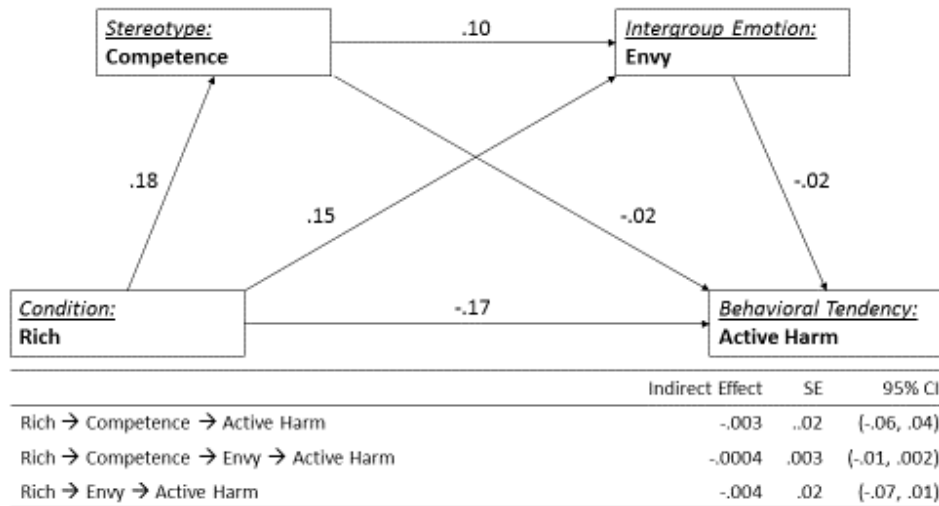*Note.* Coefficients are unstandardized.

Diagram with:
- Stereotype: Competence (top left box)
- Intergroup Emotion: Envy (top right box)
- Condition: Rich (bottom left box)
- Behavioral Tendency: Passive Facilitation (bottom right box)

Path coefficients: .10 (Competence → Envy), .18 (Condition → Competence), .15, .41*, .04 (Envy → Passive Facilitation), .36* (Condition → Passive Facilitation)

	Indirect Effect	SE	95% CI
Rich → Competence → Passive Facilitation	.07	.06	(-.004, .23)
Rich → Competence → Envy → Passive Facilitation	.001	.003	(-.001, .02)
Rich → Competence → Passive Facilitation	.006	.02	(-.01, .07)
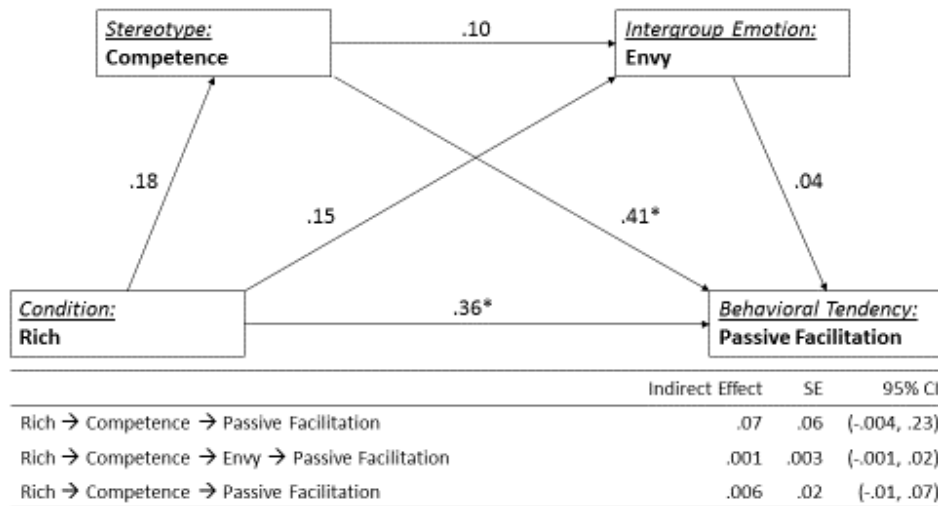
Figure 16. The mediating role of competence and envy at time 1 in the relation between imagining a rich person vs. nature control and passive facilitation.
Note. Coefficients are unstandardized.

Hypothesis 5

The purpose of Hypothesis 5 was to examine the effects of imagined intergroup contact over time. It was hypothesized the relationships described in Hypotheses 1-3 would still be significant, but would be weaker at time 2 than at time 1. A series of mixed-factor ANOVAs were used with imagined contact condition (two groups: the relevant imagined interaction condition versus the nature control condition) as the between-subjects independent variable and time as the within-subjects independent variable using a Geisser-Greenhouse correction for all within-subjects tests. A separate ANOVA was conducted for each dependent variable: the two stereotypes, four intergroup emotions, future contact intentions, and four behavioral tendencies. Cell means are presented in Table 11.

Hypothesis 1 over time. In Hypothesis 1a, it was predicted that there would be no difference in warmth or competence between the control and imagining young adults. For warmth, there was not a main effect of condition, $F(1,131) = .23$, $MSE = .17$, $p = .63$, or time, $F(1, 131) = .21$, $MSE = .27$, $p = .65$, and there was no condition by time interaction, $F(1,131) = .19$, $MSE = .27$, $p = .67$. For competence, there was also not a main effect of condition, $F(1,131) = .01$, $MSE = .78$, $p = .94$, or time, $F(1,131) = .08$, $MSE = .20$, $p = .78$, or a condition by time interaction, $F(1,131) = .03$, $MSE = .01$, $p = .87$.

In Hypothesis 1b, it was predicted that both warmth and competence would be higher in the imagining people with a criminal background condition than the control condition. For warmth, there was not a main effect of condition, $F(1,124) = .86$, $MSE = .70$, $p = .36$, or time, $F(1, 124) = .66$, $MSE = .23$, $p = .42$, and there was no condition by time interaction, $F(1,124) = 2.90$, $MSE = .23$, $p = .09$. For competence, there was also not a main effect of condition, $F(1,124) = 1.88$, $MSE = .93$, $p = .17$, but there was a main effect of time, $F(1,124) = 13.33$, $MSE = .22$, $p < .001$. Ratings of the competence of people with a criminal background were lower at time 2 than at time 1 in both conditions. There was not an interaction between time and condition for competence, $F(1, 124) = .41$, $MSE = .22$, $p = .52$.

In the first part of Hypothesis 1c, it was predicted that imagining interacting with a physically disabled person would lead to higher competence ratings, but no difference in warmth ratings, compared to the control condition. For competence, there was no main effect of condition, $F(1,139) = 2.41$, $MSE = .72$, $p = .12$, but there was a main effect of time, $F(1,139) = 6.13$, $MSE = .19$, $p = .02$. There was not a time by condition interaction, $F(1,139) = .20$, $MSE = .19$, $p = .65$. Ratings of physically disabled people's competence were lower at time 2 than at time 1 in both conditions. For warmth, there was also no main effect of condition, $F(1,139) = $

1.75, $MSE = .70$, $p = .19$, but there was a main effect of time, $F(1,139) = 8.51$, $MSE = .21$, $p =$ .004. Again, the time by condition interaction was not significant, $F(1,193) = .00$, $MSE = .21$, $p =$ .99. Ratings of physically disabled people's warmth were lower at time 2 than time 1 in both conditions.

In the second part of Hypothesis 1c, it was predicted that imagining interacting with a rich person would lead to higher warmth ratings, but no difference in competence ratings, compared to the control condition. For warmth, there was not a main effect of condition, $F(1,134) = .23$, $MSE = .78$, $p = .64$, time, $F(1,134) = 3.55$, $MSE = .24$, $p = .06$, or a time by condition interaction, $F(1,134) = 2.08$, $MSE = .24$, $p = .15$. For competence, there was not a main effect of condition, $F(1,134) = 2.77$, $MSE = .62$, $p = .10$, or time, $F(1,134) = 2.31$, $MSE = .25$, $p = .13$, or a time by condition interaction, $F(1,134) = .12$, $MSE = .25$, $p = .73$.

Hypothesis 2 over time. In Hypothesis 2a, it was predicted that there would be no difference in any of the four intergroup emotions between imagining interacting with a young adult and the control condition. For admiration, there was no main effect of condition, $F(1,130) = 1.24$, $MSE = 1.60$, $p = .27$, time, $F(1,130) = .06$, $MSE = .47$, $p = .81$, or a time by condition interaction, $F(1,130) = 1.62$, $MSE = .47$, $p = .21$. For contempt, there was no main effect of condition, $F(1,130) = .44$, $MSE = .84$, $p = .51$, or time, $F(1,130) = 2.01$, $MSE = .36$, $p = .16$, or a time by condition interaction, $F(1,130) = .28$, $MSE = .36$, $p = .60$. For envy, there was no main effect of condition, $F(1,130) = .10$, $MSE = 1.09$, $p = .75$, time, $F(1,130) = .79$, $MSE = .53$, $p = .38$, or a time by condition interaction, $F(1,130) = .01$, $MSE = .52$, $p = .93$. For pity, there was no main effect of condition, $F(1,130) = 1.34$, $MSE = 1.13$, $p = .25$, or time, $F(1,130) = .55$, $MSE = .44$, $p = .46$, or a time by condition interaction, $F(1,130) = 1.20$, $MSE = .44$, $p = .28$.

In Hypothesis 2b, it was predicted that feelings of contempt would be lesser, but there would be no difference in admiration, pity, or envy, when imagining interacting with people with a criminal background compared to the control condition. For contempt, there was no main effect of condition, $F(1,123) = .42$, $MSE = 1.05$, $p = .52$, or time, $F(1,123) = 1.32$, $MSE = .36$, $p = .25$, or a time by condition interaction, $F(1,123) = .24$, $MSE = .36$, $p = .63$. For admiration, there was no main effect of condition, $F(1,123) = 1.62$, $MSE = .57$, $p = .21$, or time, $F(1,123) = 2.38$, $MSE = .16$, $p = .13$, or a time by condition interaction, $F(1,123) = .10$, $MSE = .16$, $p = .76$. For envy, there was no main effect of condition, $F(1,123) = .02$, $MSE = .51$, $p = .90$, or time, $F(1,123) = 1.26$, $MSE = .10$, $p = .26$, or a time by condition interaction, $F(1,123) = .46$, $MSE = .10$, $p = .50$. For pity, there was no main effect of condition, $F(1,123) = 3.39$, $MSE = .95$, $p = .07$, or time, $F(1,123) = 3.89$, $MSE = .32$, $p = .05$, or a time by condition interaction, $F(1,123) = .02$, $MSE = .32$, $p = .89$.

