

5-6-2014

Promoting Positive Attitudes Toward Individuals with Down Syndrome: The Relationship Between Indirect Contact Interventions and the Quality of Previous Contact

Nadine M. Rooney

Macalester College, nrooney@macalester.edu

Follow this and additional works at: http://digitalcommons.macalester.edu/psychology_honors



Part of the [Psychology Commons](#)

Recommended Citation

Rooney, Nadine M., "Promoting Positive Attitudes Toward Individuals with Down Syndrome: The Relationship Between Indirect Contact Interventions and the Quality of Previous Contact" (2014). *Psychology Honors Projects*. Paper 34.
http://digitalcommons.macalester.edu/psychology_honors/34

This Honors Project is brought to you for free and open access by the Psychology Department at DigitalCommons@Macalester College. It has been accepted for inclusion in Psychology Honors Projects by an authorized administrator of DigitalCommons@Macalester College. For more information, please contact scholarpub@macalester.edu.

Promoting Positive Attitudes Toward Individuals with Down Syndrome: The Relationship
Between Indirect Contact Interventions and the Quality of Previous Contact

Nadine M. Rooney

Macalester College

Abstract

The present study examined the influence of two indirect contact interventions (i.e., viewing a positive image of a man with DS and imagining a positive interaction with a man with DS) on nondisabled individuals' attitudes toward those with DS. Additionally, this study explored the nature of the relationship between previous contact (i.e., quantity and quality) and the effectiveness of said interventions. In this two-part study, 87 participants reported their attitudes and liking toward individuals with DS, as well as the quantity and quality of previous contact. One week later, participants completed a lab session that involved viewing a picture of and/or imagining an interaction with a man with DS or neither, and reporting their attitudes and liking again. Data analyses revealed that neither of the indirect contact interventions was associated with more positive attitudes or liking. Quality of previous contact was significantly and positively associated with positive attitudes and liking toward individuals with DS. Analyses indicated mixed findings on quantity of previous contact. The effectiveness of the indirect contact interventions did not vary as a function of quality or quantity of previous contact with individuals with DS. These results have implications for further investigation and development of indirect contact interventions.

Promoting Positive Attitudes Toward Individuals with Down Syndrome: The Relationship
Between Indirect Contact Interventions and the Quality of Previous Contact

Historically, individuals with disabilities have been excluded from mainstream society, preventing them from interacting with nondisabled individuals and from fully participating in their communities (Shaw, Chan, & McMahon, 2012). However, recent efforts to promote the social integration and acceptance of individuals with disabilities have increased in a number of countries, including Australia, China, Chile, and the United States (Rice, 2009; Siperstein, Parker, Norins, & Widaman, 2011; Sirlopú et al., 2008; Wong, 2008; Yazbeck, McVilly, & Parmenter, 2004). For example, federal legislation in the United States (e.g., Americans with Disabilities Act [ADA], Individuals with Disabilities Education Improvement Act [IDEA]) has granted individuals with disabilities access to the same education, employment, housing, transportation, and other public accommodations that are available to nondisabled individuals (Rice, 2009). As a result of such legislation, social interaction between individuals with and without disabilities occurs more frequently. Greater interaction between these two groups has important implications for the well-being and social inclusion of individuals with disabilities in mainstream society.

Despite community integration efforts and advances in civil rights, barriers preventing the full acceptance of individuals with disabilities remain (Antonak & Livneh, 2000). Legislation requiring the physical integration of people with disabilities into mainstream society does not guarantee social integration or acceptance of these individuals (Cummins & Lau, 2003). In the 2009 Purposes and Findings of the ADA Amendments Act, the United States Congress found that “despite some improvements, such forms of discrimination against individuals with disabilities continue to be a serious and pervasive social problem” (as cited in Shaw et al., 2012,

p. 82). For example, excluding people with disabilities from competitive employment denies these individuals their rights to equal opportunity, community participation, and self-sufficiency, and costs the United States billions of dollars in expenses related to dependency and non-productivity (Shaw et al., 2012). In addition, social exclusion may result in negative self-evaluations, feelings of powerlessness, and frustration (McManus, Feyes, & Saucier, 2011), as well as a sense of alienation among people with disabilities (Cummins & Lau, 2003). Exclusion impacts the well-being of community members with and without disabilities, and it is necessary to address identified barriers to integration.

Negative attitudes toward individuals with disabilities (especially those with intellectual disabilities, including Down syndrome) constitute a major barrier hindering the progress of integration (Lawson & Walls-Ingram, 2010; Yazbeck et al., 2004). Individuals with intellectual disabilities are aware of the differential treatment they receive when nondisabled individuals express negative attitudes through prejudice and discrimination (McManus et al., 2011). Marginalization, isolation, and victimization stemming from prejudice are likely to decrease the quality of life of individuals with intellectual disabilities (Parashar, Chan, & Leierer, 2008). Therefore, it is necessary to examine underlying variables associated with attitude change and identify effective means of promoting positive attitudes in order to better understand nondisabled individuals' attitudes toward individuals with intellectual disabilities. The current study aims to further understand and develop such interventions with the hopes of fostering the integration and acceptance of these individuals in mainstream society.

Antonak and Livneh (2000) define attitudes as "latent or inferred psychosocial processes" that are "acquired through experience" and expressed once "evoked by specific referents" (p. 212). An extensive literature has examined people's attitudes, including a great deal of specific

research on the nature of nondisabled individuals' attitudes toward those with disabilities (Rice, 2009). The literature suggests that nondisabled individuals across various cultures tend to hold negative and/or ambivalent attitudes toward individuals with disabilities (Antonak & Livneh, 2000; Hazzard, 1983; Parashar et al., 2008; Vilchinsky, Findler, & Werner, 2010; Yucker, 1994). For example, Hazzard (1983) studied 367 elementary school students' knowledge about and attitudes toward individuals with disabilities using the Children's Knowledge about Handicapped Persons Scale. This researcher found that the children often stereotyped individuals with disabilities as "pathetic" and believed that they "deserve or desire pity" (p. 137). According to Parashar et al. (2008), "people with disabilities are repeatedly seen as . . . a burden on others" and are "socially and culturally devalued" (p. 230). Similarly, Vilchinsky et al. (2010) observed that nondisabled individuals experienced an initial negative emotional response when simply reading about an encounter with an individual with a disability. These researchers investigated whether personality traits, specifically attachment (one's "global and stable orientation toward the self, others, and relationships"), of 404 Jewish Israeli participants were associated with negative attitudes toward individuals with disabilities (Vilchinsky et al., 2010, p. 299). Their results suggest that typically, nondisabled individuals react negatively toward individuals with disabilities, regardless of attachment orientation.

Although much literature examines attitudes toward individuals with disabilities in general, many researchers (e.g., Krajewsky & Flaherty, 2000; Lawson & Walls-Ingram, 2010; Parashar et al., 2008; Wong, 2008; Yucker, 1994) suggest that nondisabled individuals' attitudes vary according to the type of disability, such as intellectual disabilities. According to Shaw et al. (2012), there appears to be a "hierarchy of preferences for types of disabilities" (p. 88), indicating that individuals with intellectual disabilities experience more stigma in comparison

with those who have physical disabilities. The majority of the literature suggests that nondisabled individuals tend to hold more negative than positive attitudes toward individuals with intellectual disabilities (e.g., Antonak & Harth, 1994; Yazbeck et al., 2004). Myers, Ager, Kerr, and Myles (1998) identified three types of attitudes that nondisabled individuals may hold toward individuals with intellectual disabilities: a “preparedness” to interact with these individuals; a “lack of awareness” about these individuals; and/or a “wariness or even hostility” toward the integration of individuals with intellectual disabilities (p. 97-98). According to Yazbeck et al. (2004), attitudes toward individuals with intellectual disabilities tend to reflect the “wariness or hostility” described by Myers et al. (1998). For example, nondisabled individuals often view those with intellectual disabilities as taking advantage of the welfare system or as incapable of being suitable parents (Sirlopú et al., 2008; Yazbeck et al., 2004). Although most research finds that nondisabled individuals generally hold negative attitudes toward individuals with intellectual disabilities, some discrepancies do exist within the literature.

For example, Rice (2009) examined the attitudes of 295 undergraduate students who were enrolled in either political science or special education courses and found that overall, participants reported relatively positive attitudes toward individuals with intellectual disabilities on the Mental Retardation Attitude Inventory – Revised (MRAI-R). Similarly, Sirlopú et al. (2008) surveyed 120 Chilean students (ages 11-15) on their attitudes toward individuals with a specific intellectual disability, Down syndrome, and found that they held “relatively low levels of prejudice . . . [and] rather positive attitudes toward people with Down syndrome” (p. 2723). Although most of the research in this field does not appear to support these particular findings, there is evidence suggesting that some nondisabled individuals tend to endorse positive stereotypes about individuals with intellectual disabilities. For example, individuals with

intellectual disabilities are often thought of as having “affectionate loving personalities” (Gilmore, 2006, p. 66). Although this particular stereotype may not seem negative, it is important to recognize that each individual has his or her own characteristics, and that having a disability does not mean these individuals share a common personality.

According to Nario-Redmond (2010), nondisabled people tend to “spread” assumptions about disability across “all aspects of a [disabled] person’s identity . . . [including] personality, motives, and behaviours” (p. 474), as well as erroneously overestimate relative group homogeneity among people with disabilities. Nondisabled individuals often exaggerate group homogeneity among individuals with Down syndrome (DS), in particular. For example, Gilmore (2006) observed a tendency for Australian community members to believe all individuals with DS “look the same and act the same,” which may be a result of focusing on the distinct physical characteristics associated with DS (p. 66). According to Hayes (1990), this “myth of uniformity” has no empirical support and disregards variation in physical appearance and personality amongst individuals with DS (as cited in Gilmore, 2006, p. 66).

Nario-Redmond (2010) also discusses how people with disabilities are commonly stereotyped as incompetent. Because DS causes intellectual impairments, nondisabled individuals are often surprised when individuals with this disability work in jobs that require adequate social and cognitive skills (Sirlopú et al., 2008). In the case of DS, stereotypes of incompetence and warmth (e.g., affectionate personality) combine and result in paternalistic attitudes. Nondisabled individuals may view those with DS as inferior due to paternalistic prejudice.

Further indication of nondisabled individuals’ negative attitudes toward DS is the elevated rate of selective abortion after prenatal testing. According to Lawson and Walls-Ingram

(2010), the termination rate after a diagnosis of DS is over 90%; the willingness to abort appears to be significantly higher in cases of DS than in those of physical disability. Lawson and Walls-Ingram (2010) suggest that this selective termination is influenced by greater prejudice towards individuals with DS, as well as a societal view that parenting a child with DS is less rewarding than parenting a child with a physical disability (or no disability). The pervasiveness of negative attitudes and prejudice toward individuals with DS appears to be well-supported by the literature. Because the negative attitudes held by others may influence the overall quality of life (and even the chance at life) of individuals with DS, it is necessary to identify and expand interventions that promote a positive change in nondisabled individuals' attitudes toward those with DS, as well as examine potential influences on the efficacy of such interventions. Indeed, researchers have dedicated extensive energy to developing effective means of attitude change in prejudiced individuals.

According to Dovidio, Eller, and Hewstone (2011), "intergroup contact has long been recognized as one of psychology's most promising and effective strategies for improving intergroup relations and reducing bias and conflict" (p. 149). Over the past 50 years, researchers have conducted hundreds of studies to better understand the nature of intergroup contact and how it relates to attitude change (Pettigrew & Tropp, 2006). The link between intergroup contact and prejudice reduction was actually present in the literature by the mid-1930s (e.g., Zelig & Hendrickson, 1933; as cited in Dovidio, Gaertner, & Kawakami, 2003). However, the majority of research on intergroup contact theory over the past half century is inspired by Allport's (1954) contact hypothesis on the interaction between racial and ethnic groups, described in his classic work, *The Nature of Prejudice* (Pettigrew, Christ, Wagner, & Stellmacher, 2007).

Allport (1954) hypothesized that contact between an ingroup (e.g., White people) and outgroup (e.g., Black people) can reduce prejudice if four key conditions are met: equal group status within the situation, common goals, intergroup cooperation, and institutional support. Allport (1954) also states that contact can *increase* prejudice if any of these four conditions are not fulfilled; in order to effectively reduce prejudice, contact must involve communication between groups and they must work together, thus fostering the key conditions for changing attitudes in a positive manner. According to Pettigrew (1998), research has supported the contact hypothesis across a variety of situations and groups. Intergroup contact theory appears to extend to target groups beyond races and ethnicities, including groups based on age, sexual orientation, and disability (Pettigrew et al., 2007). Research also indicates that intergroup contact usually has positive effects, even in situations where Allport's four conditions for optimal contact are not met (Pettigrew, 1998; Pettigrew & Tropp, 2006).

