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Entertainment-education effectively reduces prejudice

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Abstract

We show that entertainment-education reduces prejudice and does so more effectively than several established prejudice reduction methods. In Experiment 1, participants exposed to an educational television sitcom with diverse, yet relatable Arab/Muslim characters had lower scores on implicit and explicit measures of prejudice than participants exposed to a control sitcom featuring an all White cast. The prejudice reduction effect persisted 4 weeks after exposure. In Experiment 2, viewing of a 4-minute music video that portrayed Arabs/Muslims as relatable and likable resulted in a larger reduction in prejudice against Arabs/Muslims than two established prejudice reduction methods (*imagined contact exercise* and *group malleability article*), which produced no improvements. In both experiments, increased identification with target group members was associated with greater prejudice reduction. Entertainment-education, in addition to being scalable, is likely to be one the most effective methods for improving intergroup relations and promoting diversity.

Keywords

entertainment-education, identification, intervention, narratives, prejudice reduction

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"Entertainment-education" uses television, radio, theater, literature, and other media to alter consumers' attitudes and behaviors in desirable ways by embedding persuasive messages in the narrative. For example, in *Twende na Wakati* (*Let's Go With the Times*)—a radio soap opera that aired in Tanzania—several relatable main characters discovered the benefits of family planning and HIV prevention. The effect of exposure to this series was clear: Hundreds of thousands of sexually active adults took fewer sexual partners and increased their use of condoms (Rogers et al., 1999). Entertainment-education has been used throughout the world to engender social change in health issues, women's empowerment,

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economic development, and domestic violence. The potential of entertainment-education as a prejudice reduction method, while seemingly high, has not been assessed extensively. The purpose of this research was to test the effectiveness of entertainment-education as a prejudice reduction method by comparing it to control conditions and to two established prejudice reduction methods (*imagined contact exercise* and *group malleability article*).

The Available Prejudice Reduction Methods

Since the Civil Rights Act of 1964, researchers and organizations have developed many programs to combat racial prejudice in the US but a vast majority of these programs have not been shown to be effective. Between 1958 and 2008, only 12 published scientific articles have reported research designed to evaluate a prejudice reduction method in a randomized field experiment with a nonstudent population (Paluck & Green, 2009). As part of the "President's Initiative on Race" during the Clinton presidency, a committee of experts selected the 124 most promising programs designed to promote racial reconciliation from thousands of submissions. Among the selected programs, less than 10% were assessed by outside evaluators and only two programs compared people who received the intervention to control groups who did not ("President's Initiative on Race"; Franklin et al., 1999). In light of this deficit, Moss-Racusin et al. (2014) called for randomized control trials that evaluate the impact of diversity interventions in a recent *Science* article.

Of the few prejudice reduction methods that have been systematically evaluated for effectiveness, many have been ineffective and some have backfired. For example, looking at corporate diversity efforts, Dobbin and Kalev (2013) showed that initiatives designed to eliminate managerial bias—diversity training, diversity performance evaluations, and bureaucratic rules—have been largely ineffective. Discussion-based approaches to prejudice reduction often produce a boomerang effect (Brauer, Judd, & Jacquelin, 2001). Some interventions targeting implicit bias improve people's scores on an implicit measure of prejudice (Lai et al., 2016), but none seem to have any other effects beyond that. "We found no published paper . . . that tested whether a change in implicit prejudice predicted a later change in behavior," concluded Lai, Hoffman, and Nosek in a recent review article (2013, p. 323).