In Hypothesis 2c, it was predicted that feelings of pity would be lesser, but there would be no difference in admiration, contempt, or envy, when imagining interacting with a physically disabled person compared to the control condition. For pity, there was no main effect of condition, $F(1,137) = 3.42$, $MSE = 1.44$, $p = .07$, but there was a main effect of time, $F(1,137) = 34.72$, $MSE = .32$, $p < .001$, such that feelings of pity toward physically disabled people was lower at time 2 than at time 1 in both conditions. However, there was also a significant time by condition interaction, $F(1, 137) = 5.71$, $MSE = .32$, $p = .02$. To follow-up this interaction, simple main effects of time using local error terms were computed separately for each condition. The effect of time was significant in both the imagined interaction condition, $F(1,69) = 7.00$, $MSE = .28$, $p = .01$, and the control condition, $F(1,69) = 3.26$, $MSE = .36$, $p < .001$. However, the

difference over time was much larger in the control condition ($d = .58$) than in the imagined interaction condition ($d = .26$).

For admiration, there was no main effect of condition, $F(1, 137) = 3.21$, $MSE = 1.97$, $p = .08$, or time, $F(1,137) = 2.02$, $MSE = .43$, $p = .16$, or a time by condition interaction, $F(1,137) = 1.32$, $MSE = .43$, $p = .25$. For contempt, there was no main effect of condition, $F(1,137) = .08$, $MSE = .59$, $p = .77$, or time, $F(1,137) = 2.63$, $MSE = .15$, $p = .12$, or a time by condition interaction, $F(1,137) = .16$, $MSE = .15$, $p = .69$. For envy, there was no main effect of condition, $F(1,137) = .32$, $MSE = .36$, $p = .57$, or time, $F(1,137) = 3.73$, $MSE = .14$, $p = .06$, or a time by condition interaction, $F(1,137) = .40$, $MSE = .14$, $p = .53$.

In Hypothesis 2d, it was predicted that feelings of envy would be lesser, but there would be no difference in admiration, contempt, or pity, when imagining interacting with a rich person compared to the control condition. For envy, there was no main effect of condition, $F(1,132) = .73$, $MSE = 2.35$, $p = .40$, or time, $F(1,132) = .66$, $MSE = .35$, $p = .42$, or a time by condition interaction, $F(1,132) = .36$, $MSE = .35$, $p = .55$. For admiration, there was no main effect of condition, $F(1,132) = 1.10$, $MSE = 1.51$, $p = .30$, or time, $F(1,132) = .61$, $MSE = .38$, $p = .44$, or a time by condition interaction, $F(1,132) = 1.36$, $MSE = .38$, $p = .25$. For contempt, there was no main effect of condition, $F(1,132) = .52$, $MSE = .68$, $p = .47$, or time, $F(1,132) = 2.64$, $MSE = .28$, $p = .12$, or a time by condition interaction, $F(1,132) = .01$, $MSE = .28$, $p = .95$. For pity, there was no main effect of condition, $F(1,132) = 1.94$, $MSE = .64$, $p = .17$, or time, $F(1,132) = .02$, $MSE = .22$, $p = .89$, or a time by condition interaction, $F(1,132) = .07$, $MSE = .22$, $p = .79$.

Hypothesis 3 over time. In Hypothesis 3a, it was predicted that future contact intentions would be more positive in the imagined interaction conditions than in the control condition. For young adults, there was no main effect of condition, $F(1,130) = 2.18$, $MSE = 1.36$, $p = .14$, or

time, $F(1,130) = .25$, $MSE = .27$, $p = .62$, or a time by condition interaction, $F(1,130) = .38$, MSE $= .27$, $p = .54$. For people with a criminal background there was no main effect of condition, $F(1,122) = 2.79$, $MSE = 1.34$, $p = .10$, but there was a main effect of time, $F(1,122) = 4.18$, MSE $= .19$, $p = .04$. However, there was also an interaction between time and condition, $F(1, 122) =$ 4.48, $MSE = .19$, $p = .04$. Simple main effects analyses revealed that the effect of time was significant only in the imagined interaction condition, $F(1,55) = 6.81$, $MSE = .22$, $p = .01$, not in the control condition, F, $F(1,67) = .00$, $MSE = .16$, $p = .96$. In the imagined interaction condition, future contact intentions for people with a criminal background was lower at time 2 than at time 1.

For physically disabled people, there was a main effect of condition, $F(1,139) = 4.11$, $MSE = .65$, $p = .05$, such that future contact intentions were greater in the imagined interaction condition than in the control condition. There was also a main effect of time, $F(1,139) = 3.95$, $MSE = .37$, $p = .05$, such that future contact intentions were more positive at time 2 than at time 1 in both conditions. There was not a time by condition interaction, $F(1,139) = .72$, $MSE = .37$, $p =$ $.40$.

Similarly, for rich people, there was a main effect of condition, $F(1,130) = 6.19$, $MSE =$ 1.04, $p = .01$, such that future contact intentions were greater in the imagined interaction condition than in the control condition. There was also a main effect of time, $F(1,130) = 3.87$, $MSE = .27$, $p = .05$, such that future contact intention were more positive at time 2 than at time 1 in both conditions. There was not a time by condition interaction, $F(1,130) = .61$, $MSE = .23$, $p =$ $.44$.

In Hypothesis 3b, it was predicted that there would be no difference in active or passive harm or facilitation between imagining interacting with a young adult and a control condition.

For active facilitation, there was no main effect of condition, $F(1,128) = .86$, $MSE = 1.33$, $p = .36$, or time, $F(1,128) = 1.67$, $MSE = .45$, $p = .20$, or a time by condition interaction, $F(1,128) = 1.67$, $MSE = .45$, $p = .20$. For active harm, there was no main effect of condition, $F(1,128) = .02$, $MSE = 1.03$, $p = .89$, or time, $F(1,128) = .34$, $MSE = .26$, $p = .56$, or a time by condition interaction, $F(1,128) = .69$, $MSE = .26$, $p = .41$. For passive facilitation, there was no main effect of condition, $F(1,128) = .66$, $MSE = 1.28$, $p = .42$, or time, $F(1,128) = 1.21$, $MSE = .30$, $p = .27$, or a time by condition interaction, $F(1,128) = .43$, $MSE = .30$, $p = .51$. For passive harm, there was no main effect of condition, $F(1,128) = .05$, $MSE = .98$, $p = .83$, but there was a main effect of time, $F(1,128) = 6.70$, $MSE = .30$, $p = .01$, such that passive harm tendencies were greater at time 2 than time 1. There was no time by condition interaction, $F(1,128) = .24$, $MSE = .30$, $p = .63$.

In Hypothesis 3c, it was predicted that active and passive harm would be lesser, but there would be no difference in active or passive facilitation, between imagining interacting with a person with a criminal background and the control condition. For active harm, there was no main effect of condition, $F(1,119) = .00$, $MSE = 1.23$, $p = .97$, or time, $F(1,119) = .60$, $MSE = .39$, $p = .44$, or a time by condition interaction, $F(1,119) = 1.24$, $MSE = .39$, $p = .27$. For passive harm, there was no main effect of condition, $F(1,119) = .74$, $MSE = 1.44$, $p = .39$, or time, $F(1,119) = .76$, $MSE = .56$, $p = .39$, or a time by condition interaction, $F(1,119) = 1.06$, $MSE = .56$, $p = .31$. For passive facilitation, there was no main effect of condition, $F(1,119) = 1.40$, $MSE = 1.79$, $p = .24$, or time, $F(1,119) = 1.77$, $MSE = .38$, $p = .19$, or a time by condition interaction, $F(1,119) = 2.31$, $MSE = .38$, $p = .13$. For active facilitation, there was no main effect of condition, $F(1,119) = 3.36$, $MSE = 1.58$, $p = .07$, but there was a main effect of time, $F(1,119) = 8.05$, $MSE = .42$, $p = .005$. However, there was also a significant time by condition interaction, $F(1,119) = 5.25$, MSE

= .42, p = .02. Simple slope analyses revealed that the effect of time was only significant in the imagined interaction condition, $F(1,54)$ = 12.55, MSE = .40, p = .001, not in the control condition, $F(1,65)$ = .16, MSE = .43, p = .69. Tendencies for active facilitation were lower in the imagined interaction condition at time 2 than time 1.

In Hypothesis 3d, it was predicted that active facilitation would be greater, passive harm would be lesser, and passive facilitation and active harm would be same when imagining interacting with a physically disabled person compared to the control condition. For active facilitation, there was no main effect of condition, $F(1,130)$ = 2.12, MSE = 1.03, p = .15, or time, $F(1,130)$ = 3.27, MSE = .42, p = .07, or a time by condition interaction, $F(1,130)$ = .08, MSE = .42, p = .78. For active harm, there was no main effect of condition, $F(1,130)$ = .94, MSE = 1.09, p = .33, or time, $F(1,130)$ = .46, MSE = .25, p = .50. But, there was a time by condition interaction, $F(1,130)$ = 6.38, MSE = .25, p = .01. Simple slopes analyses revealed that the effect of time was significant in the control condition, $F(1,65)$ = 4.33, MSE = .30, p = .04, but not the imagined interaction condition, $F(1,65)$ = 2.10, MSE = .20, p = .15. In the control condition, tendencies toward active harm were greater at time 2 than at time 1. For passive facilitation, there was no main effect of condition, $F(1,130)$ = 3.63, MSE = 1.00, p = .06, or time, $F(1,130)$ = 3.59, MSE = .31, p = .06, or a time by condition interaction, $F(1,130)$ = .01, MSE = .31, p = .91. For passive harm, there was no main effect of condition, $F(1,130)$ = 1.33, MSE = .82, p = .25, but there was a main effect of time, $F(1,130)$ = 4.45, MSE = .45, p = .04. There was also a time by condition interaction, $F(1,130)$ = 4.45, MSE = .45, p = .04. Again, the effect of time was only significant in the control condition, $F(1,65)$ = 7.78, MSE = .52, p = .01, not the imagined interaction condition, $F(1,65)$ = .00, MSE = .39, p = 1.00. In the control condition, tendencies toward passive harm were greater at time 2 than time 1.