Pettigrew (1998) states that although researchers continue to identify situational factors that allow for optimal contact, requiring too many "essential conditions" will only exclude most intergroup situations and may cause researchers to lose interest in the contact hypothesis (p. 70). Pettigrew and Tropp (2006) refer to previous research on the attitudinal effects of mere-exposure (e.g., Zajonc, 1968) when they state that "social psychology has shown repeatedly that greater exposure to targets can, in and of itself, significantly enhance liking for those targets" (p. 753); therefore, repeated intergroup contact should have positive (or at least, benign) effects, whether or not the optimal conditions are attained. Nevertheless, it is important to remember that "*although increased contact itself is associated with reduced prejudice, the effect is magnified significantly under conditions characterizing equal status, cooperation, common goals, and institutional support*" (emphasis original; Hodson & Hewstone, 2013, p. 8). Pettigrew and

Tropp's (2006) meta-analysis also pushes the boundaries of these facilitating conditions because it indicates that the positive effects of contact can reduce intergroup prejudice toward the entire outgroup, as well as other outgroups, thus generalizing to individuals who were not involved in the immediate contact situation. These findings have motivated further research that expands our understanding of intergroup contact, including the identification of several different forms of contact (Crisp & Turner, 2009; Dovidio et al., 2011; Pettigrew et al., 2007; Schiappa, Gregg, & Hewes, 2005).

Allport's (1954) contact hypothesis, as well as Pettigrew's (1998) intergroup contact theory, initially referred to contact as a face-to-face interaction between members of different groups. This definition now refers to direct contact (e.g., through the inclusion of students with intellectual disabilities in general education classrooms), which is the focus of the majority of intergroup contact research. Although research shows that the negative relationship between direct contact and prejudice is highly significant and robust, the opportunities for meaningful, direct interaction between groups may be limited in many instances as a result of physical or social segregation (Crisp & Turner, 2009). As previously mentioned, individuals with disabilities have been historically segregated from nondisabled individuals in areas such as education, employment, and housing. Although integration efforts have greatly increased over the years, the physical and social segregation of individuals with disabilities (including DS) still occurs to some extent (Shaw et al., 2012). In such instances, various forms of *indirect* contact may be the most effective and practical means of promoting positive intergroup attitudes, even though they may not fulfill Allport's four conditions (Harwood, 2010). Thus, researchers examined and developed potential interventions involving several forms of indirect contact, such as extended

contact, vicarious contact, parasocial contact, and imagined contact (e.g., Crisp & Turner, 2009; Dovidio et al., 2011; Schiappa et al., 2005).

Wright, Aron, McLaughlin-Volpe, and Ropp (1997) critically advanced the contact literature with the extended contact hypothesis, which “proposes that knowledge that an in-group member has a close relationship with an outgroup member can lead to more positive intergroup attitudes” (p. 74). Wright et al. (1997) conducted a set of four studies that supported their extended contact hypothesis, revealing that merely observing or having knowledge of a positive relationship between an ingroup member and an outgroup member is associated with more positive intergroup attitudes. Subsequent research conducted by Pettigrew et al. (2007), which involved phone surveys of 2,656 German respondents’ attitudes toward Muslims and “foreigners” living in Germany, indicated that extended contact reduces prejudice almost as effectively as direct contact; the efficacy of extended contact is supported within the literature (Crisp & Turner, 2009; Dovidio et al., 2011). Although Pettigrew et al. (2007) examined indirect contact in the sense of having an ingroup *friend* who has an outgroup *friend*, Dovidio et al. (2011) discuss how vicarious contact, which involves viewing positive contact between an ingroup member and an outgroup member (not necessarily a friend), also produces more positive intergroup attitudes. These key findings in the extended contact research have spurred interest in other “nondirect” forms of contact (Dovidio et al., 2011, p. 153).

According to Schiappa et al. (2005), in the media-rich environment of today, “people may come to ‘know’ more people *parasocially* (i.e., through the media), rather than directly through interpersonal contact,” and that “most media users form attitudes and beliefs about many . . . [people] with whom their contact has been exclusively through the mass media” (p. 95). These researchers relate the concept of parasocial interaction with media characters (real or

fictional) in the mass communication literature to intergroup contact literature based on Allport's (1954) contact hypothesis. Schiappa et al. (2005) propose the parasocial contact hypothesis, which contends that parasocial contact – intergroup contact through the media – can significantly influence intergroup attitudes, especially if opportunities for direct intergroup contact have been limited. The attitudinal influence of books, videos, and especially television episodes has been the focus of much parasocial contact research, often in the context of multicultural education geared towards children who live in homogeneous communities (Aboud & Brown, 2013).

Exposure to media depicting positive intergroup contact appears to produce effects similar to those of other forms of indirect contact (Dovidio et al., 2011; Schiappa et al., 2005). According to Dovidio et al. (2011), “portrayals of intergroup relations on television can influence the attitudes of [a] vast number of viewers, often without their conscious awareness,” (p. 153). For example, Schiappa et al. (2005) found that viewing television programs portraying positive intergroup contact between heterosexual men and homosexual men was associated with significantly lower levels of prejudice among college students (Studies 1 & 2). Similarly, research suggests that parasocial contact with individuals with disabilities may predict the attitudes held by nondisabled individuals, although there are some inconsistencies within the literature (Beattie, Anderson, & Antonak, 1997; Hall & Minnes, 1999; Hazzard & Baker, 1982; Siperstein et al., 2011).

For example, Beattie et al. (1997) investigated whether undergraduates' attitudes toward disabilities were influenced by watching videos that positively portrayed individuals with disabilities, as well as by having a professor with a physical disability. Interestingly, researchers found that students who viewed the videos expressed more positive attitudes only if their professor had a visible physical disability, contrary to their hypotheses predicting main effects of

both direct contact (i.e., having a professor with a disability) and indirect contact (i.e., viewing positive videos of people with disabilities). However, these researchers did expect participants who experienced both forms of intergroup contact to report the most positive attitudes because their professor embodied positive characteristics that were portrayed indirectly in the videotapes (e.g., competence, social skills, acceptance of disability) (Beattie et al., 1997). Similarly, Hazzard and Baker (1982) attempted to enhance children's attitudes toward individuals with disabilities through a multi-media program that included films, books, and activities. Students who participated in this multi-media intervention demonstrated an increase in knowledge about disabilities and in positive attitudes toward individuals with disabilities; however, this effect was only temporary. Although these studies by Beattie et al. (1997) and Hazzard and Baker (1982) seem to offer only partial support of the parasocial contact hypothesis, other research conducted by Hall and Minnes (1999) provides more substantial evidence for the effectiveness of parasocial contact as a potential intervention for promoting positive attitudes toward individuals with disabilities, specifically DS.

Hall and Minnes (1999) studied 92 undergraduate students' attitudes toward individuals with DS portrayed in different types of television programs. Researchers assigned participants to one of three conditions: the first condition involved watching a documentary about a young adult male with DS; the second condition involved watching an episode of a drama series featuring a similar character; and the third condition involved watching an episode of a drama series that did not feature an actor with DS or any other disability. The actors with DS were not significantly different in terms of attractiveness, verbal ability, or severity of disability. The researchers measured participants' beliefs, level of comfort around individuals with DS, and behavioral intentions (using adapted versions of the Attitudes Toward Disabled Persons Scale, Feelings of

Comfort Scale, and Volunteering Intentions Scale, respectively). Greater feelings of comfort were significantly correlated with watching the documentary about an individual with DS. Results also indicated that viewing either the documentary or the drama including individuals with DS significantly predicted participants' willingness to volunteer with individuals with disabilities. Therefore, this research appears to support parasocial contact as an effective means of influencing nondisabled individuals' attitudes toward individuals with DS. Although mass-mediated contact research has traditionally focused on television programs, more recent research has examined the use of still images as a potential intervention for attitude change (Marshall, Craun, & Theriot, 2009; Pearl, Puhl, & Brownell, 2012; Varughese & Luty, 2010; Varughese, Mendes, & Luty, 2011).

Researchers have begun investigating the influence of positive images on individuals' attitudes. For example, Marshall et al. (2009) observed that participants who viewed positive images of elderly clients engaged in activities at an adult day care facility reported significantly more positive attitudes toward that social service program than did participants who did not view any images. Similarly, Pearl et al. (2012) found that participants who viewed stigmatizing images of obese individuals endorsed more negative attitudes than participants who viewed positive portrayals of obese individuals; participants also reported a significant preference for the positive images. Pearl et al. (2012) assert that their findings provide evidence of the media's ability to significantly shape public attitudes and of the media's potential to prevent "the spread of inaccurate perceptions" and the perpetuation of negative stereotypes (p. 828). The use of images to reduce prejudice has also been implemented in the domain of disability (e.g., Varughese & Luty, 2010).

Varughese and Luty (2010) investigated whether viewing the image of a man with DS who has dysmorphic facial features influenced 360 participants' attitudes toward individuals with DS. Participants were block randomized and assigned either to a control condition where they only read a vignette briefly describing an imaginary individual with DS or to the experimental condition where they viewed the picture of a young man with the physical appearance of DS (accompanied by the vignette). The man in the image is wearing a shirt and tie, and the background appears to be an office. Then, the researchers measured participants' attitudes with an adapted version of the Attitude to Mental Illness Questionnaire (AMIQ). Six months later, the experiment was repeated so that participants who were previously assigned to the control condition were now assigned to the experimental condition. Researchers found that on average, participants who viewed the picture had significantly less stigmatized attitudes toward individuals with intellectual disabilities than participants who only read the vignette.

Varughese and Luty (2010) initially hypothesized that viewing an individual with dysmorphic facial features would be associated with an increase in stigmatized attitudes. On the contrary, their results suggest that merely looking at the picture of an individual with DS potentially *decreases* stigmatized attitudes toward individuals with intellectual disabilities. The same image of man with DS in an office was used in a subsequent study conducted by Varughese et al. (2011) in comparison with an "unattractive" image of a man also said to have DS, but who was wearing casual clothes. Only the first image was significantly associated with less stigmatized attitudes, supporting the notion that positive portrayals of individuals with DS may serve as a potential intervention for promoting positive attitudes among nondisabled people. Although these findings appear to support the use of images as a promising means of changing intergroup attitudes, much more research is necessary in order to understand the nature of this

specific form of indirect contact, as well as to determine the potential of yet another form of indirect contact (i.e., imagined contact) that has more recently gained the attention of researchers.

According to Crisp and Turner (2009), “imagined intergroup contact is the mental simulation of a social interaction with a member or members of an outgroup category” (p. 234), which researchers (e.g., Vezzali, Capozza, Giovannini, & Stathi, 2012) have recently established as influential on both explicit and implicit intergroup attitudes. According to Dadds, Bovbjerg, Redd, and Cutmore (1997), mental imagery appears to elicit emotional and motivational responses similar to the real experience; mental imagery also seems to share the same neurological basis as perception and utilizes neuromechanisms related to those of memory, emotion, and motor control (Kosslyn, Ganis, & Thompson, 2001). Research suggests that in order for imagined contact to have a significantly positive influence on intergroup attitudes and to encourage actual intergroup contact, “participants must actively engage in mental simulation of the contact experience,” and the imagined contact must have a positive tone (Dovidio et al., 2011, p. 155). Crisp and Turner (2013) state that imagined contact involves the self directly, even though the overall nature of imagined contact is indirect, and should have a significant influence on intergroup attitudes.

Turner, Crisp, and Lambert (2007) conducted a set of three experiments investigating whether the deceptively simple act of imagining intergroup contact can influence intergroup attitudes. In Experiment 1, researchers found that imagining a positive conversation with an elderly stranger was associated with significantly lower levels of intergroup bias than was imagining an outdoor scene in young participants. Experiment 2 ruled out priming as a potential explanation for the positive effects associated with imagined intergroup contact, since

participants who imagined talking to an elderly person reported significantly lower levels of intergroup bias in comparison with those who simply thought about elderly people. Finally, Experiment 3 indicated that heterosexual men who imagined talking to a homosexual man subsequently evaluated homosexual men more positively, perceived greater outgroup variability, and experienced less intergroup anxiety. Turner et al. (2007) also ruled out demand characteristics as an explanation for the positive effects associated with imagined intergroup contact, as participants were unable to identify the purpose and hypotheses of the experiments. These three experiments provide strong support for the notion that imagined intergroup contact must be positive (i.e., not neutral) and must simulate interaction between the self and an imagined outgroup member (i.e., not just thinking about an outgroup member) in order to reduce intergroup prejudice (Turner et al., 2007).

Researchers are now exploring ways to enhance the efficacy of imagined contact interventions (e.g., Cameron, Rutland, Turner, Holman-Nicolas, & Powell, 2011; Husnu & Crisp, 2011). For example, Husnu and Crisp (2011) observed that asking participants to focus on the concrete and specific details (e.g., when and where the interaction occurs) of their imagined scenarios with an elderly stranger enhanced the vividness of the simulated contact and was associated with greater estimates of future outgroup acquaintances. These researchers also found that simply asking participants to close their eyes during imagined intergroup contact was related to greater intentions to engage in direct intergroup contact in the future. Cameron et al. (2011) also aimed to enhance the vividness of imagined contact through the use of pictures and photographs; the researchers wanted to ensure that all of the children participating in their study would benefit from imagining an interaction with a peer with a physical disability, “despite younger children’s arguably initial limited capacity to imagine positive contact with the

outgroup” (Cameron et al., 2011, p. 709). The researchers presented participants in the experimental condition with the illustration of a park setting, the photograph of a nondisabled child (i.e., an ingroup member), and the photograph of a child with a physical disability (i.e., an outgroup member). Participants were instructed to imagine playing and having fun with the child with the disability and to subsequently report what they imagined and their intergroup attitudes. Participants who engaged in this unique version of imagined contact reported lower levels of intergroup biases than did participants who merely reported their attitudes. This study implemented a combination of two types of indirect contact: the still image of an outgroup member (previously discussed) and imagined contact with that outgroup member. However, the researchers did not examine the potential independent effects of these two types of contact. Also, it does not appear that any study has implemented such an intervention with adult participants; therefore, this research has important implications for future investigations (including the present study) on combining different types of contact intended to promote positive intergroup attitudes.