Why is it so difficult to reduce prejudice and discrimination? Humans have a tendency to categorize each other into social groups (e.g., "women," "blue collar workers," "runners") as a way of simplifying their social environment (Allport, 1954). In addition, people's sense of self is closely tied to the groups they belong to (Tajfel & Turner, 1979) and it has been shown that they have a strong desire to feel good about themselves (Hogg & Abrams, 1990). One way to boost one's sense of self, therefore, is to attribute positive characteristics to groups one is part of and negative characteristics to groups one does not belong to—biases known as ingroup favoritism and outgroup derogation (Aberson, Healy, & Romero, 2000). People also identify more with their ingroup, tend to distance themselves from the outgroup, and emphasize differences between their ingroup and the outgroup (Brewer, 1999). In short, people adopt an "us" versus "them" mentality as a way to feel good about themselves. The lack of identification and familiarity with outgroup members and not being able to relate to the outgroup further contribute to the high resistance of attitudes and behaviors toward outgroups.

This research suggests that intergroup relations will improve if people feel similar to, like, and relate to people from the outgroup. Therefore, a prejudice reduction method is likely to be effective when it leads individuals to identify with members of the target outgroup. As we will describe in the next paragraphs, entertainment-education has this unique capacity and is, thus, likely to be an effective method for

improving people's thoughts, feelings, and behaviors toward outgroups.

Entertainment-Education Provides Opportunity for Indirect Contact

Entertainment-education has been shown to be highly effective in a variety of domains. By embedding messages about desirable behaviors in entertainment media, researchers and practitioners have been able to increase the number of South Africans willing to protest domestic violence and improve the treatment of women in several South Asian countries (Singhal, Cody, Rogers, & Sabido, 2004). Entertainment-education has also been used to increase the approval of family planning among Pakistanis (Lozare et al., 1993) and self-efficacy in seeking treatment for depression and cervical cancer screenings among Latinas (Hernandez & Organista, 2013; Sharf, Freimuth, Greenspon, & Plotnick, 1996).

Why should entertainment media be effective in reducing prejudice? According to *intergroup contact theory*, direct contact between individuals belonging to different social groups is one of the most effective ways to reduce hostile intergroup feelings between groups (Allport, 1954). Contact is especially effective when the contact occurs under cooperative and equal-status conditions, it entails a shared goal, and an authority figure supports it (Pettigrew & Tropp, 2006). Interacting with and getting to know members of an outgroup allows individuals to relate to that outgroup more, to extend their sense of self to that outgroup, to understand the perspectives of the outgroup members, and to identify more closely with the outgroup (Aron & McLaughlin-Volpe, 2001; Pettigrew & Tropp, 2008). However, opportunities for this kind of intergroup contact are scarce for many people and are sometimes actively avoided.

Building on intergroup contact theory, researchers have found alternatives to direct contact between members of different groups to improve intergroup attitudes. For example, mentally simulating a positive, relaxed interaction with a member of an outgroup (imagined contact; Crisp & Turner, 2009) can improve attitudes towards that outgroup. Similarly, knowing that a member of one's ingroup has a close relationship with a member of an outgroup (extended contact; Wright, Aron, McLaughlin-Volpe, & Ropp, 1997) or observing an ingroup member interact with outgroup members (vicarious contact; Mazziotta, Mummendey, & Wright, 2011) can improve attitudes towards the outgroup. Finally, some have suggested that having a one-sided personal relationship with an outgroup character in the media can improve intergroup relations (parasocial contact; Schiappa, Gregg, & Hewes, 2005). We refer to all these forms of contact with the generic term "indirect contact."

Entertainment media provide individuals with numerous opportunities to engage in various forms of indirect contact with outgroup members. We therefore predict that entertainment media effectively reduce prejudice and discrimination. We will now turn to the psychological mechanisms that we expect to underlie this effect.

Entertainment-Education Facilitates Identification With Members of the Outgroup

We expect the beneficial effect of entertainment-education to be driven by increased identification with members of the outgroup. Parasocial interactions enable people to develop relationships, resembling friendships, with members of an outgroup (Cohen, 2001). Media consumers can develop parasocial relationships with characters who belong to an outgroup or an ingroup. Furthermore, people can watch others with whom they have a parasocial ingroup relationship interact with characters from an outgroup (a kind of parasocial vicarious contact) or maintain a relationship with an outgroup character (a kind of parasocial extended contact). People may also imagine themselves engaging in a conversation or interaction with an outgroup character (a kind of parasocial imagined contact). These forms of indirect contact cause viewers to like, to

understand, to feel similar to, and to feel more connected to members of the outgroup. In short, they should identify more with them. Thus, through media contact, people can overcome the kind of "us versus them" mentality that tends to contribute to prejudice towards outgroups. Therefore, we expect the beneficial effect of entertainment-education to be due to increased identification with members of the outgroup.