In Hypothesis 3e, it was predicted that passive facilitation would be greater, active harm would be lesser, and active facilitation, and passive harm would be the same when imagining interacting with a rich person compared to the control condition. For active facilitation, there was a main effect of condition, $F(1,129) = 6.27$, $MSE = 1.46$, $p = .01$, such that tendencies toward active facilitation were greater in the imagined interaction condition than the control condition. There was no main effect of time, $F(1,129) = .32$, $MSE = .52$, $p = .57$, or time by condition interaction, $F(1,129) = .23$, $MSE = .52$, $p = .63$. For active harm, there was no main effect of condition, $F(1,129) = .90$, $MSE = 1.35$, $p = .34$, but there was a main effect of time, $F(1,129) = 3.94$, $MSE = .27$, $p = .05$. Tendencies toward active harm were greater at time 2 than time 1 in both conditions. There was no time by condition interaction, $F(1,129) = .34$, $MSE = .27$, $p = .56$. For passive facilitation, there was a main effect of condition, $F(1,129) = 9.50$, $MSE = 1.32$, $p = .003$, such that tendencies toward passive facilitation were greater in the imagined interaction condition than in the control condition at both time points. There was no main effect of time, $F(1,129) = 1.92$, $MSE = .39$, $p = .17$, or time by condition interaction, $F(1,129) = .13$, $MSE = .39$, $p = .72$. For passive harm, there was no main effect of condition, $F(1,129) = 2.08$, $MSE = .99$, $p = .15$, but there was a main effect of time, $F(1,129) = 6.08$, $MSE = .42$, $p = .02$. Tendencies toward passive harm were greater at time 2 than time 1 in both conditions. There was no time by condition interaction, $F(1,129) = .11$, $MSE = .42$, $p = .75$.

Table 11

Means and standard deviations for all main study variables as a function of imagined condition at time 1 and time 2.

	Time 1		Time 2	
	Imagined Interaction M (SD)	Nature Control M (SD)	Imagined Interaction M (SD)	Nature Control M (SD)
Young Adults				
Warmth	3.37 (0.72)	3.29 (0.66)	3.37 (0.82)	3.34 (0.63)
Competence	3.58 (0.63)	3.60 (0.70)	3.58 (0.75)	3.58 (0.71)
Admiration	2.49 (1.03)	2.45 (1.01)	2.64 (1.02)	2.36 (1.00)
Contempt	1.66 (0.74)	1.64 (0.72)	1.81 (0.76)	1.70 (0.84)
Envy	1.63 (0.94)	1.61 (0.83)	1.72 (0.86)	1.67 (0.95)
Pity	2.02 (0.88)	1.97 (0.82)	2.19 (0.95)	1.95 (0.90)
Future Contact Intentions	3.51 (0.82)	3.35 (0.95)	3.52 (0.81)	3.26 (1.00)
Active Facilitation	2.07 (0.79)	2.05 (0.78)	3.44 (0.93)	3.41 (0.92)
Active Harm	1.34 (0.78)	1.33 (0.74)	2.07 (0.78)	2.14 (0.87)
Passive Facilitation	3.66 (0.97)	3.39 (0.94)	3.79 (0.94)	3.72 (0.89)
Passive Harm	3.91 (0.76)	3.75 (0.94)	1.49 (0.82)	1.55 (0.84)
People with a Criminal Background				
Warmth	2.63 (0.56)	2.43 (0.75)	2.48 (0.67)	2.48 (0.69)
Competence	3.38 (0.63)	3.24 (0.82)	3.19 (0.78)	2.99 (0.78)
Admiration	1.31 (0.61)	1.18 (0.50)	1.38 (0.72)	1.27 (0.59)
Contempt	2.02 (0.89)	1.94 (0.84)	1.90 (0.78)	1.86 (0.87)

Table 11 (cont'd)

	Time 1		Time 2	
	Imagined Interaction *M (SD)*	Nature Control *M (SD)*	Imagined Interaction *M (SD)*	Nature Control *M (SD)*
People with a Criminal Background				
Envy	1.17 (0.55)	1.13 (0.47)	1.19 (0.66)	1.20 (0.54)
Pity	2.27 (0.76)	2.02 (0.83)	2.12 (0.85)	1.90 (0.74)
Future Contact Intentions	2.67 (0.87)	2.27 (0.86)	2.42 (0.88)	2.28 (0.90)
Active Facilitation	2.16 (0.88)	2.10 (0.95)	3.09 (0.95)	2.98 (1.12)
Active Harm	1.77 (0.89)	2.09 (1.10)	2.15 (0.73)	2.25 (0.96)
Passive Facilitation	3.54 (0.88)	3.04 (1.01)	3.36 (1.03)	3.28 (1.06)
Passive Harm	3.61 (0.94)	3.26 (1.12)	1.98 (1.02)	2.02 (1.00)
Physically Disabled People				
Warmth	4.07 (0.61)	3.94 (0.72)	3.91 (0.69)	3.78 (0.67)
Competence	3.32 (0.64)	3.14 (0.74)	3.17 (0.70)	3.03 (0.61)
Admiration	2.93 (1.11)	2.71 (1.04)	2.91 (1.11)	2.52 (1.11)
Contempt	1.39 (0.56)	1.34 (0.59)	1.44 (0.63)	1.43 (0.65)
Envy	1.14 (0.40)	1.13 (0.48)	1.26 (0.57)	1.19 (0.52)
Pity	3.25 (0.85)	3.16 (0.90)	3.02 (0.96)	2.59 (1.02)
Future Contact Intentions	3.45 (0.71)	3.20 (0.96)	3.54 (0.60)	3.40 (0.51)
Active Facilitation	1.73 (0.83)	1.72 (0.80)	3.95 (0.75)	3.75 (0.99)
Active Harm	1.34 (0.74)	1.35 (0.66)	1.65 (0.71)	1.93 (0.92)
Passive Facilitation	4.09 (0.70)	3.89 (0.92)	3.99 (0.80)	3.77 (0.85)

Table 11 (cont'd)

	Time 1		Time 2	
	Imagined Interaction *M (SD)*	Nature Control *M (SD)*	Imagined Interaction *M (SD)*	Nature Control *M (SD)*
	Physically Disabled People			
Passive Harm	4.12 (0.69)	3.86 (0.88)	1.36 (0.78)	1.67 (1.01)
	Rich People			
Warmth	2.96 (0.75)	2.90 (0.80)	2.96 (0.71)	3.10 (0.61)
Competence	4.13 (0.57)	3.95 (0.75)	4.01 (0.63)	3.88 (0.66)
Competence	3.32 (0.64)	3.14 (0.74)	3.17 (0.70)	3.03 (0.61)
Admiration	2.51 (0.99)	2.25 (0.87)	2.33 (0.94)	2.27 (0.97)
Contempt	1.56 (0.55)	1.64 (0.78)	1.68 (0.62)	1.75 (0.76)
Envy	2.81 (1.29)	2.64 (1.13)	2.75 (1.14)	2.54 (1.10)
Pity	1.37 (0.54)	1.52 (0.67)	1.40 (0.58)	1.52 (0.80)
Future Contact Intentions	2.65 (0.77)	2.30 (0.78)	2.71 (0.79)	2.44 (0.85)
Active Facilitation	1.96 (0.90)	2.14 (0.87)	3.39 (0.84)	3.06 (1.08)
Active Harm	1.28 (0.69)	1.43 (0.79)	2.13 (0.89)	2.22 (0.93)
Passive Facilitation	3.50 (0.90)	3.04 (1.11)	4.09 (0.84)	3.62 (1.01)
Passive Harm	4.19 (0.77)	3.75 (1.02)	1.45 (0.89)	1.66 (0.95)

Discussion

The imagined contact hypothesis proposes that a simple guided imagery exercise can improve intergroup interactions and further enhance the classic prejudice-reducing effects of actual intergroup contact (Crips & Turner, 2009). Numerous studies in the past decade have demonstrated its effectiveness at reducing a broad range of intergroup attitudes, behaviors, and beliefs (Miles & Crisp, 2014). However, studies show limitations to imagined contact's effectiveness (Turner et al., 2007; Crisp & Turner, 2009). Furthermore, other research, namely the Stereotype Content Model (Fiske et al., 2002), demonstrated that prejudice comes in many forms and different groups are the target of different prejudices, emotions, and behaviors depending on how they are stereotyped on the dimensions of warmth and competence (Cuddy et al., 2007). This theory suggests that attempts at prejudice reduction need to be sensitive to these differences and should be explicit about which type of prejudice is being targeted. Previous studies showed that imagined intergroup contact differentially improved warmth and competence stereotypes depending on initial perceptions of groups on these two dimensions of stereotype content (Brambilla et al., 2012). In the current study, I sought to replicate and extend previous findings on the relationship between imagined intergroup contact and the stereotype content model by: 1) examining differences in participants' emotional reactions to groups following imagined intergroup contact; 2) examining differences in participants' behavioral tendencies toward groups following imagined intergroup contact; 3) testing whether warmth or competence stereotypes are affected more by imagined intergroup contact; and 4) measuring the effects of imagined intergroup contact over time.

In the study, participants were asked to imagine one of five potential scenarios. In four of the scenarios, participants imagined interacting with a member of one of four social groups. The

four groups were selected to represent one of the four quadrants of the Stereotype Content Model, depending on perceptions of their warmth and competence. In another scenario, participants were asked to imagine a neutral nature scene. Analyses then tested whether warmth and competence perceptions of the four groups differed depending on which condition participants were assigned. The analyses also tested whether emotions and behavioral tendencies toward the groups differed according to the hypothesized emotions and behavioral tendencies associated with different combinations of warmth and competence in the Stereotype Content Model. Further analyses examined how imagined interactions led to specific behavioral tendencies via stereotype perceptions and intergroup emotional reactions. Finally, analyses examined whether relationships between condition, stereotype content, intergroup emotions, and behavioral reactions changed over the span of a week. Overall, hypotheses were largely unsupported. A summary of the results and possible explanations for the unpredicted findings are discussed below.

Summary and Explanation of Results

The first hypothesis was a replication of findings by Brambilla and colleagues (2012). Specifically, this hypothesis sought to demonstrate that imagined intergroup contact would affect warmth and competence stereotypes only when groups were previously perceived as low on those dimensions. Thus, compared to the nature control condition participants in the imagined contact conditions were expected to view people with a criminal background as both more warm and more competent, physically disabled people as more competent but no more warm, rich people as more competent but no more competent, and young adults as neither more warm nor more competent. Comparisons of all four imagined contact conditions with the nature control condition indicated no differences in either warmth or competence for any of the four groups.