Imagined contact is an easily-implemented intervention strategy that costs little and appears to have many benefits related to intergroup attitudes, especially when opportunities for direct contact are limited (Crisp & Turner, 2013). However, it is important to note that imagined contact is unlikely to have as powerful or robust an effect as more direct forms of intergroup contact (Crisp & Turner, 2009). Crisp and Turner (2009) state, “we do not advocate imagined contact as a replacement for existing interventions, such as extended or actual contact,” and suggest that imagined contact should be valued because of “its ability to encourage people to seek out contact, to remove inhibitions associated with existing prejudices, and to prepare people to engage outgroups with an open mind” (p. 231). Therefore, imagined contact, as well as other forms of indirect contact (e.g., pictures of outgroup members), should be implemented as a “first

step” toward the promotion of positive intergroup attitudes (Crisp & Turner, 2009, p. 231). It is also crucial that researchers continue to expand knowledge on the nature of these indirect forms of contact. For example, researchers (e.g., Turner et al., 2007) call for the investigation of potential influences on the effectiveness of these indirect intervention strategies. Therefore, the present study examined the role of previous intergroup contact in determining the effectiveness of interventions such as still images of outgroup members and imagined intergroup contact.

Many researchers acknowledge the important influence previous contact may have on intergroup attitudes (e.g., Harwood, Hewstone, Paolini, & Voici, 2005; McManus et al., 2011, Plant, 2004; Plant & Devine, 2003; Prestwich, Kenworthy, Wilson, & Kwan-Tat, 2008; Siperstein et al., 2011; Yazbeck et al., 2004). As researchers disentangle quantity of previous intergroup contact from the quality of that contact, they expose discrepancies in determining the significance of both factors (e.g., McManus, 2011; Yazbeck et al., 2004). For example, some research suggests that greater quantity of contact with individuals with intellectual disabilities such as DS is associated with more positive attitudes (Krajewski & Flaherty, 2000; Yazbeck et al., 2004). Yazbeck et al. (2004) investigated whether a variety of demographic factors (e.g., sex, age, education), as well as prior knowledge or regular contact, were associated with 1,100 Australian participants’ attitudes toward individuals with intellectual disabilities. Researchers used three measures of attitudes: the Scale of Attitudes Towards Mental Retardation and Eugenics-Revised (AMR&E-R), the Mental Retardation Attitude Inventory (MRAI), and the Community Living Attitudes Scale-Mental Retardation (CLAS-MR). Prior knowledge of and regular contact with people with intellectual disabilities (treated as a single variable) were associated with more positive intergroup attitudes, as was education and age (i.e., being young).

Although this research seems to support the influence of quantity of previous contact on attitudes, a major limitation of this study is that Yazbeck et al. (2004) did not differentiate between prior knowledge and regular contact. Knowledge and contact may have independent effects (or no effect, as suggested by McManus et al., 2011) and thus cannot be treated as a single variable. Although the researchers found that higher levels of contact were associated with significantly more positive attitudes, this study did not measure the quality of these interactions. More contact may increase the likelihood of having positive interactions; therefore, it is possible that the quality of contact, not the quantity, was actually the predictor of more positive attitudes. According to McManus et al. (2011), this failure to consider the quality of interactions with individuals with intellectual disabilities may help explain the discrepancies within the literature.

Other research has indeed taken quality of previous intergroup contact into consideration and has attempted to determine whether quantity or quality of contact is of greater importance in terms of intergroup attitudes (e.g., Hall & Minnes; Lawson & Walls-Ingram, 2010; Prestwich et al., 2008; Yuker, 1994). The literature overwhelmingly supports quality of previous contact as a significant predictor of intergroup attitudes (e.g., Allport, 1954; Lawson et al., 2010; McManus et al., 2011; Plant, 2004; Plant & Devine, 2003; Yuker, 1994). For example, Plant and Devine (2003) found that White participants with high-quality (i.e., positive) previous interracial contact reported more positive outcome expectancies regarding interactions with Black people, as well as less anxiety in anticipation of intergroup contact; quantity of previous contact was unrelated to outcome expectancies and anxiety. Similarly, Plant (2004) observed that White participants who reported more positive previous contact with Black people at time point one tended to have more positive contact with Black people over the following two weeks. The importance of quality of previous contact has also been supported in the domain of attitudes toward individuals with

disabilities, including DS (e.g., Hall & Minnes, 1999; Lawson & Walls-Ingram, 2010; McManus et al., 2011).

As previously mentioned, McManus et al. (2011) posit that much of the discrepancy related to the roles of quantity and quality of contact is due to the failure to take both variables into consideration when examining intergroup attitudes. These researchers assert that examining both quantity and quality of previous intergroup contact in the same study will help clarify which variable most accurately predicts participants' attitudes about individuals with intellectual disabilities. McManus et al. (2011) measured 125 undergraduate students' attitudes toward individuals with intellectual disabilities using the Mental Retardation Attitude Inventory-Revised (MRAI-R). Researchers developed nine items using a Likert-type scale to assess quantity of contact (e.g., "In the past, I have rarely interacted with individuals with intellectual disabilities") and six items to assess quality of contact (e.g., "Overall I have had positive experiences with people with intellectual disabilities"). Researchers found that quality of contact, not quantity, was significantly associated with more positive attitudes toward individuals with intellectual disabilities. This finding is supported by other researchers who have also identified quality of previous contact as a significant predictor of nondisabled individuals' attitudes toward individuals with DS (e.g., Hall & Minnes, 1999; Lawson & Walls-Ingram, 2010). Therefore, it appears that quality, not quantity, of previous contact is most significant in predicting nondisabled individuals' attitudes toward those with DS.

Although quality of previous contact has been identified as significant predictor of intergroup attitudes, as well as an influence on subsequent intergroup contact (e.g., Plant, 2004), the literature does not appear to extensively address the possible role that quality of previous contact plays in determining the effectiveness of interventions that promote attitude change. In

addition, the relationship between quality of previous contact and subsequent *indirect* contact (e.g., viewing pictures of an outgroup member and imagining contact) has not been thoroughly examined. However, researchers have investigated the influence of quantity of previous contact on the efficacy of both parasocial and imagined contact interventions (e.g., Cameron et al., 2011; Harwood, 2010; Schiappa et al., 2005). It appears that ingroup individuals with little or no prior experience with outgroup members may benefit most from these indirect contact interventions (Cameron et al., 2011; Schiappa et al., 2005).

How quality of previous contact influences the efficacy of indirect contact interventions remains unclear. For example, some researchers posit that “contact may not only improve intergroup attitudes among intolerant persons, but it may even work *best* [emphasis added] among such individuals” (Hodson, Costello, & MacInnis, 2013, p. 50). On the other hand, interventions involving imagined contact may be less successful among intolerant individuals, as these individuals may be “more resistant to the positive effects of imagined contact and/or find it more difficult to generate positive envisaged encounters” (Husnu & Crisp, 2011, p. 115). Therefore, it is necessary for future research, including the present study, to attempt to clarify these discrepancies by exploring potential individual factors (e.g., quality of previous contact) that may influence the effectiveness of indirect contact interventions in promoting positive intergroup attitudes.

Finally, it is important to note that “in research and in practice, we [unfortunately] tend to focus more on understanding and reducing negative attitudes – or on achieving states of tolerance, acceptance and respect – than on understanding and promoting positive attitudes” (Pittinsky, Rosenthal, & Montoya, 2011b, p. 41-42). According to Pittinsky, Rosenthal, and Montoya (2011a), positive and negative attitudes toward outgroups are nonbipolar, so they “are

not interchangeable in predicting positive versus negative behaviors toward those groups” (p. 134). Because positive and negative attitudes may change at significantly different times and rates, it is not appropriate to infer the level of positive attitudes by reversing the score on a measure of negative attitudes (Pittinsky et al., 2011b), a practice that remains prevalent throughout attitude research today. Pittinsky et al. (2011b) have therefore developed the Allophilia Scale to account for positive outgroup attitudes; thus far, this measure has only been applied in the domains of race (e.g., Pittinsky et al., 2011a) and sexuality (Fingerhut, 2011). As the overarching goal of the present study was to promote positive attitudes toward individuals with DS, the Allophilia Scale was examined in comparison to another, commonly-used attitude scale in the domain of disability (i.e., the MRAI-R; Antonak & Harth, 1994) with the hopes of more accurately measuring positive attitudes toward individuals with DS and further developing Pittinsky et al.’s (2011b) scale.

With the main objective of promoting positive attitudes toward individuals with DS, the present study aimed to expand current knowledge about implementing indirect forms of contact (i.e., viewing a positive portrayal of a man with DS and imagining a positive interaction with a man with DS) as interventions that promote positive attitude change in nondisabled individuals by examining these forms of contact individually and together. It was predicted that viewing the picture or imagining contact would be associated with more positive attitudes toward individuals with DS; it was also predicted that experiencing both forms of contact together would be associated with significantly more positive attitudes toward individuals with DS than either the picture or imagined contact conditions alone, based on Cameron et al.’s (2011) use of both forms of contact as an enhanced imagined contact intervention. The present study also examined the quality of previous contact as a moderator, such that higher levels of quality would be associated

with more positive attitudes toward individuals with DS among all participants. Additionally, this study explored the nature of the relationship between quality of previous contact and the effectiveness of the interventions that will be implemented in this research. However, specific hypotheses were not made due to previously discussed discrepancies in the literature. Also, it was expected that those with less previous contact would benefit more from both interventions. The present study's investigation of indirect contact and the quality of previous contact may have important implications in determining effective interventions that promote the integration of individuals with DS into mainstream society.

Method

Participants

The participants for this study were 87 undergraduate students (65 females, 21 males, 1 gender fluid individual; 53 White, 13 Asian/Asian American, 11 Mixed Race/Biracial, 6 Black/African American, 2 Latin@, 2 declined to state), age 18 and older ($M_{age} = 19.5$), at a private liberal arts college in the Midwest. Participants were recruited for the "Influences on Attitudes Study" by word of mouth, Macalester College email, or a Facebook message/post inviting them to participate in this two-part study. Students participating in Introduction to Psychology courses were recruited through Sona Systems, the college's participant pool management software. All participants read and agreed to a consent form before beginning both parts of the study, were debriefed upon completion of both parts of the study, and were thanked for their time. Participants in the Introduction to Psychology courses were compensated with course credit, while others received five dollars.

Design

This study had a 2 x 2 factorial design with Picture Contact (still image, no still image) and Imagined Contact (scenario, no scenario) as between-subjects independent variables. The independent variable Picture Contact was defined as whether or not participants viewed a still image of an individual with Down syndrome (DS). The independent variable Imagined Contact was defined as whether or not participants imagined a scenario in which they had a positive interaction with an individual with DS. Therefore, this study had four conditions: the control condition, experimental condition one_{picture}, experimental conditional two_{imaginedcontact}, and experimental condition three_{picture&imaginedcontact}. This study had two dependent variables, Attitudes and Allophilia. The variable Attitudes was defined as participants' self-reported attitudes toward individuals with DS, with higher scores indicating more favorable attitudes toward such individuals. Allophilia was defined as participants' self-reported liking (i.e., having nonstereotyped positive attitudes; Pittinsky et al., 2011a) of individuals with DS.

Materials

SurveyMonkey, an online survey website, was used to collect data from participants for both parts of this study. For the second part of the study, participants used computers located in one of the Psychology Department's labs to complete the experiment.

Picture. Participants in experimental conditions one_{picture} and three_{picture&imaginedcontact} viewed a still image (in color) depicting a young adult, White male with DS, which has been used in two previous studies (Varughese & Luty, 2010; Varughese et al., 2011). Viewing this still image was considered a form of positive indirect contact through media. The man with DS is "smartly dressed in a shirt and tie apparently at work in an office," (Varughese et al., 2011, p. 405), and he is holding a coffee cup and several binders. The background of the original image, although blurry, includes two other individuals. It is unclear as to whether previous research

included these two individuals in the background; therefore, the image was cropped and resized using the Microsoft Windows Paint program so that only the man with DS was portrayed. The cropped image was validated as a positive portrayal of an individual with DS in a pilot study previously conducted by the researcher. The original image (by George Doyle) was purchased online from Getty Images, a commercial image gallery. The cropped version of this image used in the present study, as well as instructions for viewing the image, can be found in Appendix A. Although previous research (Varughese & Luty, 2010; Varughese et al., 2011) included a vignette describing a hypothetical individual with DS as the man in the image, the present study did not include the vignette in order to make the Picture and Imagined Contact Scenario stimuli as distinct as possible. The man in the still image was simply referred to as “Oliver.”