In general, a key to the effectiveness of entertainment-education in shifting attitudes is that people become involved and identify with the characters. Identification entails involvement with characters in a way that leads people to adopt the character's viewpoints and to take part in the character's experiences (Eyal & Rubin, 2003). Once consumers identify with a character, they lose cognizance of their role as audience members and temporarily entrench themselves in the character. Consequently, their resistance decreases and they become more engaged with and receptive to persuasive messages built into a media narrative (Cohen, 2001). For example, identification has influenced people's behavioral intentions with respect to discussing sexually transmitted infections (Moyer-Gusé, Chung, & Jain, 2011) and attitudes towards policy issues like the death penalty (Till & Vitouch, 2012). Differences between one's self and the outgroup are minimized and similarities become more salient to consumers when they identify with characters from target outgroups.

Additionally, when people relate to and identify with characters in media narratives, they become more open to adopting those characters as social models and aspire to be like them (Bandura, 2004). When audience members identify with the characters, they learn from the character's experiences and seek to model on those characters in a way that can lead to prosocial attitude and behavior change (Sood, 2002; Sood, Menard, & Witte, 2004). Audience members may come to identify with characters from their ingroup who behave in ways that are open, friendly, and nonprejudiced towards characters from an outgroup. The behaviors of such ingroup characters can, consequently, have beneficial effects on consumers' self-efficacy to behave in a nonoffensive way, shape their expectations of how intergroup interactions can occur, and shape their beliefs about what is socially acceptable and normative behavior towards target outgroup members (Cooper, Paluck, & Fletcher, 2013).

Entertainment-Education and Prejudice Reduction

Although entertainment-education has been shown to be effective in changing attitudes and behaviors in numerous domains, social scientists have minimally investigated its effectiveness as a prejudice reduction method. Previous research shows that increased exposure to television programs portraying gay–straight interactions (e.g., *Will & Grace*) and Black–White interactions (e.g., MTV's *Real World: Austin*) is associated with more positive attitudes towards gay and Black people (Ortiz & Harwood, 2007; Schiappa et al., 2005; Schiappa, Gregg, & Hewes, 2006). Similarly, exposing participants to a film that repeatedly represents Blacks positively and Whites negatively increases pro-Black attitudes (Eno & Ewoldsen, 2010). Other research has shown that entertainment-education through radio soap operas can shift perceptions of social norms for intergroup interactions in conflict contexts (Paluck, 2009). However, the existing empirical evidence is suggestive, at best.

A convincing demonstration of the beneficial effect of entertainment-education on prejudice reduction entails the following characteristics: Random assignment to experimental conditions; evidence for the underlying psychological process; examination of the longevity of the effect; reduction of prejudice toward a highly stigmatized group; the existence of a comparable control group; a convincing cover story to reduce experimental demand; a subject population similar to the average consumer of TV shows in industrialized countries; and the inclusion of explicit, implicit, and behavioral measures of prejudice that have been standardized and validated. Existing studies on the beneficial effects of entertainment-education on prejudice

reduction lack most of these characteristics. The purpose of this paper is to fill this gap in the literature and to compare entertainment-education to other well-known prejudice reduction methods.

To summarize, entertainment-education provides consumers with opportunities to engage in parasocial, extended, vicarious, and imagined contact with members of outgroups. It also exposes them to social models that they can imitate and learn from, and it reduces the extent to which consumers counterargue and resist the information presented to them. As a consequence, entertainment-education showing relatable and likeable outgroup characters should cause consumers to identify more with members of the outgroup. Therefore, entertainment-education should be a highly effective method to reduce prejudice. We expect this effect to be strong and to persist over time. We also expect entertainment-education to be more effective than other currently available prejudice reduction methods.