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For some sub-hypotheses this lack of difference indicates support, for others it does not. This pattern of no difference was only predicted for certain groups on certain dimensions (i.e., physically disabled/warmth, rich people/competence, young adults/warmth and competence). For the rest of the dimensions and groups, the lack of difference means that the imagined intergroup contact was not successful at improving stereotype perceptions above a nonsocial imagined scene.

Although not significant, the pattern of results for each group was in the predicted direction. The means of both warm and competence perceptions of each group were higher in the imagined contact condition compared to the control condition. Therefore, it is possible that the sample was simply not large enough to provide ample power to detect these differences. A post-hoc power analysis indicates that power to detect the observed effect sizes with the current sample ranged from only .03 to .39 for the warmth and competence analyses. However, some researchers have recommended examination of confidence intervals in determining if an adequate sample size was achieved, in lieu of post-hoc power analyses (see Levine & Enson, 2001). The confidence intervals around the effect sizes indicate that the data are consistent with the possibility of large differences between the imagined contact condition and nature control condition (up to .65 for warmth for people with a criminal background). Thus, the confidence intervals suggest that a larger sample may yield more significant differences. However, the confidence intervals are also quite large and indicate the true effect size could be nothing or even in the opposite direction. Additionally, many of the effect sizes are not substantially smaller than the average effect size of $d = .35$ of imagined intergroup contact obtained by Miles and Crisp (2014). Thus, definitive conclusions cannot be drawn without further investigation.

The small differences may have also been a result of the choice of specific groups representing the four quadrants. Although, the groups in the current study were chosen because they were squarely within the four quadrants and they were significantly different from each other, they are not extreme representations of warmth and competence (or lack thereof). For example, in the nature control condition, the low competence groups of people with a criminal background and physically disabled people had means of 3.24 and 3.14, respectively, well above the midpoint of the 1-5 scale. Similarly, the low warmth groups of people with a criminal background and rich people, had means of 2.43 and 2.90, respectively. Thus, none of the groups were rated toward the low end of the scale on either warmth or competence. It's possible that this pattern represents a form of systematic measurement error. Winkler, Kanouse, and Ware (1982, p. 555) described acquiescence response set as the "tendency to agree with attitude statements regardless of content." This bias may have led participants to rate social groups toward the positive end of the scale, regardless of their true opinions. Alternatively, both the pleasant interaction and the nature scene may have induced transient positive mood that leaked into evaluations of all social groups (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

I also tried to choose groups that were not currently the center of widespread sociopolitical debates (e.g., racial/ethnic minority groups, LGBT people) to try to minimize the influence of socially desirable or politically correct responses. Stereotypes about these less controversial groups in the current study may have been more variable or less coherent. In contrast, Brambilla and colleagues (2012) used immigrant groups that were particularly controversial and prominent in the country in which the study was conducted (Italy). Imagining interacting with groups with stronger, more consistent associated stereotypes may lead to more exaggerated stereotype differences.

Other past research has studied imagined intergroup contact with outgroups in the categories of ethnic groups, nationality, mental illness, disability, age, sexual orientation, religion and weight. Although imagined contact reduced intergroup bias for each of these groups, nationality and age demonstrated the strongest effects. Perceptions about people with a criminal background and rich people do not fit into one of these previously studied types of groups, and may represent a category that does not respond to imagined intergroup contact.

Of course, we must always maintain possibility that the imagined contact condition manipulation was not sufficiently strong enough to produce more positive warmth and competence stereotypes. In their meta-analysis, Miles and Crisp (2014) found that the imagined contact effect was stronger when participants were given more detail about the situation in which the interaction took place. Following the example from Husnu & Crisp (2010a), the imagined contact instruction in the current study asked participants to specifically focus on when and where they might meet the outgroup member. However, the imagined interaction may have been more powerful if I had provided participants with these details. Research indicates that mental simulation is effective at influencing behavior because it activates mental schemas and cognitive representations associated with those behaviors (Schank & Abelson, 1977). Providing more detail about the context may help to make schemas related to interacting with pleasant strangers more easily accessible, and thus be more likely to be activated in response to an outgroup member.

It is possible that the current study represents a true failure to replicate Brambilla et al.'s study (2014), and imagined intergroup contact does not affect stereotype perceptions. Many major models of attitudes distinguish between emotional and cognitive components of attitudes (Abelson, Kinder, Peters, & Fiske, 1982; Crites, Fabrigar, & Petty, 1994; McGuire, 1969). The

implication of this distinction is that attempts to change attitudes will be most effective when they are congruent with the type of attitude. Rational arguments will more effective at changing attitudes that are cognitively-based on beliefs, judgments, or thoughts (such as stereotype perceptions), whereas emotional appeals are necessary to change attitudes based in affective feelings or drives (intergroup emotions, prejudice; Edwards, 1990). It is possible that imagined intergroup contact could have differential impacts on cognitive or affect-based attitudes. The current research suggests that imagined intergroup contact may tap into emotion-based intergroup attitudes, rather than cognitively-based attitudes (which stereotypes could be considered). So, although Miles & Crisp (2014) found that imagined intergroup contact reliably improved intergroup attitudes, it is simultaneously possible for imagined intergroup contact to not be effective at improving stereotype perceptions. Future research should more carefully attempt to distinguish these cognitive and attitude-based attitudes and determine which is most susceptible to change by imagined intergroup contact.

Hypothesis 2 was predicated on the stereotype differences hypothesized in Hypothesis 1. Since the proposed differences in stereotype perceptions were not observed, it is not surprising that the corresponding emotional differences were also not observed. Specifically, I predicted that compared to the nature control condition participants in the imagined contact conditions would feel less contempt toward people with a criminal background, less pity toward physically disabled people, and less envy toward rich people. Emotional reactions to young adults were not expected to differ by condition. No differences were observed for any of the four emotions for any of the four groups. As with stereotype perceptions, this indicates that some sub-hypotheses were supported and others were not. The lack of differences in was predicted for people with a criminal background on admiration, pity, and envy; for physically disabled people on admiration,

contempt, and envy; for rich people on admiration, contempt, and pity; and for young adults on all four emotions. However, the lack of significant results for the emotions that were expected to differ indicate that the imagined intergroup contact did not improve emotional reactions toward social group members.

As with Hypothesis 2, Hypothesis 3 was predicated on stereotype differences hypothesized in Hypothesis 1. However, results were not as straight forward as for emotional reactions. First, it was predicted that future contact intentions would be higher after imagined intergroup contact for all of the groups. This prediction was confirmed for people with a criminal background and rich people, but not young adults or physically disabled people.

Next, it was predicted that compared to the nature control condition, participants in the imagined contact conditions would report behavioral tendencies consistent with stereotype dimension differences. Specifically, active and passive harm were expected to be lower for people with a criminal background; passive harm was expected to be lower and active facilitation was expected to be higher for physically disabled people; and passive facilitation was expected to be higher and active harm was expected to be lower for rich people. Again, no differences were expected for young adults. Active and passive harm did not differ by condition for any of the social groups. Active facilitation was higher after imagining an interaction with a person with a criminal background compared to the control condition. Passive facilitation was higher after imagining an interaction with a physically disabled person and a rich person compared to the control condition. As with the previous hypotheses, some null results were predicted and the lack of significant effects supports those predictions. However, the significant differences that were observed were not predicted.

The lack of predicted differences for the emotion and behavioral variables actually lends support to the Stereotype Content Model. Because imagined contact did not affect warmth and competence stereotype dimensions as hypothesized, changes in emotions and behavioral tendencies corresponding to those stereotype changes would not be expected. The Stereotype Content Model contends that cognitive stereotypes lead to behavior, mediated by emotions, in a theoretical chain reaction (Cuddy et al., 2007). Thus, without the first step of the chain (stereotype change) triggered, one would not expect intergroup emotions to change and in turn behavioral tendencies would also be unaffected. Correlations in Tables 4 through 7 also provide some evidence that the relationships posited by the Stereotype Content Model between stereotypes, emotions, and behavioral tendencies was present. For young adults (Table 7), perceptions of warmth and competence were correlated with feelings of admiration, which was in turn correlated with active and passive facilitation. For people with a criminal background (Table 6), perceptions of warmth and competence were correlated with contempt, which was in turn correlated with active and passive harm. For physically disabled people (Table 5), perceptions of warmth and competence were correlated with pity, which was in turn correlated with active facilitation (but not passive harm). Rich people (Table 4) was the only group that did not show the predicted relationships, as envy was not affiliated with warmth and competence or active harm and passive facilitation. Of course, more sophisticated analyses would be necessary to examine these relationships in isolation. However, overall, there is reason to believe that stereotype content and emotions work together to determine behavioral tendencies.

This chain reaction of the Stereotype Content Model was predicted in Hypothesis 4. Specifically, it was predicted that in the imagined contact conditions warmth and competence stereotypes and the appropriate intergroup emotion (corresponding to the particular groups' on

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warmth and competence) would mediate the relationship between condition and the appropriate

behavioral tendency (corresponding to the particular groups' warmth and competence).

However, none of the indirect effects were significant and only a handful of the potential direct

effects were significant. This lack of significant differences is not surprising given the lack of

differences in warmth and competence between the imagined interaction conditions and nature

control condition.

However, some behaviors did differ between the imagined contact conditions and the

control condition. Future contact intentions as well as active and passive facilitation were higher

in some of the imagined contact conditions. This is consistent with Miles and Crisp's (2014)

meta-analysis showing that imagined contact had a larger effect on behavioral intentions that on

attitudes. The authors argue that this is consistent with theories of mental simulation that posit

mental simulation and memory activation directly initiate associated behaviors (Dijksterhuis,

Bargh, & Mark, 2001; Kosslyn et al., 2001). The current findings provide further evidence that

imagined contact may not affect behavior through its effect on attitudes, but may rather intervene

closer to the actual behavior. Thus, although the behavioral differences expected as a result of

stereotype change did not occur, imagined intergroup contact may have still created differences

in behavioral intentions through another more proximal path. Future research should explore this

possible more proximal mechanism.

The fact that some behavioral tendencies were more likely to be affected by imagined

contact than others may relate to the valence of the behaviors. Both active and passive forms of

facilitation demonstrated differences as a result of imagined contact. These are more positive and

socially acceptable behaviors. It is a well-known phenomenon that when self-reporting, people

are biased toward positive self-descriptions, independent of actual behaviors and attitudes. One

dimension of social desirability is the tendency for people to "deny socially-deviant impulses and claim, sanctimonious, 'saint-like' attributes." (Paulhus, 2002, p. 64). Thus, even if they felt that they may engage in harmful activities, people may have been reluctant to report their intentions to engage in what is generally considered unacceptable or antisocial behavior.