Imagined Contact Scenario. Participants in experimental conditions two_{imaginedcontact} and three_{picture&imaginedcontact} received instructions to imagine having positive intergroup contact with an individual with DS. The instructions in the present study were adapted from previous research (Crisp & Turner, 2009; Husnu & Crisp, 2011) in order to encourage participants to imagine a more elaborate scenario, thus boosting the efficacy of imagined contact. The instructions varied slightly between the two conditions, as experimental condition three_{picture&imaginedcontact} included an image of the outgroup member with whom participants imagined having contact. The instructions for experimental condition two_{imaginedcontact} were as follows: “I would like you to take a minute to imagine yourself meeting a stranger with Down syndrome for the first time. Imagine that the interaction is positive, relaxed, and comfortable. During the conversation, imagine you find out some interesting and unexpected things about the stranger. While imagining this think specifically of when (e.g., next Thursday) and where (e.g., the bus stop) this conversation might occur.” The instructions for experimental condition three_{picture&imaginedcontact} substituted “stranger

with Down syndrome” with “Oliver.” This scenario instructed participants to engage in the simulation using a positive tone and encouraged participants to run through a mental script of the interaction (i.e., not just think about people with DS in general), which is “critical for observing positive effects” (Crisp & Turner, 2009, p. 234). These instructions also directed participants to focus on specific details of the interaction, which has been empirically shown to enhance the effects of imagined contact (e.g., Husnu & Crisp, 2011).

Measures

Attitudes. During both parts of the study, participants’ attitudes toward individuals with DS were measured by Antonak and Harth’s (1994) 29-item Mental Retardation Attitude Inventory-Revised (MRAI-R). More recent research has referred to this measure as the Intellectual Disability Attitude Inventory – Revised (Rice, 2009), but the present study will hereafter refer to it as the MRAI-R. McManus et al. (2011) found the MRAI-R to be a reliable measure of attitudes toward individuals with intellectual disabilities ($\alpha = .88$, reported by McManus et al.). For the present study, all 29 items were modified to ask about DS, as opposed to intellectual disabilities in general. The MRAI-R consists of four subscales indicating favorable attitudes toward individuals with DS. The first is the Integration—Segregation (INSE) subscale, which consists of seven items related to the integration or segregation of individuals with DS into schools and the workplace (e.g., “The child with Down syndrome should be integrated into regular classes in school”). The second is the Social Distance (SDIS) subscale, which has eight items related to attitudes about living or being close in proximity to individuals with DS (e.g., “I have no objection to attending the movies or a play in the company of people with Down syndrome”). The third is the Private Rights (PRRT) subscale, which has seven items related to the civil rights of individuals with DS (e.g., “Regardless of his or her own views, a private

nursery school director should be required to admit children with Down syndrome”). The fourth is the Subtle Derogatory Beliefs (SUDB) subscale, which has seven items related to unfavorable attributes about individuals with DS (e.g., “Children with Down syndrome waste time playing in class instead of trying to do better”). McManus et al., (2011) reported the internal consistency of all four subscales (INSE $\alpha = .82$, SDIS $\alpha = .78$, PRRT $\alpha = .63$, SUDB $\alpha = .77$). In the current sample, internal consistency was sufficiently high for the overall MRAI-R and subscales at Time 1 (T1; pre-session survey) and Time 2 (T2; lab session) except for the PRRT T1, which was marginally reliable (overall MRAI-R T1 $\alpha = .91$, INSE T1 $\alpha = .78$, SDIS T1 $\alpha = .81$, PRRT T1 $\alpha = .67$, SUDB T1 $\alpha = .82$.; overall MRAI-R T2 $\alpha = .90$, INSE T2 $\alpha = .80$, SDIS T2 $\alpha = .82$, PRRT T2 $\alpha = .74$, SUDB T2 $\alpha = .77$). The items from each subscale are mixed together in the inventory. Participants rated their agreement with each item on the original scale from 1 (*strongly disagree*) to 4 (*strongly agree*), with higher scores indicating more favorable attitudes toward individuals with DS. Seventeen items are worded negatively and were reverse coded by the researcher; therefore, this measure assumes that negative and positive attitudes are bipolar.

Allophilia. During both parts of the study, participants’ liking for individuals with DS was measured by the Allophilia Scale, developed by Pittinsky and colleagues (2011b) to assess outgroup liking in the domain of race. It does not appear that the Allophilia Scale has been previously implemented in the domain of disability; therefore, the present study aimed to further develop and validate this scale by modifying all 17 items to apply to individuals with DS. The Allophilia Scale contains five subscales indicating liking for outgroup members. The first subscale is Affection, which consists of four items indicating positive affective evaluations of outgroup members (e.g., “I respect individuals with DS”). The second is Comfort, which consists of three items indicating a feeling of ease with outgroup members (e.g., “I feel like I can be

myself around individuals with DS”). The third subscale, Kinship, consists of three items indicating a feeling of closeness with outgroup members (e.g., “I feel a sense of belonging with individuals with DS”). The fourth subscale is Engagement, which consists of four items indicating a tendency to seek to affiliate and interact with outgroup members (e.g., “I am truly interested in understanding the points of view of individuals with DS”). The final subscale, Enthusiasm, consists of three items indicating emotionally heightened positive attitudes about outgroup members (e.g., “I feel inspired by individuals with DS”). Pittinsky et al. (2011b) found good internal consistency for all subscales when the target individuals were African Americans (Affection $\alpha = .89$, Comfort $\alpha = .91$, Kinship $\alpha = .89$, Engagement $\alpha = .92$, Enthusiasm $\alpha = .88$; no alpha coefficient reported for the entire scale), thus supporting the Allophilia Scale as a reliable measure of liking toward outgroup members. In the current sample, internal consistency was sufficiently high for the overall Allophilia and subscales at T1 and T2 (overall Allophilia T1 $\alpha = .94$, Affection T1 $\alpha = .90$, Comfort T1 $\alpha = .88$, Kinship T1 $\alpha = .82$, Engagement T1 $\alpha = .86$, Enthusiasm T1 $\alpha = .91$; overall Allophilia T2 $\alpha = .95$, Affection T2 $\alpha = .93$, Comfort T2 $\alpha = .93$, Kinship T2 $\alpha = .88$, Engagement T2 $\alpha = .86$, Enthusiasm T2 $\alpha = .91$). Participants rated their agreement with each item on a scale from 1 (*strongly disagree*) to 6 (*strongly agree*).

Quantity of Contact. In the first part of the study only, participants were asked to report the amount of previous contact they have had with individuals with DS using a scale from 1 (*none*) to 9 (*a lot*). This measure was created for the present study. Quantity of participants’ previous contact was investigated as a potential moderator of attitudes and liking across all four conditions. Also, these data were examined to determine if quantity of previous contact influences the effectiveness of the two indirect contact interventions used in present study.

Importantly, a skewness value of .26 suggests that the distribution of quantity of previous contact scores is approximately symmetric in this sample.

Quality of Contact. In the first part of the study only, participants who reported having any contact with individuals with DS were asked to also report the quality of that contact. The present study modified the six items ($\alpha = .90$, reported by McManus et al., 2011; $\alpha = .93$ in the current sample) used by McManus et al. to assess quality of contact with individuals with DS. McManus et al. (2011) adapted three items from Plant and Devine's (2003) previous research on racial interactions, which the present study further adapted to apply to individuals with DS (e.g., "I have had many positive experiences with individuals with Down syndrome"). McManus et al. (2011) created the other three items, which were also adapted for the present study (e.g., "I have enjoyed the experiences I have had with individuals with Down syndrome"). As in McManus et al.'s (2011) study, participants rated their agreement with each item on a scale from 1 (*disagree very strongly*) to 9 (*agree very strongly*), with higher scores indicating higher quality of previous contact with individuals with DS. Quality of participants' previous contact was investigated as a potential moderator of attitudes and liking across all four conditions. These data were examined to determine if quality of previous contact is related to the effectiveness of the two indirect contact interventions used in present study. Importantly, a skewness value of -.07 suggests that the distribution of average quality of previous contact scores is approximately symmetric in this sample.

Demographics. Participants were asked to provide demographic information (i.e., age, sex, and race) during part one of this study. All measures can be found in Appendix B.

Procedure

Participants were recruited by word of mouth, Macalester College email, a Facebook message/post, or through Sona Systems to participate in a two-part study about influences on people's attitudes. Participants signed up for a lab session (i.e., part two of this study) approximately two weeks in advance; one week prior to the scheduled session, all participants were sent a direct link to a pre-session survey administered through the SurveyMonkey website, which was completed on any accessible computer within approximately two days of receiving the link. It took participants approximately 15 minutes to complete the 53-item pre-session survey. On the first screen, participants consented to participating in this two-part survey by clicking "I wish to continue." Participants were reassured that their information would remain confidential and that they could quit the study at any point in time. Additionally, participants were asked to complete the survey in a non-distracting environment and to remain attentive throughout their participation. On the following screen, participants typed in their Macalester ID number so that the data from the pre-session survey could be subsequently matched with their data provided during the lab session. Participants were reassured that their ID numbers would be used solely for data-matching purposes. Next, participants completed the MRAI-R and Allophilia Scale to report their attitudes toward and liking of individuals with DS. Participants were then asked to report the quantity and quality of previous contact they have had with individuals with DS. Participants finished the pre-session survey by reporting their demographic information. They were thanked for their participation.

Approximately 24 hours before their scheduled lab session, participants were sent an email reminding them of the time and location of the session. The researcher set up computers before participants arrived by opening the survey for part two of the study (also administered by SurveyMonkey). The researcher was in the room for the entire study. Participants consented to

part two of the study and were reassured that their information would remain confidential and that they could quit the study at any point in time. Participants then typed in the same Macalester ID number they provided in the pre-session survey, so the research could match up participant data from both parts of the study during data analysis. Additionally, participants reported the last digit of their phone number, allowing SurveyMonkey to randomly assign participants to one of the four conditions (control = 21 participants, experimental condition one_{picture} = 22 participants, experimental condition two_{imaginedcontact} = 22 participants, or experimental condition three_{picture&imaginedcontact} = 22 participants). The researcher visually confirmed that participants were assigned to the correct condition and that the page loaded correctly. All participants were informed that some of the survey items might seem familiar, but that they should not worry about remembering what they previously reported during the pre-session survey; rather, it was important to honestly report their feelings in that particular moment. Participants assigned to the control condition were asked to complete the MRAI-R and Allophilia Scale. Participants assigned to experimental condition one_{picture} were instructed to view the still image of a young man with DS and then complete the MRAI-R and Allophilia Scale. In experimental condition two_{imaginedcontact}, participants imagined a scenario in which they interacted with a male stranger who has DS; then, they also completed the MRAI-R and Allophilia Scale. Participants assigned to experimental condition three_{picture&imaginedcontact} viewed the still image of a man with DS, imagined interacting with that man, and then completed the MRAI-R and Allophilia Scale. After completing the lab session, participants received a debriefing form that explained the purpose of the present study and directed them to the Macalester College Health and Wellness Center if they felt any negative effects from the study (which was not anticipated). Participants were encouraged to contact the researcher or the Macalester College Psychology Department if they

had any further questions or concerns. All participants were compensated and thanked for their time.

Results

Pearson's correlations were completed to examine the relationships among the following variables from Time 1 (T1; pre-session survey): average overall and subscale MRAI-R scores, average overall and subscale Allophilia scores, and the average quality and quantity of previous contact participants had with individuals with DS (see Table 1). An alpha level of .05 was adopted a priori. All average MRAI-R scores (i.e., overall and subscale) were significantly and positively correlated with each other. All average Allophilia scores (i.e., overall and subscale) were significantly and positively correlated with each other as well. Average overall and subscale MRAI-R scores were significantly intercorrelated with average overall and subscale Allophilia scores with one exception: the MRAI-R subscale PRRT and the Allophilia subscale Kinship were not significantly associated with each other. Average quality of previous contact was significantly and positively associated with average overall and subscale MRAI-R scores, average overall and subscale Allophilia scores, and average quantity of previous contact. Average quantity of previous contact was significantly and positively associated with scores on the MRAI-R subscale SUDB; the relationship between average quantity of contact and average overall MRAI-R and PRRT scores approached significance ($r = .204, p = .06$; $r = .194, p = .08$). Average quantity of previous contact was significantly and positively associated with overall and subscale Allophilia scores, with the exception of the Engagement subscale. These findings support the hypothesis that quality of previous contact is associated with more positive attitudes and liking toward individuals with DS. Additionally, there is partial support that greater quantity

of previous contact is associated with more positive attitudes and liking toward individuals with DS.

Pearson's correlations were completed to examine the relationships among the following variables from Time 2 (T2; lab session): average overall and subscale MRAI-R scores, and average overall and subscale Allophilia scores (see Table 2). All MRAI-R T2 and Allophilia T2 scores were significantly and positively correlated. Similarly, another Pearson's correlation indicated that average overall MRAI-R and Allophilia scores from T1 and T2 were significantly intercorrelated (see Table 3). These findings provide further evidence of the positive relationship between attitudes and liking toward individuals with DS.