The Present Research

In light of the aforementioned theoretical considerations, we formulated four hypotheses.

H1: We predicted that exposure to entertainment media with embedded prosocial messages about a target outgroup would lead to decreased prejudice on explicit, implicit, and behavioral measures of prejudice.

H2: We predicted that the effect would be strong enough to persist for at least 4 weeks.

H3: We predicted that the effect would be mediated by people's identification with members of the target group. In other words, the more the entertainment programs cause consumers to identify with the target group, the stronger the prejudice reduction effect should be.

H4: We predicted that entertainment-education would produce larger effects than other well-established prejudice reduction methods.

We conducted two experiments to test these hypotheses. In both experiments we focused on Arabs/Muslims as the target group because Americans have increasingly reported negative feelings toward Arabs and Muslims since the 9/11 terrorist attacks (Arab American Institute, 2014). In Experiment 1, individuals from student and nonstudent samples were randomly assigned to watch an entertainment-education television sitcom designed to reduce prejudice toward Arabs/Muslims, or a control sitcom. The two sitcoms were matched on theoretically unrelated dimensions that might influence prejudice. We collected explicit, implicit, and behavioral measures of prejudice immediately after the viewing and 4–6 weeks later. We also measured the extent to which viewers identified with members of the target group to test whether identification was essential in the prejudice reduction effect. In Experiment 2, we compared the effects of a short prodiversity music video to a control condition and to two well-known prejudice reduction methods. As we will discuss in more detail in what follows, the latter two methods were an *imagined contact exercise* (Crisp & Turner, 2009) and a *group malleability article* (Halperin, Russell, Trzesniewski, Gross, & Dweck, 2011). We again assessed prejudice and participants' identification with members of the target group with validated measures. We expected to find reduced prejudice in the entertainment-education condition compared to the control condition (Experiments 1–2) and to the other two prejudice reduction conditions (Experiment 2).

Experiment 1

We chose TV sitcoms as a form of entertainment-education in Experiment 1. Unlike other entertainment media, TV sitcoms are powerful because viewers see and hear characters interact. When imagining characters (e.g., when reading a book), people may imagine the target outgroup characters with a particular appearance that may not generalize to other members of that group. For example, when reading about a Muslim doctor, they may imagine a clean-shaven individual

who speaks English without an accent, which will not change their stereotypes toward bearded Muslims, some of whom may have a foreign accent. One advantage of TV sitcoms is that the appearance of the members of the target group is provided to the viewers. Thus, they should be quite effective in reducing prejudice. The goal of Experiment 1 was to test hypotheses 1 and 2, and to collect initial evidence for Hypothesis 3. More specifically, the goal of this experiment was to investigate the effectiveness of entertainment-education in reducing prejudice against Arabs/Muslims, test the effect's longevity, and examine whether identification with members of the outgroup in the entertainment-education show is associated with greater shifts in prejudice.

Method

Participants

We recruited 193 White individuals ranging from 18 to 60 years of age. Approximately half of the participants were male (N = 98). There were no significant age or gender differences between experimental conditions (ps > .653). Fifty-eight of the participants were recruited through local advertisements in grocery stores, doctor offices, and university buildings in a mid-sized Midwestern city and were paid $20 for participating. The number of participants was limited by a $1,200 budget (one non-White participant and one Muslim participant were paid, but were not included in the dataset). The other 135 participants were students recruited to receive extra credit in their introductory psychology course. We aimed to acquire the maximum number of participants during the period of a semester. Later analyses showed that the observed effects were not moderated by recruitment procedure. The smallest detectable effect for a sample size of N = 193, a significance level of α = .05, and 80% power, is approximately η^2 = .04 (equivalent to f = .20, d = .40). All participants were screened prior to the experiment to ensure that they had no or minimal previous exposure to the TV sitcoms. The participants were randomly assigned to one of two conditions, the entertainment-education condition or the control condition. One hundred and fifty-four participants completed the Posttest 2 measures 4–6 weeks after the main experiment, yielding a 20% attrition rate. Posttest 1 measures of prejudice were not predictive of whether participants returned to complete Posttest 2 (ps > .332).