Some measurement limitations should also be noted. Internal consistency for some of the emotion and behavioral tendencies was not ideal. According to rule-of-thumb guidelines (George & Mallery, 2003), internal consistency for admiration ranged from questionable ($\alpha = .65$) to good ($\alpha = .81$) depending on the social group. Contempt ranged from unacceptable ($\alpha = .25$) to questionable (.61). Pity fell in the unacceptable ($\alpha = .49$) to questionable range ($\alpha = .64$). Active harm was squarely in the unacceptable range ($\alpha = .22$ to .35), and active facilitation was acceptable ($\alpha = .71$) to poor ($\alpha = .58$). The multiple observed differences for passive facilitation may be partially due to the fact that its internal consistency was good or excellent for each of the social groups. Additionally, the programming error meant that passive harm was only measured with one item. It should be noted that Cronbach's alpha is a function not only of the average inter-item correlations, but also the number of items; holding the average inter-item correlation constant, increasing the number of items will improve the value. The measures discussed above are only two-item measures and would not be expected to have high alpha values. However, even with this consideration, the current values are still rather poor. These measurement problems may have compromised the ability to detect differences as a result of imagined intergroup contact.

In Hypotheses 1 through 3, it was also predicted that changes in warmth and warmth-related emotions and behaviors would change more than competence and competence-related emotions and behaviors. None of these hypotheses were supported. This is largely attributable to

the lack of significant differences between the imagined contact conditions and the nature control condition.

Hypothesis 5 concerned how imagined intergroup contact's effect on stereotype perceptions, emotions, and behavior might change over time. I predicted that the relationships predicted between imagined intergroup contact and the outcomes in Hypothesis 1 through 3 would still be observed a week later, but that the effects would be weaker. However, the results told a more complicated story. Several perceptions, emotions, and behaviors toward groups, worsened over time. Perceptions of people with a criminal background's competence declined over time, as did future contact intentions and tendency for active facilitation. Perceptions of physically disabled people's warmth declined over time at the same time that people's feelings of pity toward them and tendency to exhibit both active and passive harm toward them increased. These patterns were particularly peculiar because many of them were either stronger or only observed in the control condition, rather than the imagined interaction condition (which might be expected). The only positive improvement over time was that future contact intentions toward rich people increased over time; however, tendencies for active and passive harm toward them also increased.

These effects suggest that it is possible that the simple act of engaging in a mental simulation improved social perceptions above a more neutral state, regardless of whether the scene was social or not, resulting in no difference in group ratings at time 1. The fact that perceptions deteriorated only or to a greater degree in the control condition may indicate that the social content of the imagined intergroup contact prevented some of the decline in intergroup outcomes compared to the nature scene. However, the main purpose of including this analysis was to examine how long-lasting imagined intergroup contact's effects were. Because imagined

intergroup contact did not produce the predicted condition differences at time 1, it is not possible with the current data to adequately test this question. To the extent that imagined intergroup contact did affect participants' perceptions of groups' warmth and competence, there is no evidence that these evaluations declined over a week period.

Taken together the current results suggest that imagined intergroup contact is not able to influence people's stereotypes about outgroup members. This failure to replicate previous findings to the contrary indicates a potential limit to the power of imagined intergroup contact as a tool for prejudice reduction. Although previous evidence indicates that imagined intergroup contact is mostly successful at improving intergroup attitudes (Miles & Crisp, 2014), the current research suggests that the underlying cognitions may be more resistant to change. Stereotypes represent culturally shared schemas of social groups, and knowledge of their content may not necessarily correspond to endorsement of their underlying veracity (Arkes & Tetlock, 2004). These stereotypes are also deeply ingrained and may be more resistant to change than attitudes (Devine, 1989). Imagined intergroup contact may be more successful at changing attitudes than these cognitive stereotypes. One possibility is that imagined intergroup contact changes attitudes long enough to enable a positive real-life interaction that may be more capable of chipping away at these underlying cognitive representations.

The results also lend limited support to the Stereotype Content Model and associated BIAS model. No differences in intergroup emotions or behavioral tendencies were found. However, these differences would not be expected without the corresponding changes in warmth and competence stereotypes. Because imagined intergroup contact did not change groups' standing on warmth and competence, the emotions and behavioral tendencies expected for other types of prejudice were not observed.

Limitations and Future Directions

Perhaps the most consequential limitation of the current study is the possibility that the imagined intergroup contact manipulation was not strong enough to produce the predicted effects. It is important to determine if this is true by replicating the study with a stronger induction in order to more definitively conclude if the lack of significant findings really indicate that imagined interactions do not affect stereotype content. A stronger induction would include more elaborate instructions about the context of the imagined interaction. The instructions will probably be most effective if they ask participants to imagine scenes that participants are likely to find themselves in the course of everyday life. This might involve telling participants to imagine striking up a conversation with the outgroup member while grabbing a coffee after class at the local coffee shop, while seated next to the outgroup member on a flight on their way home for the holidays, or at the local bar on Friday night. Providing more detail about the context of the interaction may help participants more easily imagine how such an interaction might occur, and how they and the other person would react in such a situation.

Another limitation of this study is the previously discussed measurement problems for the emotion and behavioral tendency variables. More reliable measures of both are necessary to confidently test hypotheses. Additionally, emotions, like other self-reports, are vulnerable to self-editing and concerns of demand characteristics. It is possible that participants were leery of reporting such strong negative emotions, like contempt, toward a social group for fear of appearing callous or hostile. Future studies could include alternative measures of emotion, such as an Implicit Association Test, that may more accurately capture participants' unfiltered emotions. Similarly, what people say they will do and what they actually do are often incongruent (Sheeran, 2002). The current study only captured behavioral intentions. Additional

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studies may consider including actual measures of behavior (such as measures of how close to an outgroup member a person chooses to sit) that may provide more insight into how imagined intergroup contact affects behavior.

The sample was mostly composed of White women in addition to being exclusively drawn from a college population. Thus, the sample does not represent the composition of even the American public, let alone the entire human race. Many scholars have cautioned against assuming that results using samples such as these are adequate to draw conclusions about basic human psychological processes (Henrich, Heine, & Norenzayan, 2010). For example, studies have uncovered a number of differences between college students and other populations on matters related to social attitudes and perceptions. One important difference is that American college students are more tolerant and supportive of social diversity, and are more likely to mask or rationalize negative attitudes toward outgroups (Henry, 2009). Future studies should collect a sample from outside a college setting in order to increase the representativeness of any potential findings. Because of the drastically unequal sample sizes, gender comparisons are not possible with the current data. However, some exploratory analysis reveals trends that suggest there may be some gender differences in the effects of imagined group contact on stereotype perceptions. Future studies should target men in data collection more thoroughly explore these potential gender differences.

As mentioned previously, it is also possible that imagined intergroup contact is not effective for the specific social groups featured in the current manipulations. Future research should more thoroughly explore a broad range of categories of social groups using multiple representations of each group. These studies may provide the bonus insight of uncovering the underlying characteristics that distinguish which outgroups are prime candidates for imagined

intergroup interventions. For example, other research has classified groups based on the perceived controllability of membership in the group, entitativity of the group, and visibility of the categorization.

Additionally, to reinforce the imagined interaction, participants were asked to describe what they imagined. These descriptions may serve as a valuable source of information on the processes underlying imagined interaction. Content analysis of the descriptions may uncover themes common to people for whom imagine interaction was more successful and provide insight into the necessary components to ensure prejudice reduction. For example, descriptions used by participants who had more positive outcomes may have used more positively-valenced words in their descriptions, or been more elaborate and detailed in their description of the conversation. Descriptions could be examined for whether they contain competence or warmth-related words. Differences in whether participants actually describe the content of the conversation rather than just the act of talking may also affect subsequent intergroup outcomes. If participants do describe the content of the conversation, that content could also be coded for other factors such as whether they talked about things they had in common or not.

A final limitation of the current study relates to the statistical methods. The analyses included many variables and tested many potential relationships. Although this allowed me to examine a wide breadth of potential effects and thoroughly probe the effects of intergroup contact, it may have introduced statistical artifacts. As the number of significant tests performed increases, the probability of committing a Type I error also increases (Shaffer, 1995). Thus, some of the significant differences found among the behavioral tendency variables may be spurious rather than reflecting real differences between conditions. Replications of the current study would enable a better understanding of the true effects.

Conclusion

In summary, the results of the current study did not support the prediction that imagined intergroup contact would differentially change participants' warmth and competence stereotypes about outgroup members. This failure to replicate previous studies identifies a potential limitation to the capabilities of imagined intergroup contact for prejudice reduction. Culturally-shared cognitive representations of outgroups may be more resistant to change than personal attitudes toward members. The results, however, do suggest that emotions and behavioral intentions are dependent on associated warmth and competence stereotypes, lending support to the Stereotype Content and BIAS models. However, these conclusions are based on null results for which there may be many explanations. Future research is necessary to validate these findings.

A major strength of the current study was the examination of perceptions over time. Although, there were no difference by condition at the first measurement, many ratings of stereotypes, intergroup emotions, and behavioral tendencies toward groups changed within a week. This information is important for determining the proper use of imagined intergroup contact as a prejudice reduction technique (i.e., how long before an actual interaction should it be implemented).

Combined with previous research, these findings demonstrate the powerful hold that stereotypes have on intergroup relations. It is possible that we are able to, at least temporarily, change attitudes and behavioral intentions, but without underlying changes in cognitive structures, real intergroup harmony may not be achieved. They also demonstrate the importance of considering multiple dimensions of prejudice when designing techniques to improve

intergroup outcomes. Because not all types of prejudice are the same, different interventions may

be necessary for different categories of groups.

APPENDICES

APPENDIX A: Instructions and Experimental Manipulation

       Beginning Instructions. Because there is a shortage of HPR participants this semester, the clinical and social psychology researchers have teamed up to conduct two different studies in one session. In general, we are all interested in perceptions of various social groups. In the first study of the session, the clinical researchers will have you do a guided imagery meditation. In the second study of the session, the social researchers will ask you questions about your opinion of relations between social groups in the United States.

There will also be the opportunity to take part in a follow-up online survey. If you complete the short follow-up survey, you will receive an additional HPR credit as well as be entered into a drawing for the chance to win a $200 Amazon gift card. Watch for an email about the second survey in your MSU email in a week and/or look for the experiment called "**Social Groups Part 2**" on the HPR website. You are only eligible for the drawing if you complete BOTH surveys!