A multivariate analysis of variance (MANOVA) was conducted to examine the potential effect of condition on participants' attitudes and liking toward individuals with DS. The independent variable, condition, had four levels: control condition, experimental condition one_{picture}, experimental conditional two_{imaginedcontact}, and experimental condition three_{picture&imaginedcontact}. The dependent variables were average MRAI-R and Allophilia subscale scores from T2. Results indicate that condition did not have a significant effect on participants' attitudes or liking toward individuals with DS [Wilks' λ for condition = .81, $F(27, 217) = .60$, $p = n.s$] (see Table 4 for means and standard error values). Therefore, these results indicate that the two indirect contact interventions did not have significant effects on attitudes or liking¹, although a pattern in the data shows that participants who imagined a positive scenario reported the highest average MRAI-R and Allophilia subscale scores. Overall, the hypotheses that viewing a

¹ A two-way MANOVA was subsequently conducted to examine the potential effect of Picture Contact (no picture, picture) and Imagined Contact (no imagined contact scenario, imagined contact scenario) on average overall MRAI-R and Allophilia scores from T2. Consistent with the one-way MANOVA, the interventions did not have significant main or interactive effects on participants' attitudes or liking toward those with DS.

picture and/or imagining a scenario would result in significantly more positive attitudes and greater liking were not supported.

A repeated measures ANOVA was conducted to examine the potential change in participants' average overall MRAI-R scores from T1 to T2 based on condition. Results indicate that participants' overall MRAI-R scores did not significantly change from T1 to T2 across all conditions [Wilk's λ for change in attitudes over time, based on condition = .95, $F(3, 83) = 1.32$, $p = n.s.$] (see Table 5 for means and standard error values). Irrespective of condition, participants' average overall MRAI-R scores did not significantly increase from T1 to T2, although one would not necessarily expect significant results from this test because it includes the control condition [$F(1, 83) = 2.12$, $p = n.s.$]. These results do not support the hypothesis that participants' attitudes toward individuals with DS would be more positive after receiving one or both of the indirect contact interventions.

Another repeated measures ANOVA was conducted to examine the potential change in participants' overall Allophilia scores from T1 to T2 based on condition. Results indicate that participants' overall Allophilia scores did not significantly change from T1 to T2 across all conditions [Wilk's λ for change in liking over time, based on condition = .98, $F(3, 83) = .66$, $p = n.s.$] (see Table 5 for means and standard error values). Irrespective of condition, participants' average overall Allophilia scores did not significantly increase from T1 to T2, although one would not necessarily expect significant results from this test because it includes the control condition [$F(1, 83) = 2.09$, $p = n.s.$]. These results do not support the hypothesis that participants' liking toward individuals with DS would be greater after receiving one or both of the indirect contact interventions.

A two-way MANOVA was conducted in order to examine the potential main and interactive effects of condition and quality (high/low) of previous contact with individuals with DS on the average overall MRAI-R and Allophilia scores (from T2) among the 69 participants who reported having previous contact with individuals with DS. Quality of contact was determined as low ($n = 35$) or high ($n = 34$) by a median split of participants' average scores (low ≤ 5.67). Consistent with previous findings, the results indicate that condition did not have a significant main effect on participants' attitudes or liking toward individuals with DS [Wilks' λ for condition = .97, $F(6, 120) = .33$, $p = \text{n.s.}$]. Quality of previous contact did have a significant main effect on participants' attitudes and liking [Wilks' λ for quality = .72, $F(2, 60) = 11.79$, $p < .001$, $\eta_p^2 = .28$]. Univariate tests revealed that participants with high-quality previous contact reported significantly higher average overall MRAI-R scores than those with low-quality previous contact [$F(1, 61) = 9.39$, $p = .003$, $\eta_p^2 = .13$] (see Figure 1), as well as significantly higher average overall Allophilia scores [$F(1, 61) = 23.95$, $p < .001$, $\eta_p^2 = .28$] (see Figure 2). There was not a significant interaction between condition and quality of previous contact [Wilks' λ for condition based on interaction = .93, $F(6, 120) = .74$, $p = \text{n.s.}$] (see Table 6 for means and standard error values). Although these results do support a main effect of quality of previous contact, such that participants with high-quality previous contact reported more positive attitudes and greater liking toward individuals with DS, they do not support the hypothesis that the interventions would have a differential effect on attitudes and liking as a function of the quality of previous contact with individuals with DS.

Finally, a two-way MANOVA was conducted in order to examine the potential main effect of quantity of previous contact with individuals with DS on 85 participants' average overall MRAI-R and Allophilia scores from T2; this analysis also explored a potential interaction

between condition and quantity of previous contact. Quantity of previous contact was determined as low ($n = 51$) or high ($n = 34$) by a median split of participants' average scores ($\text{low} \leq 4$). Consistent with previous findings, the results indicate that condition did not have a significant main effect on participants' attitudes or liking toward individuals with DS [Wilks' λ for condition = .96, $F(6, 152) = .46$, $p = \text{n.s.}$]. Quantity of previous contact did not have a significant main effect on participants' attitudes and liking [Wilks' λ for quantity = .96, $F(2, 76) = 1.63$, $p = \text{n.s.}$]. There was not a significant interaction between condition and quantity of previous contact [Wilks' λ for condition based on interaction = .87, $F(6, 152) = 1.80$, $p = \text{n.s.}$] (See Table 7 for means and standard error values). This analysis does not support a main effect of quantity of previous contact on attitudes and liking toward individuals with DS, which contrasts the previously conducted Pearson's correlation that suggested a significant, positive relationship between quantity of previous contact and liking toward individuals with DS.

Discussion

The present study aimed to examine the roles of two indirect contact interventions (viewing a positive portrayal of a man with DS and imagining a positive interaction with a man with DS), both individually and together, in predicting nondisabled individuals' attitudes and liking toward those with DS. This research was also conducted to expand the literature on mass-mediated intergroup contact, which has traditionally focused on television programs and films (e.g., Hall & Minnes, 1999; Schiappa et al., 2005). Recent research (e.g., Pearl et al., 2012; Varughese et al., 2011) supports the use of still images to promote positive intergroup attitudes; therefore, the present study predicted that viewing the positive image of a man with DS would be associated with more positive attitudes and greater liking toward individuals with DS. Additionally, this study was intended to contribute to the literature on imagined intergroup

contact by implementing an imagined contact intervention to promote positive attitudes and liking toward individuals with DS, and by examining the potential interactive effects of both viewing a positive image and imagining a positive scenario. This study predicted that imagining a positive interaction with a man with DS would also be associated with an increase in positive attitudes and liking toward individuals with DS, and that experiencing both forms of indirect contact would be associated with significantly more positive attitudes toward individuals with DS than either the picture or imagined contact conditions alone.

In addition, the present study investigated quality of previous contact with an individual with DS as a potential moderator, such that high-quality contact would predict more positive attitudes in all conditions. This study also aimed to fill gaps in the literature by exploring how quantity and quality of previous contact influence the efficacy of these two indirect contact interventions; although some research suggests that nondisabled individuals with less intergroup contact may benefit the most from these interventions (Cameron et al., 2011; Schiappa et al., 2005), the influence of quality of previous contact on the effectiveness of indirect contact interventions was unclear. Lastly, the present study aimed to determine whether the Allophilia Scale is a suitable measure of liking within the domain of disability. The purpose of this research was to better understand the influences on nondisabled individuals' attitudes and liking toward those with DS in order to promote the integration and well-being of individuals with DS in mainstream society.

The results of this study do not support the hypothesis that viewing the positive image of a man with DS predicts significantly more positive attitudes or greater liking toward individuals with DS. Participants who viewed the image did not have significantly more positive attitudes or greater liking toward those with DS when compared to participants in the other conditions, and

these participants did not report significantly different attitudes or liking from T1 to T2 (i.e., from before to after receiving the picture intervention). These results do not support previous research on mass-mediated intergroup contact in general (e.g., Dovidio et al., 2011; Schiappa et al., 2012), or studies that specifically implemented still images as a means of promoting positive attitude change (e.g., Marshall et al., 2009; Pearl et al., 2012; Varughese & Luty, 2010; Varughese et al., 2011). The positive image intervention administered in this study has been implemented in past research (i.e., Varughese & Luty, 2010; Varughese et al., 2011) that found this intervention to be an effective means of reducing stigma toward individuals with intellectual disabilities. Importantly, the present study differed slightly from Varughese's earlier work by utilizing a cropped version of the original image, excluding two blurry figures of coworkers in the background. Including these individuals in the image could be a potential confound in past research, as this image may serve as a portrayal of intergroup contact (Dovidio et al., 2011) – rather than just an image of an outgroup member – that could have differentially influenced participants' attitudes in the previous study. Overall, this study's findings may suggest that still image interventions do not effectively promote positive attitudes or liking toward individuals with DS; however, these results may also imply that this particular image is not a meaningful form of indirect contact. Thus, future research should determine whether there are certain aspects of images portraying outgroup members that enhance their efficacy as potential attitudinal interventions.

The results of this study do not support the hypothesis that imagining a positive interaction with a man with DS predicts significantly more positive attitudes or greater liking toward individuals with DS. Participants who received the imagined contact intervention did not report significantly more positive attitudes or greater liking than participants in other conditions,

and they did not report a significant increase in attitudes or liking from T1 to T2. These results contradict previous research on imagined intergroup contact (e.g., Turner et al., 2007). Notably, a pattern in the data revealed that participants in the imagined contact condition consistently scored higher on the MRAI-R and Allophilia scales, though these differences did not reach significance; perhaps this pattern would have approached significance in a larger sample.

Although the imagined contact instructions implemented in this study were adapted from and previously validated by past research (Crisp & Turner, 2009; Husnu & Crisp, 2011), it is possible that participants were not actively engaged in the simulation. Instructions prompting participants to imagine a more elaborate scenario (see Crisp & Turner, 2009 for examples of instructions varying in detail) might have been more effective in promoting positive attitudes and greater liking among participants in the present study. Future research should explore ways to enhance imagined intergroup contact as a beginning step toward promoting positive intergroup attitudes and liking.

The results of this study indicate that the two indirect contact interventions (i.e., viewing a picture and imagining a scenario) do not have combined effects on participants' attitudes and liking toward individuals with DS, such that participants who both viewed a still image of a man with DS and imagined a positive interaction with a man with DS did not report significantly more positive attitudes or greater liking than participants who received only one or none of the interventions. Although previous research has not directly examined the potential combined effects of these two interventions, Cameron et al. (2011) implemented an enhanced imagined contact intervention that included outgroup pictures and found that participants' intergroup attitudes were more positive in the imagined contact and pictures condition in comparison with those in the control condition who simply reported intergroup attitudes. However, these

researchers did not examine potential independent effects of images of outgroup members or imagined contact. The current study's findings suggest that these two indirect contact interventions do not interact to predict significantly more positive attitudes or liking toward individuals with DS. These results could be related to issues of inadequate stimuli, as previously discussed (e.g., the imagined contact scenario was not sufficiently elaborate). Given the findings about the role of quality of previous contact discussed below, it does not seem likely that the non-significant findings discussed thus far are a function of a lack of variance in participants' attitudes about or liking of individuals with DS.

Indeed, the results of this study indicate that quality of previous contact with individuals with DS is significantly and positively associated with participants' attitudes and outgroup liking, such that participants who had high-quality previous contact reported significantly more positive attitudes and greater liking toward individuals with DS than participants who had low-quality previous contact. These findings are consistent with past research (e.g., McManus et al., 2011). Although these results indicate a main effect of quality of previous contact, they do not support the hypothesis that the effectiveness of the indirect contact interventions would vary as a function of quality of previous contact with individuals with DS. However, these results must be interpreted with caution, as the sample size of participants who reported quality of previous contact ($n = 69$) was insufficient after being divided into four conditions and then grouped by high/low-quality previous contact within each condition.

The present study yielded mixed findings about quantity of previous contact. There was partial support for a significant, positive relationship between quantity of previous contact and liking toward individuals with DS, such that participants who had more previous contact reported greater liking toward individuals with DS. However, subsequent analyses did not support a

significant main effect of quantity, and they did not indicate that effectiveness of the indirect contact interventions significantly varied as a function of quantity of previous contact with individuals with DS. Participants with less previous contact were expected to benefit the most from these indirect contact interventions (Cameron et al., 2011; Schiappa et al., 2005), but the results from the present study do not support this hypothesis. It is important to interpret these results with caution, as, once again, the sample size ($n = 85$) was insufficient once participants were divided by condition and quantity of previous contact. Additionally, there were more “low quantity” participants than “high quantity,” even after a median split; thus, the number of participants with more previous contact was inadequate within each condition. Future research must continue to investigate the role of quantity of previous contact regarding intergroup attitudes and liking and indirect contact interventions, as past research (e.g., McManus et al., 2011; Plant & Devine, 2003; Yazbeck et al., 2004) and the present study report mixed findings.