Stimulus Material

Participants in the entertainment-education condition were exposed to six episodes of a sitcom called *Little Mosque on the Prairie* (henceforth called *Little Mosque*), whereas participants in the control condition viewed six episodes of a sitcom called *Friends*. The two sitcoms and their respective episodes were selected based on elaborate pilot testing. On the one hand, the two had to be as comparable as possible. On the other hand, the entertainment-education sitcom had to trigger psychological processes known to reduce prejudice.

The two sitcoms and their six episodes were chosen from a larger pool of possibilities. The entertainment-education sitcom, *Little Mosque*, was written to increase understanding of Western Muslims and the issues they face as a community by focusing on a group of Arabs/Muslims residing in a small Canadian town. The characters are depicted as relatable and likable people who face common everyday experiences (e.g., disagreeing with parents, interacting with a love interest, or planning an event). They come off as normal people who have flaws and positive attributes just like everyone else in the world. In this way, the characters are easy to identify with. Additionally, they vary in age, gender, beliefs, lifestyles, and occupations, expanding the range of viewers who may find them relatable. *Little Mosque* also depicts intergroup contact between Muslims and non-Muslims (mostly White Christian characters) that audience members may relate to and mimic in their own lives. In contrast, we chose the American sitcom *Friends* for the control group because it exclusively depicts White characters going about their daily lives.

To analyze the content of the sitcoms more precisely, we counted the number of times a White character said something to a character from a minority group, or vice versa. Not surprisingly, *Little Mosque* had an average of 206 cross-group utterances per episode, while *Friends* had none. Among the cross-group utterances in *Little Mosque*, 71.94% focused the viewers' attention on the minority character or dealt with an issue that involved the minority character.

We also completed a pilot study to ensure the sitcoms were matched on a variety of subjective dimensions that might influence prejudice. White undergraduates (N = 49) were randomly assigned to watch between two and eight episodes of either *Little Mosque* or *Friends*. Participants rated the sitcoms and the characters on how *funny*, *relatable*, *interesting*, *annoying*, *realistic*, *understandable*, *likeable*, and *agreeable* they found them (Bryant & Zillmann, 1991). We also asked participants about their general emotions after watching the sitcoms by asking them how *happy*, *annoyed*, *sad*, *uncomfortable*, *satisfied*, *angry*, and *inspired* they felt (Shapiro & Lang, 1991). We tested whether there were differences between the two sitcoms on any of the dimensions (with Bonferoni corrections to adjust for multiple tests). The sitcoms were rated similarly across all of the dimensions (ps > .281) except for two: Participants judged the *Friends* characters as funnier and reported feeling happier after watching *Friends* (ps < .040).

Outcome Prejudice Measures

All of the measures in the experiment were modified so that Arabs were the target group, except for the Implicit Association Test (IAT) in which Arab-Muslims are the traditional target. Unless otherwise mentioned, participants gave their responses on 7-point Likert scales with appropriately labeled endpoints. All of the measures and scales are available in the supplemental materials.

Feelings and liking thermometers. Participants were asked to indicate their feelings toward 10 racial and nonracial groups on a 0 to 100 sliding scale (0 = *very cold*, 100 = *very warm*). Participants also reported their liking for the same 10 groups on a 0 to 100 sliding scale (0 = *very unlikable*, 100 = *very likable*).

Modern Racism Scale. Participants completed a modified version of the Modern Racism Scale (McConahay, 1986) with six items. We removed the following outdated item: "Blacks have more influence on school desegregation plans than they ought to have." After reverse-coding the appropriate items, the items were averaged to produce a prejudice score (α = .81).