       Experimental Manipulation. Now you will begin the first study for the clinical research team.

       Experimental conditions. You will partake in a short guided imagery meditation. Please take a minute to imagine yourself meeting a stranger for the first time. This stranger happens to be (physically handicapped person/person with a criminal background /a rich person/young adult). While imagining this, think specifically of *when* (e.g. next Thursday) and *where* (e.g. the bus stop) this conversation might occur. During the conversation imagine you find out some interesting, positive, and unexpected things about the (physically handicapped person/ person with a criminal background /rich person/young adult) person.

Nature control condition. You will partake in a short guided imagery meditation. Please take a minute to imagine you are walking in the outdoors. Try to imagine aspects of the scene about you (e.g., is it a beach, a forest, are there tress, hills, what's on the horizon).

Reinforcement in experimental and nature control conditions. Describe as many aspects of the scenario you just imagined as possible.

Transition Instructions. That concludes the first study. Now you will move onto the second study for the social research team. You will be asked a series of questions about your perceptions of various social groups.

APPENDIX B: Stereotype Content

(Cuddy et al., 2007; Fiske et al., 1999, 2002)

For each group, please rate how much each trait describes members of that group (*1-not at all to 5-extremely*).

Warmth items:

1. Warm

2. Nice

3. Friendly

4. Sincere

Competence items:

1. Competent

2. Confident

3. Skillful

4. Able

APPENDIX C: Intergroup Emotions

(Cuddy et al., 2007)

To what extent do you *currently* feel each of the following emotions toward each group (*1-not at all to 5-extremely*).

Contempt items:

1. Contempt

2. Disgust

Admiration items:

1. Admiration

2. Pride

Pity items:

1. Pity

2. Sympathy

Envy items:

1. Envy

2. Jealousy

APPENDIX D: Future Contact Intentions

(Crisp & Husnu, 2011)

Think about the next time you might find yourself in a situation where you could interact with each of the following groups (e.g., waiting for a bus, with a friends in a coffee shop, etc.). Please answer each of the following questions about those interactions (*1-not at all to 5-extremely*).

1. How likely do you think it is that you would strike up a conversation?

2. How interested would you be in striking up a conversation?

3. In general, how much do you intend to interact with *social group* in the future?

4. In general, how much do you expect to enjoy interacting with *social group* in the future?

5. How important do you think it is to learn more about *social group* and the problems they face?

6. How much time do you think you might spend learning about the problems *social group* face?

7. How important do you think interacting with *social group* is?

8. How willing would you be to participate in a discussion group that includes *social group* that will focus on issues *social group* faces?

9. How willing would you be to attend a trip to learn more about *social group*?

APPENDIX E: Behavioral Tendencies

(adapted from Cuddy et al., 2008)

Imagine you are partaking in a community service project. The project involves assembling care packages that will be sent to soldiers serving overseas. You will be assigned another person as a teammate. Each team that assembles at least 500 care packages within a week will win a $100 Amazon gift card. Additionally, individual work will be recorded and the person who assembles the most care packages overall will win an extra $50 gift card. Please rate how likely it is that you would do each of the following behaviors if your partner was each of the following people (*1-not at all likely to 5-extremely likely*).

Active Facilitation items:

1. Do more work to help my partner

2. Share tips with my partner

Active Harm items:

1. Take undue credit for my partner's work

2. Tell the project organizers (i.e., tattle) if I don't think my partner is doing his or her share

Passive Facilitation items:

1. Accept my partner's ideas

2. Take my partner's ideas seriously

Passive Harm items:

1. Avoid meeting with my partner

APPENDIX F: Prior Contact

(Husnu & Crisp, 2010a)

Amount of prior contact:

Please indicate how often you interact with members of each group (*1-none to 7-a lot*).

1. How many *social group* do you know?

2. In everyday life, how often do you encounter *social group*?

3. In everyday life, how frequently do you interact with *social group*?

4. In everyday life, how much contact do you have with *social group*?

Quality of prior contact:

Please characterize your previous interactions with members of each group (*1 to 7*).

1. Superficial-deep

2. Natural-forced

3. Unpleasant-pleasant

4. Competitive-cooperative

5. Intimate-distant

6. How positively do you view *social group?* (1 to 7).

Group Membership:

Are you a member of any of the following social groups (*check all that apply)?*

1. Rich people

2. Young adults

3. Physically disabled people

4. People with a criminal background

APPENDIX G: Social Desirability Scale

(short form of Marlowe-Crowne Social Desirability Scale, Ballard, 1992)

Please indicate the extent to which you agree with each of the following statements about yourself (*1-strongly disagree to 5-strongly agree*).

1. I sometimes feel resentful when I don't get my way.

2. On a few occasions, I have given up doing something because I thought too little of my ability.

3. There have been times when I felt like rebelling against people in authority even though I knew they were right.

4. No matter who I'm talking to, I'm always a good listener.

5. I can remember "playing sick" to get out of something.

6. There have been occasions when I took advantage of someone.

7. I'm always willing to admit when I make a mistake.

8. I sometimes try to get even rather than forgive and forget.

9. When I don't know something I don't at all mind admitting it.

10. I am sometimes irritated by people who ask favors of me.

11. I have never deliberately said something that hurt someone's feelings.

APPENDIX H: Motivation to Control Prejudice Reactions

(Dunton & Fazio, 1997)

To what extent do you agree with each of the following statements (*1-strongly disagree to 5-strongly agree*)?

1. In today's society it is important that one not be perceived as prejudiced in any manner.

2. I always express my thoughts and feelings, regardless of how controversial they might be.

3. I get angry with myself when I have a thought or feeling that might be considered prejudiced.

4. If I were participating in a class discussion and a student who was from a different social group than me expressed an opinion with which I disagreed, I would be hesitant to express my own viewpoint.

5. Going through life worrying about whether you might offend someone is just more trouble than it's worth.

6. It's important to me that other people not think I'm prejudiced.

7. I feel it's important to behave according to society's standards.

8. I'm careful not to offend my friends, but I don't worry about offending people I don't know or don't like.

9. I think that it is important to speak one's mind rather than to worry about offending someone.

10. It's never acceptable to express one's prejudices.

11. I feel guilty when I have a negative thought or feeling about a person of another race, gender, or sexuality.

12. When speaking to a person from a minority group, it's important to me that he/she not think I'm prejudiced.

13. It bothers me a great deal when I think I've offended someone, so I'm always careful to consider other people's feelings.

14. If I have a prejudiced thought or feeling, I keep it to myself.

15. I would never tell jokes that might offend others.

16. I'm not afraid to tell others what I think, even when I know they disagree with me.

17. If someone who made me uncomfortable sat next to me on a bus, I would not hesitate to move to another seat.

APPENDIX I: Demographics

1. What is your gender? _____ Female _____ Male _____ Other/Prefer not to say

2. What is your age? _____

3. What is the zip code of the town where you grew up? _____

4. What is the zip code of the town where you currently live? _____

5. What year are you in school?

   _____ 1st year _____ 2nd year _____ 3rd year

   _____ 4th year _____ 5th year _____ 6th year or higher

6. Were you born in the U.S.? _____ Yes _____ No

   a. If no, where were you born? _____

   b. At what age did you come to the U.S.? _____ years of age

7. What is your racial group?

   _____ White / Caucasian

   _____ Black / African American

   _____ Asian or Pacific Islander

   _____ Hispanic / Latino / Latina

   _____ Native American / American Indian

   _____ Multiracial / Multiethnic (please describe) _____

   _____ Other (please describe) _____

8. How important would you say your religion is in your life?

   1   2   3   4   5   6   7

   Not at all   *Extremely*

   Important   *Important*

9. How would you describe your political views?

   1   2   3   4   5   6   7

   Very   *Very*

   Liberal   *Conservative*

10. Are you currently employed? _____ Yes _____ No

11. How would you describe your economic resources growing up?

_____ Very poor, not enough to get by

_____ Barely enough to get by

_____ Had enough to get by but no extras

_____ Had more than enough to get by

_____ Well to do

_____ Extremely well to do

12. How would you describe your economic resources currently?

_____ Very poor, not enough to get by

_____ Barely enough to get by

_____ Had enough to get by but no extras

_____ Had more than enough to get by

_____ Well to do

_____ Extremely well to do

13. What is the highest level of education attained by your mother/father?

_____ Less than high school

_____ High school/GED

_____ Some college

_____ 2-year college degree (Associate's)

_____ 4-year college degree (BA, BS)

_____ Master's degree

_____ Doctoral degree or Professional degree (JD, MD)

REFERENCES

REFERENCES

Abele, A. E., & Bruckmüller, S. (2011). The bigger one of the "big two"? Preferential processing of communal information. *Journal of Experimental Social Psychology, 47,* 935-948.

Abelson, R. P., Kinder, D. R., Peters, M. D., & Fiske, S. T. (1982). Affective and semantic components in political person perception. *Journal of Personality and Social Psychology, 42*(4), 619-630.

Allport, G. W. (1954). *The Nature of Prejudice.* Cambridge, MA: Addison-Wesley.

Arkes, H. R., & Tetlock, P. E. (2004). Attributions of implicit prejudice, or "would Jesse Jackson 'fail' the implicit association test?" *Psychological Inquiry, 15*(4), 257-278.

Asch, S. E. (1946). Forming impressions of personality. *Journal of Abnormal and Social Psychology, 41,* 258-290.

Ashmore, R. D., & Del Boca, F. K. (1981). Conceptual approaches to stereotypes and stereotyping. In D. L. Hamilton (Ed.), *Cognitive processes in stereotyping and intergroup behavior* (pp. 1-35). Hillsdale, NJ: Erlbaum.

Ballard, R. (1992). Short forms of the Marlowe-Crowne social desirability scale. *Psychological Reports, 71,* 1155-1160.

Bigler, R. S., & Hughes, J. M. (2010). Reasons for skepticism about the efficacy of simulated social contact interventions. *American Psychologist, 65*(2), 132-133.

Birtel, M. D., & Crisp, R. J. (2012). Imagining intergroup contact is more cognitive difficult for people higher in intergroup anxiety but this does not detract from its effectiveness. *Group Processes & Intergroup Relations, 15*(6), 744-761.

Brambilla, M., Ravenna, M., & Hewstone, M. (2012). Changing stereotype content through mental imagery: Imagining intergroup contact promotes stereotype change. *Group Processes & Intergroup Relations, 15*(3), 305-315.