Lastly, the results of the present study suggest that the Allophilia Scale is a reliable measure of participants’ liking toward individuals with DS, and that participants’ attitudes and liking toward individuals with DS are significantly and positively correlated. However, further research on implementing the Allophilia Scale within the domain of disability is necessary, as some scale items may be problematic when applied to disability/DS. For example, scale items such as “I feel inspired by individuals with DS” and “I am impressed by individuals with DS” might indicate participants’ endorsement of the heroic survivor stereotype that is often applied to people with disabilities (Nario-Redmond, 2010). According to Nario-Redmond (2010), nondisabled individuals often view people with disabilities (including DS) as brave and inspiring for “overcoming [the] hardships” (p. 478) of disability, reflecting paternalistic attitudes. Sirlopu et al. (2008) state that nondisabled people may experience feelings of liking toward individuals

with DS while simultaneously perceiving said individuals as incompetent. Therefore, it is possible that participants in the present study who scored high on the Allophilia Scale also hold paternalistic attitudes toward individuals with DS. Unfortunately, assessing paternalism was beyond the scope of the present study; future research must continue to examine Allophilia in the context of disability and attempt to disentangle feelings of liking from those of paternalism.

The major limitation of this study was the small sample size, which was especially inadequate once participants were divided by quantity and/or quality of previous contact within each condition. Because the power to detect any significant differences among groups was limited, results should be interpreted with caution. Some patterns within the data were in the expected direction (e.g., an increase in positive attitudes and liking after receiving the imagined contact intervention), and results may have reached significance if the sample had been larger. Additionally, there may be an issue with the external validity of the present study, as participants were all Macalester College students. According to Yazbeck et al. (2004), undergraduates are more likely to report positive attitudes toward individuals with intellectual disabilities than those who are older and/or have received less education. Therefore, the findings of the present study are not necessarily generalizable to other populations.

Regarding internal validity, the measures utilized in this study appeared sufficiently reliable, although the Cronbach's alpha for the PRRT subscale of the MRAI-R was not ideal. Also, participants completed the MRAI-R and Allophilia Scale at T1 and T2; therefore, testing effects may have influenced the results of this study. Participants reported information on their attitudes and liking toward individuals with DS in the pre-session survey and during the lab session so that the researcher could conduct within-subjects analyses. Even though a minimum of five days elapsed between the completion of the pre-session survey and the lab session,

participants may have remembered their initial responses. Participants were advised to report their attitudes and feelings in that specific moment. However, it is possible that they tried to answer items in a manner consistent with their earlier responses. Perhaps more time between the pre-session survey and the lab session would have prevented these potential testing effects. Additionally, some participants completed the lab session seven days after the pre-session survey; ideally, all participants would wait for the same amount of time between the two components of this study.

Another major limitation of the present study is that participants were asked to report their own explicit attitudes and liking toward individuals with DS. Therefore, participants potentially answered items in a socially desirable manner instead of reporting their actual attitudes and feelings (Antonak & Livneh, 2000). Even if nondisabled individuals do not explicitly discriminate against individuals with DS, they may nevertheless hold implicit biases toward said individuals. Thus, it is critical that future research investigates the relationship between indirect contact interventions and implicit attitudes toward individuals with DS.

One implication of this study is that pictures of outgroup members alone may not serve as a meaningful form of indirect contact. It appears that only Varughese and Luty (2010) and Varughese et al. (2011) have investigated the effects of viewing a picture of an individual with DS on nondisabled individuals' attitudes; as previously stated, research on mass-mediated intergroup contact has traditionally focused on television. It is possible that pictures of individuals with DS are not effective attitudinal interventions. However, future research must examine similar picture-based interventions that appear to successfully promote positive intergroup attitudes in the domain of disability, as well as others, in order to determine whether there are certain aspects of still images that increase their efficacy as potential interventions. For

example, researchers should investigate the extent to which the background or setting of an image influences viewers' attitudes and liking toward the depicted outgroup member. Perhaps it is important that the target of the image is participating in a socially desirable activity (indeed, in the current study, the image depicting a man with DS in a work setting was judged as most positive), or that the image shows outgroup and ingroup members interacting in a positive manner.

Another implication of this study's results is that researchers must identify additional ways to enhance the effectiveness of imagined intergroup contact interventions. Husnu and Crisp (2011) found that closing one's eyes while imagining a positive intergroup interaction can increase intervention efficacy, as does imagining more elaborate scenarios. Perhaps future research could identify which types of details (e.g., details about the outgroup member, the scene, or the interaction itself) play larger roles in influencing intergroup attitudes and liking. Overall, it is important to better understand both imagined intergroup contact and positive portrayals of outgroup members as interventions for promoting the integration and acceptance of individuals with DS because the implementation of these interventions is relatively simple and can be done on a large scale (e.g., photo campaigns to promote the acceptance and appreciation of individuals with DS).

A major implication of the present study is that quality of previous contact with someone with DS is significantly related to one's attitudes and liking toward said individuals. While the results of this study suggest that quantity of previous contact may have an important role in predicting positive attitudes and liking toward individuals with DS, it appears that quality of previous contact has a stronger association. Therefore, researchers must not assume that nondisabled people who frequently interact with individuals with DS necessarily have more

positive attitudes or greater outgroup liking. These findings indicate that interventions promoting the acceptance and appreciation of individuals with DS should focus on facilitating high-quality intergroup interactions. Although the likelihood of experiencing high-quality intergroup contact increases with greater amounts of contact, quality appears to be a more critical component in promoting positive attitudes and liking toward individuals with DS. However, future research should also aim to clarify the role of quantity of previous contact regarding indirect contact interventions, as the literature contains mixed findings (including those of the present study).

Another important implication of this study's findings is that the Allophilia Scale appears to be a reliable measurement of outgroup liking within the domain of disability. Future research must continue to investigate the role of Allophilia in promoting the integration and acceptance of individuals with DS. Additionally, it is crucial to better understand how certain aspects of Allophilia (e.g., items from the Enthusiasm subscale) potentially relate to paternalism; researchers must examine this potential relationship in order to develop interventions that foster liking toward individuals with DS without simultaneously enabling paternalism.

Once again, future research should continue to examine potential indirect contact interventions, specifically the use of still images of outgroup members and imagined intergroup contact. Researchers should also work to identify critical components of each of these forms of indirect contact (e.g., who is included in the still image, what details are important to imagine) in order to enhance their potential as attitudinal interventions. Ideally, future studies will examine the influence of indirect contact interventions on attitudes and liking among participants in the general population who greatly vary in the quantity and quality of previous contact they have had with individuals with DS. Further research is necessary in order to determine which factors influence the effectiveness of indirect contact interventions. This research will be crucial in the

development of interventions that promote the successful integration of individuals with DS into mainstream society.

Table 1

Intercorrelations for Average Scores on the MRAI-R Overall and Subscales, Allophilia Overall and Subscales, Quality of Contact, and Quantity of Contact from T1

Measure	1	2	3	4	5	6	7	8	9	10	11	12
1. MRAI-R												
2. INSE	.85***											
3. SDIS	.78***	.54***										
4. PRRT	.78***	.56***	.45***									
5. SUDB	.84***	.66***	.59***	.50***								
6. Allophilia	.61***	.44***	.62***	.45***	.47***							
7. Affection	.61***	.41***	.64***	.47***	.46***	.88***						
8. Comfort	.46***	.39***	.50***	.26*	.37***	.80***	.68***					
9. Kinship	.35**	.28**	.37***	.18	.30**	.80***	.60***	.72***				
10. Engagement	.61***	.44***	.58***	.50***	.47***	.86***	.73***	.52***	.53***			
11. Enthusiasm	.45***	.30**	.45***	.42***	.30**	.79***	.66***	.41***	.45***	.71***		
12. Quality	.39**	.31**	.33**	.26*	.36**	.63***	.62***	.65***	.59***	.52***	.50***	
13. Quantity	.20	.08	.18	.19	.22*	.33**	.36**	.34**	.31**	.12	.35**	.58***

Note. MRAI-R = overall score on the Mental Retardation Attitude Inventory-Revised ($n = 87$); INSE = score on the Integration—Segregation subscale ($n = 87$); SDIS = score on the Social Distance subscale ($n = 87$); PRRT = score on the Private Rights subscale ($n = 87$); SUDB = score on the Subtle Derogatory Beliefs subscale ($n = 87$). Allophilia = overall score on the Allophilia Scale ($n = 87$); Affection subscale score ($n = 87$); Comfort subscale score ($n = 86$); Kinship subscale score ($n = 86$); Engagement subscale score ($n = 87$); Enthusiasm subscale score ($n = 87$).

Quality score ($n = 69$). Quantity score ($n = 85$).

* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 2

Intercorrelations for Average Scores on the MRAI-R Overall and Subscales and the Allophilia Overall and Subscales from T2

Measure	1	2	3	4	5	6	7	8	9	10
1. MRAI-R										
2. INSE	.83***									
3. SDIS	.81***	.52***								
4. PRRT	.76***	.56***	.44***							
5. SUDB	.78***	.58***	.64***	.34**						
6. Allophilia	.65***	.48***	.67***	.44***	.49***					
7. Affection	.61***	.42***	.58***	.48***	.46***	.89***				
8. Comfort	.55***	.43***	.58***	.31**	.43***	.83***	.69***			
9. Kinship	.43***	.34**	.46***	.25*	.33**	.83***	.66***	.67***		
10. Engagement	.61***	.45***	.63***	.41***	.47***	.87***	.72***	.60***	.59***	
11. Enthusiasm	.53***	.35**	.55***	.40***	.40***	.85***	.72***	.54***	.60***	.75***

Note. MRAI-R = overall score on the Mental Retardation Attitude Inventory-Revised ($n = 87$); INSE = score on the Integration—Segregation subscale ($n = 87$); SDIS = score on the Social Distance subscale ($n = 87$); PRRT = score on the Private Rights subscale ($n = 87$); SUDB = score on the Subtle Derogatory Beliefs subscale ($n = 87$). Allophilia = overall score on the Allophilia Scale ($n = 87$); Affection subscale score ($n = 87$); Comfort subscale score ($n = 86$); Kinship subscale score ($n = 86$); Engagement subscale score ($n = 87$); Enthusiasm subscale score ($n = 87$). * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 3

Intercorrelations for Average MRAI-R Overall and Allophilia Overall Scores from T1 and T2

Measure	1	2	3
1. MRAI-R T1			
2. MRAI-R T2	.92***		
3. Allophilia T1	.61***	.65***	
4. Allophilia T2	.57***	.65***	.92***

Note. MRAI-R T1 = overall score on the Mental Retardation Attitude Inventory-Revised from the pre-session survey ($n = 87$); MRAI-R T2 = overall score on the Mental Retardation Attitude Inventory-Revised from the lab session ($n = 87$). Allophilia T1 = overall score on the Allophilia Scale from the pre-session survey ($n = 87$); Allophilia T2 = overall score on the Allophilia Scale from the lab session ($n = 87$).

*** $p < .001$.

Table 4

Means and Standard Errors of MRAI-R and Allophilia Subscale Scores from T2 by Condition

Dependent Variable	Condition							
	Control <i>n</i> = 20		Picture <i>n</i> = 22		Imagine <i>n</i> = 22		Both <i>n</i> = 22	
	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>
INSE	2.93	.10	3.16	.09	3.22	.09	3.20	.09
SDIS	3.47	.09	3.42	.09	3.55	.09	3.52	.09
PRRT	3.11	.12	3.11	.11	3.15	.11	3.07	.11
SUDB	3.18	.10	3.18	.09	3.28	.09	3.18	.09
Affection	4.99	.18	5.01	.17	5.11	.17	5.06	.17
Comfort	4.18	.26	4.17	.24	4.32	.24	4.24	.24
Kinship	3.18	.25	3.35	.24	3.53	.24	3.30	.24
Engagement	4.69	.20	4.80	.19	4.94	.19	4.74	.19
Enthusiasm	4.60	.23	4.47	.22	4.79	.22	4.74	.22

Note. MRAI-R subscales = INSE, SDIS, PRRT, SUDB. Allophilia subscales = Affection, Comfort, Kinship, Engagement, Enthusiasm. Control = no intervention; Picture = viewed a positive image of man with DS; Imagine = imagined a positive scenario with a man with DS; Both = viewed a positive image and imagined a positive scenario.

Table 5

Means and Standard Errors of Overall MRAI-R and Allophilia Scores from T1 and T2 by Condition

Dependent Variable	Condition							
	Control <i>n</i> = 21		Picture <i>n</i> = 22		Imagine <i>n</i> = 22		Both <i>n</i> = 22	
	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>
MRAI-R T1	3.19	.08	3.16	.08	3.29	.08	3.27	.08
MRAI-R T2	3.21	.08	3.22	.08	3.31	.08	3.25	.08
Allophilia T1	4.46	.17	4.41	.16	4.48	.16	4.40	.16
Allophilia T2	4.46	.18	4.43	.18	4.60	.18	4.47	.18

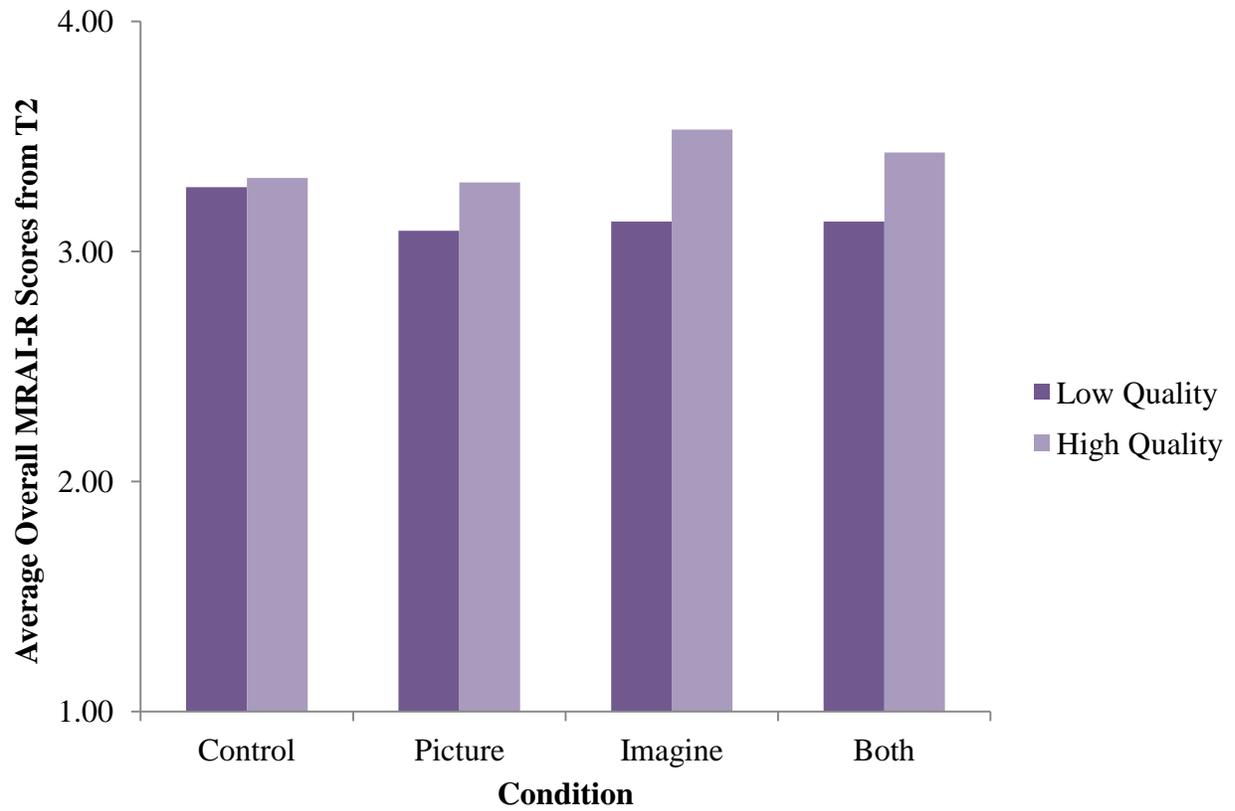


Figure 1. A significant main effect of quality of previous contact on participants' average overall MRAI-R scores from T2 (Low $M = 3.16$, $SE = .06$; High $M = 3.39$, $SE = .06$).

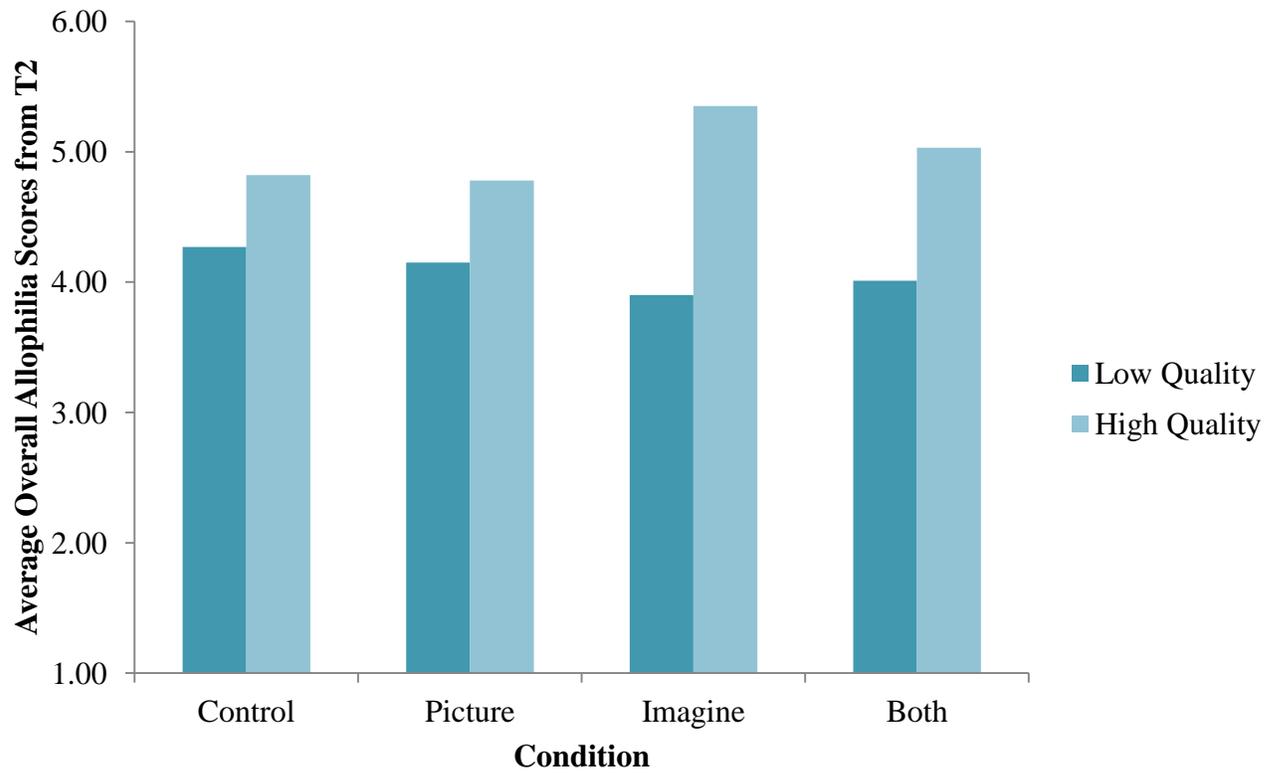


Figure 2. A significant main effect of quality of previous contact on participants' average overall Allophilia scores from T2 (Low $M = 4.08$, $SE = .13$; High $M = 4.99$, $SE = .13$).

Table 6

Means and Standard Errors of T2 Overall MRAI-R and Allophilia Scores of Participants who Reported Quality of Previous Contact (Based on Condition by Quality of Contact Interaction)

Dependent Variable	Quality	Condition							
		Control <i>n</i> = 17		Picture <i>n</i> = 18		Imagine <i>n</i> = 15		Both <i>n</i> = 19	
		<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>
MRAI-R	Low	3.28	.11	3.09	.11	3.13	.12	3.13	.10
	High	3.32	.11	3.30	.10	3.53	.11	3.43	.11
Allophilia	Low	4.27	.26	4.15	.27	3.90	.29	4.01	.23
	High	4.82	.27	4.78	.24	5.35	.27	5.03	.27

Note. Each condition's *n* is smaller for this analysis because it only includes participants who reported the quality of previous contact they have had with individuals with DS.

Table 7

Means and Standard Errors of T2 Overall MRAI-R and Allophilia Scores of Participants who Reported Quantity of Previous Contact (Based on Condition by Quantity of Contact Interaction)

Dependent Variable	Quantity	Condition							
		Control <i>n</i> = 21		Picture <i>n</i> = 21		Imagine <i>n</i> = 21		Both <i>n</i> = 22	
		<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>
MRAI-R	Low	3.27	.09	3.11	.10	3.22	.10	3.19	.10
	High	3.08	.13	3.37	.12	3.49	.12	3.35	.12
Allophilia	Low	4.70	.21	4.11	.23	4.25	.23	4.34	.22
	High	3.98	.30	4.80	.27	5.08	.27	4.67	.27

Appendix A

(by George Doyle/Stockbyte/Getty Images)

Picture Stimulus (experimental condition one_{picture} and three_{picture&imaginedcontact})

Please take one minute to look at this picture of a man named Oliver with Down syndrome before proceeding with this survey.



Note. Above is the cropped version of the original image (George Doyle/Stockbyte/Getty Images). The original image was purchased online from Getty Images (Creative #: stk212423rke) and can be found at:

<http://www.gettyimages.com/detail/photo/portrait-of-a-man-with-down-syndrome-working-in-an-royalty-free-image/stk212423rke#p>

Appendix B

Attitudes (MRAI-R; adapted from Antonak & Harth, 1994)

Please complete the following section on attitudes toward individuals with Down syndrome, rating your agreement with each item on the scale indicated (from 1 = *strongly disagree* to 4 = *strongly agree*).

1. School officials should not place children with Down syndrome and children without Down syndrome in the same classes.*
2. We should integrate people with Down syndrome and without Down syndrome into the same neighborhoods.
3. I would allow my child to accept an invitation to a birthday party given for a child with Down syndrome.
4. People with Down syndrome are not yet ready to practice the self-control that goes with social equality with people who have Down syndrome.*
5. I would be willing for my child to have children with Down syndrome as close personal friends.
6. If I were a landlord, I would want to pick my tenants even if this meant only renting to people without Down syndrome.*
7. It is a good idea to have separate after-school programs for children with Down syndrome and children without Down syndrome.*
8. Regardless of his or her own views, a private nursery school director should be required to admit children with Down syndrome.
9. Even though children with Down syndrome are in public school, it is doubtful whether they will gain much from it.*

10. Although social mixing of people with Down syndrome and without Down syndrome may be right, it is impractical until people with Down syndrome learn to accept limits in their relations with the opposite sex.*
11. I have no objection to attending the movies or a play in the company of people with Down syndrome.
12. Laws requiring employers not to discriminate against people with Down syndrome violate the rights of the individual who does not want to associate with people who have Down syndrome.*
13. Integrating children with Down syndrome and without Down syndrome into the same preschool classes should not be attempted because of the turmoil it would cause.*
14. Real estate agents should be required to show homes to families with children who have Down syndrome regardless of the desires of the homeowners.
15. I would rather not have people with Down syndrome as dinner guests with my friends without Down syndrome.*
16. Children with Down syndrome waste time playing in class instead of trying to do better.*
17. Having people with Down syndrome and without Down syndrome work at the same jobsites will be beneficial to both.
18. I would rather not have a person with Down syndrome swim in the same pool that I swim in.*
19. I would be willing to introduce a person with Down syndrome to friends and neighbors in my home town.
20. Campground and amusement park owners have the right to refuse to serve anyone they please, even if it means refusing people with Down syndrome.*

21. The problem of prejudice toward people with Down syndrome has been exaggerated.*
22. If I were a barber or beauty shop owner I would not resent it if I were told that I had to serve people with Down syndrome.
23. Assigning high school students with Down syndrome and without Down syndrome to the same classes is more trouble than it is worth.*
24. I would be willing to go to a competent barber or hairdresser who has Down syndrome.
25. Even with equality of social opportunity, people with Down syndrome could not show themselves equal in social situations to people without Down syndrome.*
26. Even though people with Down syndrome have some cause for complaint, they would get what they want if they were more patient.*
27. I would rather not have people with Down syndrome live in the same apartment building I live in.*
28. A person should not be permitted to run a day care center if he or she will not serve children with Down syndrome.
29. The child with Down syndrome should be integrated into regular classes in school.

* Items must be reverse coded.

Allophilia (adapted from Pittinsky, 2011b)

Please complete the following section on attitudes toward individuals with Down syndrome, rating your agreement with each item on the scale indicated (from 1 = *strongly disagree* to 6 = *strongly agree*).

1. In general, I have positive attitudes about individuals with Down syndrome.
2. I respect individuals with Down syndrome.

3. I like individuals with Down syndrome.
4. I feel positively toward individuals with Down syndrome.
5. I am at ease around individuals with Down syndrome.
6. I am comfortable when I hang out with individuals with Down syndrome.
7. I feel like I can be myself around individuals with Down syndrome.
8. I feel a sense of belonging with individuals with Down syndrome.
9. I feel a kinship with individuals with Down syndrome.
10. I would like to be more like individuals with Down syndrome.
11. I am truly interested in understanding the points of view of individuals with Down syndrome.
12. I am motivated to get to know individuals with Down syndrome better.
13. To enrich my life, I would try and make more friends who have Down syndrome.
14. I am interested in hearing about the experiences of individuals with Down syndrome.
15. I am impressed by individuals with Down syndrome.
16. I feel inspired by individuals with Down syndrome.
17. I am enthusiastic about individuals with Down syndrome.

Quantity of Previous Contact (created for the present study)

Please report the amount of previous contact you have had with individuals with Down syndrome according to the scale indicated (from 1 = *none* to 9 = *a lot*).

Quality of Previous Contact (adapted from McManus et al., 2011)

If you have had any previous contact with individuals with Down syndrome, please report the quality of that contact in the following items, rating your agreement with each item on the scale indicated (from 1 = *none* to 9 = *a lot*).