Brewer, M. B. (1991). The social self: On being the same and different at the same time. *Personality and Social Psychology Bulletin, 17,* 475-482.

Brewer, M. B. (2003). Optimal distinctiveness, social identity, and the self. In M. R. Leary & J. P. Tangney (Eds.), *Handbook of self and identity* (pp. 480-491). New York, NY: Guilford.

Brown, R., & Hewstone, M. (2005). An integrative theory of intergroup contact. *Advances in Experimental Social Psychology, 37,* 255-343.

Cacioppo, J. T., Gardner, W. L., & Bernston, G. G. (1997). Beyond bipolar conceptualizations and measures: The case of attitudes and evaluative space. *Personality and Social Psychology Review, 1*, 3-25.

Cameron, L., Rutland, A., Turner, R. N., Holman-Nicolas, R., & Powell, C. (2011). Changing attitudes with a little imagination: Imagined contact effects on young children's intergroup bias. *Anale de Psychologia, 27*(3), 708-717.

Crisp, R. J., & Husnu, S. (2011). Attributional processes underlying imagined contact effects. *Group Processes & Intergroup Relations, 14*(2), 275-287.

Crisp, R. J., Husnu, S., Meleady, R., Stathi, S., & Turner, R. N. (2010). From imagery to intention: A dual route model of imagined contact effects. *European Review of Social Psychology, 21*(1), 188-236.

Crisp, R. J., Stathi, S., Turner, R. N., & Husnu, S. (2008). Imagined intergroup contact: Theory, paradigm, and practice. *Social and Personality Psychology Compass, 2,* 1-18.

Crisp, R. J., & Turner, R. N. (2009). Can imagined interactions produce positive perceptions? *American Psychologist, 64*(4), 231-240.

Crisp, R. J., & Turner, R. N. (2010). Have confidence in contact. *American Psychologist, 65*(2), 133-135.

Crites, S. L., Jr., Fabrigar, L. R., & Petty, R. E. (1994). Measuring the affective and cognitive properties of attitudes: Conceptual and methodological issues. *Personality and Social Psychology Bulletin, 20*(60, 619-634.

Cuddy, A. J. C., & Fiske, S. T. (2002). Doddering, but dear: Process, content, and function in stereotyping of older persons. In T. D. Nelson (Ed.), *Ageism* (pp. 3-26). Cambridge, MA: MIT Press.

Cuddy, A. J. C., Fiske, S. T., & Glick, P. (2007). The BIAS map: Behaviors from intergroup affect and stereotypes. *Journal of Personality and Social Psychology, 92*(4), 631-648.

Cuddy, A. J. C., Fiske, S. T., & Glick, P. (2008). Warmth and competence as universal dimensions of social perception: The stereotype content model and the BIAS map. *Advances in Experimental and Social Psychology, 40,* 61-88.

Cuddy, A. J. C., Fiske, S. T., Kwan, V., Glick, P. Demoulin, S., Leyens, J. P. et al. (2009). Is the stereotype content model culture-bound? A cross-cultural comparison reveals systematic similarities and differences *British Journal of Social Psychology, 48*(1)*,* 1-33.

Cuddy, A. J. C., Norton, M. I., & Fiske, S. T. (2005). This old stereotype: The pervasiveness and persistence of the elderly stereotype. *Journal of Social Issues, 61*(2), 267-285.

Dadds, M. R., Bovbjerg, D. H., Redd, W. H., & Cutmore, T. R. (1997). Imagery in human classical conditioning. *Psychological Bulletin, 122*(1), 89-103.

Devine, P. G. (1989). Stereotypes and prejudice: Their automatic and controlled components. *Journal of Personality and Social Psychology, 56*(1), 5-18.

Dijksterhuis, A., Bargh, J. A., & Mark, P. Z. (2001). The perception-behavior expressway: Automatic effects of social perception on social behavior. *Advances in Experimental Social Psychology, 33*, 1-40.

Dovidio, J. F., Brigham, J. C., Johnson, B. T., & Gaertner, S. L. (1996). Stereotyping, prejudice, and discrimination: Another look. In C. N. Macrae, C. Stangor, & M. Hewstone (Eds.), *Stereotypes and stereotyping* (pp. 276-319). New York, NY: Guilford Press.

Dovidio, J. F., Esses, V. M., Beach, K. R., & Gaertner, S. L. (2002). The role of affect in determining intergroup behavior: The case of willingness to engage in intergroup contact. In D. M. Mackie & E. R. Smith (Eds.) *From Prejudice to Intergroup Emotions: Differentiated Reactions to Social Groups* (pp. 153-171). New York, NY: Psychology Press.

Dunton, B. C., & Fazio, R. H. (1997). An individual difference measure of motivation to control prejudiced reactions. *Personality and Social Psychology Bulletin, 23,* 316-326.

Eagly, A. H. (1987). *Sex Differences in Social Behavior: A Social-Role Interpretation.* Hillsdale, NJ: Earlbaum.

Edwards, K. (1990). The interplay of affect and cognition in attitude formation and change. *Journal of Personality and Social Psychology, 59*(2), 202-216.

Esses, V. M., & Dovidio, J. F. (2002). The role of emotions in determining willingness to engage in intergroup contact. *Personality and Social Psychology Bulletin, 28,* 1202-1214.

Esses, V. M., Haddock, G., & Zanna, M. P. (1993). Values, stereotypes, and emotions as determinants of intergroup attitudes. In D. M. Mackie & D. L. Hamilton (Eds.), *Affect, Cognition, and Stereotyping: Interactive Processes in Group Perception* (pp. 137-166). San Diego, CA: Academic Press.

Fazio, R. H., Powell, M. C., & Herr, P. M. (1983). Toward a process model of the attitude-behavior relation: Accessing one's attitude upon mere observation of the attitude object. *Journal of Personality and Social Psychology, 44*(4), 723-735.

Fiske, S. T., Cuddy, A. J. C., Glick, P., Xu, J. (2002). A model of (often mixed) stereotype content: Competence and warmth respectively follow from perceived status and competition. *Journal of Personality and Social Psychology, 82*(6), 878-902.

Fiske, S. T., Xu, J., Cuddy, A. J. C., & Glick, P. (1999). (Dis)respecting versus (dis)liking: Status and interdependence predict ambivalent stereotypes of competence and warmth. *Journal of Social Issues, 55*(3), 473-489.

George, D., & Mallery, P. (2002). *SPSS for window step by step: A simple guide and references, 11.0 update* (4th ed.) Boston, MA: Allyn & Bacon Publishers.

Giacobbe, M. R., Stukas, A. A., & Farhall, J. (2013). The effects of imagined versus actual contact with a person with a diagnosis of schizophrenia. *Basic and Applied Social Psychology, 35*(3), 265-271.

Glick, P., & Fiske, S. T. (1996). The ambivalent sexism inventory: Differentiating hostile and benevolent sexism. *Journal of Personality and Social Psychology, 70,* 491-512.

Glick, P., & Fiske, S. T. (2001a). Ambivalent stereotypes as legitimizing ideologies. In J. T. Jost and B. Major (Eds.), *The psychology of legitimacy: Emerging perspectives on ideology* (pp. 278-306). New York, NY: Cambridge University Press.

Glick, P., & Fiske, S. T. (2001b). Ambivalent sexism. *Advances in Experimental Social Psychology, 33,* 115-188.

Greenwald, A. G., & Pettigrew, T. F. (2014). With malice toward none and charity for some: Ingroup favoritism enables discrimination. *American Psychologist, 69*(7), 669-684.

Gudykunst, W. B., & Nishida, T. (2001). Anxiety, uncertainty, and perceived effectiveness of communication across relationships and cultures. *International Journal of Intercultural Relations, 25*(1), 55-71.

Gudykunst, W. B., & Shapiro, R. B. (1996). Communication in everyday interpersonal and intergroup encounters. *International Journal of Intercultural Relations, 20*(1), 19-45.

Haddock, G., & Zanna, M. P. (1994). Preferring "housewives" to "feminists": Categorization and the favorability of attitudes toward women. *Psychology of Women Quarterly, 18,* 25-52.

Harris, L. T., & Fiske, S. T. (2006). Dehumanizing the lowest of the low: Neuro-imaging responses to extreme outgroups. *Psychological Science, 17,* 847-853.

Harwood, J., Paolini, S., Joyce, N., Rubin M., & Arroyo, A. (2011). Secondary transfer effects from imagined contact: Group similarity affects the generalization gradient. *British Journal of Social Psychology, 50,* 180-189.

Henrich, J., Heine, S. J., & Norenzayan. A. (2010). The weirdest people in the world? *Behavioral and Brain Sciences, 33*(2/3), 61-83.

Henry, P. J. (2009). College sophomores in the laboratory redux: Influences of a narrow database on social psychology's view of the nature of prejudice. *Psychological Inquiry, 19,* 49-71.

Hewstone, M., Kenworth, J. B., Cairns, E., Tausch, N., Hughes, J., Tam, T., et al. (2008). Stepping stones to reconciliation in Northern Ireland: Intergroup contact, forgiveness, and trust. In. A. Nadler, T. E. Malloy, & J. D. Fisher (Eds.), *Social Psychology of Intergroup Reconciliation* (pp. 199-226). Oxford, UK: Oxford University Press.

Hogg, M. A. (2006). Social identity theory. In P. J. Burke (Ed.), *Contemporary social psychological theories* (pp. 111-136). Palo Alto, CA: Stanford University Press.

Honeycutt, J. M. (2003). *Imagined interactions: Daydreaming about communication.* Cresskill, NJ: Hampton Press.

Hubert, K. N., Gudykunst, W. B., & Guerrero, S. L. (1999). Intergroup communication over time. *International Journal of Intercultural Relations, 23*(1), 13-46.

Hurh, W. M., & Kim, K. C. (1989). The "success" image of Asian Americans: Its validity, and its practical and theoretical implications. *Ethnic Racial Studies, 12,* 512-538.

Husnu, S., & Crisp, R. J. (2010a). Elaboration enhances the imagined contact effect. *Journal of Experimental Social Psychology, 46,* 943-950.

Husnu, S., & Crisp, R. J. (2010b). Imagined intergroup contact: A new technique for encouraging greater inter-ethnic contact in Cyprus. *Peace and Conflict, 16,* 97-108.