1. In the past, my experiences with individuals with Down syndrome have been pleasant.
2. I have had many positive experiences with individuals with Down syndrome.
3. Over the course of my life, I have had many friends who have Down syndrome.
4. Overall I have had positive experiences with people with Down syndrome.
5. I have enjoyed the experiences I have had with people with Down syndrome.
6. The experiences I have had with people with Down syndrome have been fun.

Demographics

Please complete the following section on demographic information.

1. Please report your age.
2. Please report your sex.
3. Please report your race.

References

- About, F. E., & Brown, C. S. (2013). Positive and negative intergroup contact among children and its effect on attitudes. In G. Hodson & M. Hewstone (Eds.), *Advances in intergroup contact* (pp. 176-199). New York, NY: Psychology Press.
- Allport, G. W. (1954). *The nature of prejudice*. Cambridge, MA: Addison-Wesley Pub. Co.
- Antonak, R. F., & Harth, R. (1994). Psychometric analysis and revision of the Mental Retardation Attitude Inventory. *Mental Retardation*, *32*, 272-280.
- Antonak, R. F., & Livneh, H. (2000). Measurement of attitudes towards persons with disabilities. *Disability and Rehabilitation: An International, Multidisciplinary Journal*, *22*, 211-224. doi: 10.1080/096382800296782
- Beattie, J. R., Anderson, R. J., & Antonak, R. F. (1997). Modifying attitudes of prospective educators toward students with disabilities and their integration into regular classrooms. *Journal of Psychology: Interdisciplinary and Applied*, *131*, 245-259. doi: 10.1080/00223989709603512
- Cameron, L., Rutland, A., Turner, R., Holman-Nicolas, R., & Powell, C. (2011). 'Changing attitudes with a little imagination': Imagined contact effects on young children's intergroup bias. *Anales De Psicología*, *27*, 708-717. Retrieved from revistas.um.es/analesps/article/download/135311/123501
- Crisp, R. J., & Turner, R. N. (2009). Can imagined interactions produce positive perceptions? Reducing prejudice through simulated social contact. *American Psychologist*, *64*, 231-240. doi: 10.1037/a0014718

- Crisp, R. J., & Turner, R. N. (2013). Imagined intergroup contact: Refinements, debates, and clarifications. In G. Hodson & M. Hewstone (Eds.), *Advances in intergroup contact* (pp. 135-151). New York, NY: Psychology Press.
- Cummins, R. A., & Lau, A. L. D. (2003). Community integration or community exposure? A review and discussion in relation to people with an intellectual disability. *Journal of Applied Research in Intellectual Disabilities, 16*, 145-157. doi: 10.1046/j.1468-3148.2003.00157.x
- Dadds, M. R., Bovbjerg, D. H., Redd, W. H., & Cutmore, T. R. (1997). Imagery in human classical conditioning. *Psychological Bulletin, 122*, 89-103. doi: 10.1037/0033-2909.122.1.89
- Dovidio, J. F., Eller, A., & Hewstone, M. (2011). Improving intergroup relations through direct, extended and other forms of indirect contact. *Group Processes and Intergroup Relations, 14*, 147-160. doi: 10.1177/1368430210390555
- Dovidio, J., Gaertner, S. L., & Kawakami, K. (2003). Intergroup contact: The past, present, and the future. *Group Processes & Intergroup Relations, 6*, 5-21. doi: 10.1177/1368430203006001009
- Fingerhut, A. W. (2011). Straight allies: What predicts heterosexuals' alliance with the LGBT community? *Journal of Applied Social Psychology, 41*, 2230-2248. doi: 10.1111/j.1559-1816.2011.00807.x
- Gilmore, L. (2006). Perceptions of Down syndrome in the Australian community. *Journal on Developmental Disabilities, 12*, 59-70.

- Hall, H., & Minnes, P. (1999). Attitudes toward persons with Down syndrome: The impact of television. *Journal of Developmental and Physical Disabilities, 11*, 61-76. doi: 10.1023/A:102182702337
- Harwood, J. (2010). The contact space: A novel framework for intergroup contact research. *Journal of Language and Social Psychology, 29*, 147-177. doi: 10.1177/0261927X09359520
- Harwood, J., Hewstone, M., Paolini, S., & Voci, A. (2005). Grandparent-grandchild contact and attitudes toward older adults: Moderator and mediator effects. *Personality and Social Psychology Bulletin, 31*, 393-406. doi: 10.1177/0146167204271577
- Hayes, A. (1990). I developmental psychology, education and the need to move beyond typological thinking. *Australian Journal of Education, 34*, 235-241. doi: 10.1177/000494419003400302
- Hazzard, A. (1983). Children's experience with, knowledge of, and attitude toward disabled persons. *The Journal of Special Education, 17*, 131-139. doi: 10.1177/002246698301700204
- Hazzard, A. P., & Baker, B. L. (1982). Enhancing children's attitudes toward disabled peers using a multi-media intervention. *Journal of Applied Developmental Psychology, 3*, 247-262. doi: 10.1016/0193-3973(82)90018-1
- Hodson, G., Costello, K. & MacInnis, C. C. (2013). Is intergroup contact beneficial among intolerant people? Exploring individual differences in the benefits of contact on attitudes. In G. Hodson & M. Hewstone (Eds.), *Advances in intergroup contact* (pp. 49-80). New York, NY: Psychology Press.

Hodson, G., & M. Hewstone. (2013). Introduction: Advances in intergroup contact. In G.

Hodson & M. Hewstone (Eds.), *Advances in intergroup contact* (pp. 3-20). New York, NY: Psychology Press.

Husnu, S., & Crisp, R. J. (2011). Enhancing the imagined contact effect. *The Journal of Social Psychology, 151*, 113-116. doi: 10.1080/00224541003599043

Kosslyn, S. M., Ganis, G., & Thompson, W. L. (2001). Neural foundations of imagery. *Nature Reviews: Neuroscience, 2*, 635-642. doi: 10.1038/35090055

Krajewski, J., & Flaherty, T. (2000). Attitudes of high school students toward individuals with mental retardation. *Mental Retardation, 38*, 154-162. doi: 10.1352/0047-6765(2000)038

Lawson, K. L., & Walls-Ingram, S. A. (2010). Selective abortion for Down syndrome: The relation between the quality of intergroup contact, parenting expectations, and willingness to terminate. *Journal of Applied Social Psychology, 40*, 554-578. doi: 10.1111/j.1559-1816.2010.00587.x

Marshall, H. L., Craun, S. W., & Theriot, M. T. (2009). The big picture: How social work can effectively utilize photographs. *Social Work, 54*, 317-325. doi: 10.1093/sw/54.4.317

McManus, J. L., Feyes, K. J., & Saucier, D. A. (2011). Contact and knowledge as predictors of attitudes toward individuals with intellectual disabilities. *Journal of Social and Personal Relationships, 28*, 579-590. doi: 10.1177/0265407510385494

Myers, F., Ager, A., Kerr, P., & Myles, S. (1998). Outside looking in? Studies of the community integration of people with learning disabilities. *Disability and Society, 13*, 389-413. doi: 10.1080/09687599826704

- Nario-Redmond, M. R. (2010). Cultural stereotypes of disabled and non-disabled men and women: Consensus for global category representations and diagnostic domains. *British Journal of Social Psychology, 49*, 471-488. doi: 10.1348/014466609X468411
- Parashar, D., Chan, F., & Leierer, S. (2008). Factors influencing Asian Indian graduate students' attitudes toward people with disabilities. *Rehabilitation Counseling Bulletin, 51*, 229-239. doi: 10.1177/0034355207311317
- Pearl, R. L., Puhl, R. M., & Brownell, K. D. (2012). Positive media portrayals of obese persons: Impact on attitudes and image preferences. *Health Psychology: Official Journal of the Division of Health Psychology, American Psychological Association, 31*, 821-829. doi: 10.1037/a0027189
- Pettigrew, T. F. (1998). Intergroup contact theory. *Annual Review of Psychology, 49*, 65-85. doi: 10.1146/annurev.psych.49.1.65
- Pettigrew, T. F., Christ, O., Wagner, U., & Stellmacher, J. (2007). Direct and indirect intergroup contact effects on prejudice: A normative interpretation. *International Journal of Intercultural Relations, 31*, 411-425. doi: 10.1016/j.ijintrel.2006.11.003
- Pettigrew, T. F., & Tropp, L. R. (2006). A meta-analytic test of intergroup contact theory. *Journal of Personality and Social Psychology, 90*, 751-783. doi: 10.1037/0022-3514.90.5.751
- Pittinsky, T. L., Rosenthal, S. A., & Montoya, R. M. (2011). Liking is not the opposite of disliking: The functional separability of positive and negative attitudes toward minority groups. *Cultural Diversity & Ethnic Minority Psychology, 17*, 134-143. doi: 10.1037/a0023806

- Pittinsky, T. L., Rosenthal, S. A., & Montoya, R. M. (2011). Measuring positive attitudes toward outgroups: Development and validation of the Allophilia Scale. In L. R. Tropp & R. K. Mallet (Eds.), *Moving beyond prejudice reduction: Pathways to positive intergroup relations* (pp. 41-60). Washington, DC: American Psychological Association.
- Plant, E. A. (2004). Responses to interracial interactions over time. *Personality and Social Psychology Bulletin*, *30*, 1458-1471. doi: 10.1177/0146167204264244
- Plant, E. A., & Devine, P. G. (2003). The antecedents and implications of interracial anxiety. *Personality and Social Psychology Bulletin*, *29*, 790-801. doi: 10.1177/0146167203029006011
- Prestwich, A., Kenworthy, J. B., Wilson, M., & Kwan-Tat, N. (2008). Differential relations between two types of contact and implicit and explicit racial attitudes. *British Journal of Social Psychology*, *47*, 575-588. doi: 10.1348/014466607X267470
- Rice, C. J. (2009). Attitudes of undergraduate students toward people with intellectual disabilities: Considerations for future policy makers. *College Student Journal*, *43*, 207-215.
- Schiappa, E., Gregg, P. B., & Hewes, D. E. (2005). The parasocial contact hypothesis. *Communication Monographs*, *72*, 92-115. doi: 10.1080/0363775052000342544
- Shaw, L., Chan, F., & McMahan, B. (2012). Intersectionality and disability harassment: The interactive effects of disability, race, age, and gender. *Rehabilitation Counseling Bulletin*, *55*, 82-91. doi: 10.1177/0034355211431167
- Siperstein, G. N., Parker, R. C., Norins, J., & Widaman, K. F. (2011). A national study of Chinese youths' attitudes towards students with intellectual disabilities. *Journal of Intellectual Disability Research*, *55*, 370-384. doi: 10.1111/j.1365-2788.2011.01382.x

- Sirlopú, D., González, R., Ordóñez, G., Millar, A., Torres, D., de Tezanos-Pinto, P., Bohner, G., & Siebler, F. (2008). Promoting positive attitudes toward people with Down syndrome: The benefit of school inclusion programs. *Journal of Applied Social Psychology, 38*, 2710-2736. doi: 10.1111/j.1559-1816.2008.00411.x
- Turner, R., Crisp, R., & Lambert, E. (2007). Imagining intergroup contact can improve intergroup attitudes. *Group Processes & Intergroup Relations, 10*, 427-441. doi: 10.1177/1368430207081533
- Varughese, S. J., & Luty, J. (2010). Stigmatised attitudes towards intellectual disability: A randomised crossover trial. *Psychiatrist, 34*, 318-322. doi: 10.1192/pb.bp.109.027789
- Varughese, S. J., Mendes, V., & Luty, J. (2011). Impact of positive images of a person with intellectual disability on attitudes: Randomised controlled trial. *Psychiatrist, 35*, 404-408. doi: 10.1192/pb.bp.110.032425
- 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 and Intergroup Relations, 15*, 203-212. doi: 10.1177/1368430211424920
- Vilchinsky, N., Findler, L., & Werner, S. (2010). Attitudes toward people with disabilities: The perspective of attachment theory. *Rehabilitation Psychology, 55*, 298-306. doi: 10.1037/a0020491
- Wong, D. K. P. (2008). Do contacts make a difference? The effects of mainstreaming on student attitudes toward people with disabilities. *Research in Developmental Disabilities, 29*, 70-82. doi: 10.1016/j.ridd.2006.11.002

- Wright, S. C., Aron, A., McLaughlin-Volpe, T., & Ropp, S. A. (1997). The extended contact effect: Knowledge of cross-group friendships and prejudice. *Journal of Personality and Social Psychology, 73*, 73-90. doi: 10.1037/0022-3514.73.1.73
- Yazbeck, M., McVilly, K., & Parmenter, T. R. (2004). Attitudes toward people with intellectual disabilities: An Australian perspective. *Journal of Disability Policy Studies, 15*, 97-115. doi: 10.1177/10442073040150020401
- Yuker, H. E. (1994). Variables that influence attitudes toward people with disabilities: Conclusions from the data. *Journal of Social Behavior and Personality, 9*, 3-22.
- Zajonc, R. B. (1968). Attitudinal effects of mere exposure. *Journal of Personality and Social Psychology, 9*(2, Pt. 2), 1-27. doi: 10.1037/h0025848
- Zeligs, R., & Hendrickson, G. (1933). Racial attitudes of 200 sixth grade children. *Sociology & Social Research, 18*, 26-36.