Islam, M. R., & Hewstone, M. (1993). Dimensions of contact as predictors of intergroup anxiety, perceived out-group variability, and out-group attitudes: An integrative model. *Personality and Social Psychology Bulletin, 19*(6), 700-710.

Jussim, L., Cain, T. R., Crawford, J. T., Harber, K., & Cohen, F. (2009). The unbearable accuracy of stereotypes. In T. D. Nelson (Ed.), *Handbook of prejudice, stereotyping, and discrimination* (pp. 199-227). New York, NY: Taylor & Francis Group.

Kay, A. C., & Jost, J. T. (2003). Complementary justice: Effects of "poor but happy" and "poor but honest" stereotype exemplars on system justification and implicit activation of the justice motive. *Journal of Personality and Social Psychology, 85,* 832-837.

Kervyn, N., Yzerbyt, V., & Judd, C. M. (2010). Compensation between warmth and competence: Antecedents and consequences of a negative relation between the two fundamental dimensions of social perception. *European Review of Social Psychology, 21,* 155-187.

Kosslyn, S. M., Ganis, G., & Thompson, W. L. (2001). Neural foundations of imagery. *Nature Reviews Neuroscience, 2*(9), 635-642.

Lee, Y., & Jussim, L. (2010). Back in the real world. *American Psychologist, 65*(2), 130-131.

Levine, M., & Ensom, M. H. H. (2001). Post hoc power analysis: An idea whose time has passed? *Pharmacotherpay, 21*(4), 405-409.

Lin, M. H., Kwan, V. S. Y., Cheung, A., & Fiske, S. T. (2005). Stereotype content model explains prejudice for an envied outgroup: Scale of anti-Asian American stereotypes. *Personality and Social Psychology Bulletin, 31*(1), 34-47.

Louvet, E., & Rohmer, O. (2010). Are workers with disability perceived as competent? *Psychologie du Travail et des Organisations, 16*(1), 47-62.

Louvet, E., Rohmer, O., & Dubois, N. (2009). Social judgment of people with a disability in the workplace. *Swiss Journal of Psychology, 68*(3), 153-159.

MacLin, M. K., & Herrera, V. (2006). The criminal stereotype. *North American Journal of Psychology, 8*(2), 197-208.

Madriz, E. I. (1997). Images of criminals and victims: A study on women's fear and social control. *Gender & Society, 11*(3), 342-356.

Marks, D. F. (1999). Consciousness, mental imagery, and action. *British Journal of Psychology, 90,* 567-585.

McGuire, W. J. (1969). Inducing resistance to persuasion: Some contemporary approaches. In L. Berkowtiz (Ed.), *Advances in experimental social psychology* (Vol. 1, pp. 192-229). Orlando, FL: Academic Press.

Miles, E., & Crisp, R. J. (2014). A meta-analytic test of the imagined contact hypothesis. *Group Processes & Intergroup Relations, 17*(3), 3-26.

O'Connor, M. E. (1984). The perception of crime and criminality: The violent criminal and swindler as social types. *Deviant Behavior, 5,* 255-274.

Orpen, C. (2004). Personal affluence as a moderator of the impact of perceived wealth and poverty on character judgments. *The Journal of Social Psychology, 131,* 897-898.

Pagotto, L., Visintin, E. P., De Iorio, G., & Voci, A. (2013). Imagined intergroup contact promotes cooperation through outgroup trust. *Group Processes and Intergroup Relations, 16*(2), 209-216.

Paluck, E. L., & Green, D. P. (2009). Prejudice reduction: What works? A review and assessment of research and practice. *Annual Review of Psychology, 60,* 339-367.

Paolini, S., Harwood, J., & Rubin, M. (2010). Negative intergroup contact makes group memberships salient: Explaining why intergroup conflict endures. *Personality and Social Psychology Bulletin, 36*(12), 1723-1738.

Paulhus, D. (2002). Social desirable responding: The evolution of a construct. In H. I. Braun, D. N. Jackson, & D. E. Wiley (Eds.), *The role of constructs in psychological and educational measurement* (pp. 49-69). Mahwah, NJ: Erlbaum.

Peeters, G. (2001). From good and bad to can and must: Subjective necessity of acts associated with positively and negatively valued stimuli. *European Journal of Social Psychology, 31,* 125-136.

Pettigrew, T. F. & Tropp, L. R. (2006). A meta-analytic test of intergroup contact theory. *Journal of Personality and Social Psychology, 90*(5), 751-783.

Pettigrew, T. F., & Tropp, L. R. (2008). How does intergroup contact reduce prejudice? Meta-analytic tests of three mediators. *European Journal of Social Psychology, 38*(6), 922-934.

Plant, E. A., & Devine, P. G. (2003). The antecedents and implications of interracial anxiety. *Personality and Social Psychology Bulletin, 29*(6), 790-801.

Plant, E. A., Devine, P. G., & Peruche, M. B. (2010). Routes to positive interracial interactions: Approaching or avoiding prejudice. *Personality and Social Psychology Bulletin, 36*(9), 1135-1147.

Podsakoff, P. M., MacKenzie, S. B., Lee, J., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*(5), 879-903.

Preacher, K. J., & Hayes, A. F. (2007). Assessing mediation in communication research. In A. F. Hayes, M. D. Slater, & L. B. Snyder (Eds.), *The sage sourcebook of advanced data analysis methods for communication research* (pp. 13-54). Thousand Oaks, CA: Sage.

Richeson, J. A., & Shelton, J. N. (2007). Negotiating interracial interactions costs, consequences, and possibilities. *Current Directions in Psychological Science, 16*(6), 316-320.

Rosenberg, S., Nelson, C., & Vivekananthan, P. S. (1968). A multidimensional approach to the structure of personality impressions. *Journal of Personality and Social Psychology, 9,* 283-294.

Schank, R. C., & Abelson, R. P. (1977). *Scripts, plans, goals, and understanding.* Hillsdale, NJ: Erlbaum.

Schmuckler, M. A. (2001). What is ecological validity? A dimensional analysis. *Infancy, 2*(4), 419-436.

Schutz, H., & Six, B. (1996). How strong is the relationship between prejudice and discrimination? A meta-analytic answer. *International Journal of Intercultural Relations, 20,* 441-462.

Shaffer, J. P. (1995). Multiple hypothesis testing. *Annual Review of Psychology, 46,* 561-584.

Sheeran, P. (2002). Intention-behavior relations: A conceptual and empirical review. *European Review of Social Psychology, 12*(1), 1-36.

Shelton, J. N. (2003). Interpersonal concerns in social encounters between majority and minority group members. *Group Processes and Intergroup Relations, 6,* 171-186.

Shelton, J. N., Richeson, J. A., Salvatore, J., & Trawalter, S. (2005). Ironic effects of racial bias during interracial interactions. *Psychological Science, 16*(5), 397-402.

Sigelman, C. K. (2012). Rich man, poor man: Developmental differences in attributions and perceptions. *Journal of Experimental Child Psychology, 113,* 415-429.

Stangor, C., Sullivan, L. A., & Ford, T. E. (1991). Affective and cognitive determinants of prejudice. *Social Cognition, 9*(4), 359-380.

Stathi, S., & Crisp, R. J. (2008). Imagining intergroup contact promotes projection outgroups. *Journal of Experimental Social Psychology, 44,* 943-957.

Stathi, S., & Crisp, R. J., & Hogg, M. A. (2011). Imagining intergroup contact enables member-to-group generalization. *Group Dynamics: Theory, Research and Practice, 15*(3), 275-285.

Stathi, S., Tsantila, K., & Crisp, R. J. (2012). Imagining intergroup contact can combat mental health stigma by reducing anxiety, avoidance and negative stereotyping. *The Journal of Social Psychology, 152*(6), 746-757.

Stephan, W. G., & Stephan, C. W. (1985). Intergroup anxiety. *Journal of Social Issues, 41,* 157-175.

Talaska, C. A., Fiske, S. T., & Chaiken, S. (2007). Predicting discrimination: A meta-analysis of the racial attitude-behavior literature. *Social Justice Research, 21*(3), 263-296.

Turner, R. N., & Crisp, R. J. (2010). Imagining intergroup contact reduces implicit prejudice. *British Journal of Social Psychology, 49*(1), 129-142.

Turner, R. N., Crisp, R. J., & Lambert, E. (2007). Imagining intergroup contact can improve intergroup attitudes. *Group Processes & Intergroup Relations, 10*(4), 427-441.

Turner, J. C., Oakes, P. J., Haslam, S. A., & McGarty, C. (1994). Self and collective: Cognition and social context. *Personality and Social Psychology Bulletin, 20,* 454-463.

Turner, R. N., & West, K. (2012). Behavioral consequences of imagining intergroup contact with stigmatized outgroups. *Group Processes & Intergroup Relations, 15*(2), 193-202.

Vezzali, L., Capozza, D., Giovannini, D., & Stathi, S. (2012). Improving implicit and explicit intergroup attitudes using imagined contact: An experimental intervention with elementary school children. *Group Processes & Intergroup Relations, 15*(2), 203-212.

Vezzali, L., Capozza, D., Stathi, S., & Giovannini, D. (2012). Increasing outgroup trust, reducing infrahumanization, and enhancing future contact intentions via imagined intergroup contact. *Journal of Experimental Social Psychology, 48,* 437-440.

West, K., Holmes, E., & Hewstone, M. (2011). Enhancing imagined contact to reduce prejudice against people with schizophrenia. *Group Processes & Intergroup Relations, 14*(3), 407-428.

Wilder, D. A. (1993). The role of anxiety in facilitating stereotypic judgments of outgroup behavior. In D. M. Mackie and D. L. Hamilton (Eds.), *Affect, Cognition, and Stereotyping: Interactive Processes in Group Perception* (pp. 87-109). Waltham, MA: Academic Press.

Winkler, J. D., Kanouse, D. E., & Ware, J. E., Jr. (1982). Controlling for acquiescence response set in scale development. *Journal of Applied Psychology, 67,* 555-561.

Wojciszke, B., Bazinska, R., & Jaworski, M. (1998). On the dominance of moral categories in impression formation. *Personality and Social Psychology Bulletin, 24*(12), 1251-1263.

Woods, T. A., Kurt-Costes, & Rowley, S. J. (2005). The development of stereotypes about the rich and poor: Age, race, and family income differences in beliefs. *Journal of Youth and Adolescence, 34,* 437-445.

Ybarra, O., Chan, E., & Park, D. (2001). Young and old adults' concerns about morality and competence. *Motivation and Emotion, 25*(2), 85-100.