Implicit Association Test. This is a computer-based response latency measure that gauges one's automaticity in associating positive or negative evaluative concepts with categories such as social groups (Greenwald, McGhee, & Schwartz, 1998). Participants in all conditions completed the classic Arab-Muslim IAT with seven blocks. The first, second, third, fifth, and sixth blocks consisted of 20 practice trials, while the fourth and seventh blocks consisted of 40 test trials. Participants were exposed to names likely to belong to Arab-Muslims (e.g., Karim) and names likely to belong to people from other nationalities and religions (e.g., Philippe). We calculated differences in how quickly participants associated Arab-Muslim names and other names with positive and negative words (e.g., joy, agony) and converted them to a D-score (see Greenwald, Nosek, & Banaji, 2003). Higher (more positive) D-scores represent greater implicit bias, that is, more negative attitudes towards Arab-Muslims.

Behavioral measures of prejudice. This measure consisted of three questions. Participants were asked how much time they would be willing to volunteer for an organization working to protect the civil rights of Arabs. They were also asked if they would like to receive information about campaigns and legislations working to protect Arabs' civil rights and given the opportunity to write in their email address if they wanted to start receiving such information.

Process Measures

Our primary hypothesis was that identification with the characters would play a key role in the effect of

entertainment-education on prejudice reduction. However, we also included a number of additional process measures for a variety of reasons, either because we considered them to be plausible alternative candidates for the underlying mechanism at work, or because they allowed us to test a particular aspect of the experimental procedure (e.g., media consumption, ability to statistically control for unwanted mood effects). These included measures of perceived variability, imagined contact, group malleability, and emotional reactions—all of which are available in the supplemental materials.

Identification. Participants were asked four questions about how much they liked, how similar they were to, how much they felt like they knew, and how much they would like to be like the characters from the sitcom. They were asked four additional questions about how much they identified with four of the main characters from each sitcom. Participants responded on a 0 to 100 sliding scale (0 = *not at all*, 100 = *very much*). The eight questions were adapted from Murphy, Frank, Moran, and Patnoe-Woodley (2011). All of the items were averaged to produce an identification score (α = .86).

Transportation. Participants were asked nine questions about their level of transportation into the narrative of each sitcom. The questions were adapted from a validated scale developed by Green and Brock (2000). Items included prompts like: "I was mentally involved with the story line while watching *Little Mosque*" (α = .82). Some researchers consider transportation to be qualitatively different from identification, whereas others use the two terms interchangeably and insist on the close link between the two (Busselle & Bilandzic, 2008).

Perceived variability. Perceived variability was assessed with a range task adapted from Judd, Park, Ryan, Brauer, and Kraus (1995) in which participants were asked to rate Arabs on four traits: *self-centered*, *hard-working*, *aggressive*, and *cheerful*. They rated (a) the average group member, (b) the group member who possesses the trait the most, and (c) the group member who possesses the trait the least on continuous rating scales that were later transformed into 28 intervals of equal size. The difference between the highest and the lowest rating is considered an indicator of perceived variability. The difference scores were averaged across the four traits to form an overall variability score (α = .92). This score will henceforth be referred to as *Perceived Variability 1*. Additionally, participants were given one item on which they rated the extent that they found Arabs to be different from one another. This score will henceforth be referred to as *Perceived Variability 2*.

Imagined contact. We measured the extent of imagined contact with a single item that asked participants how frequently they imagined being in contact with an Arab—regardless of whether that person was real or imagined from television or film—since starting the study. Participants responded on a 5-point Likert scale (1 = *never*, 5 = *very often*).

Group malleability. Group malleability was assessed with a validated 7-item scale developed by Halperin et al. (2011). Participants indicated their level of agreement with statements like: "Groups can't change their basic characteristics." Higher scores indicate greater belief in the idea that groups are malleable (α = .67).

Emotional reactions. Following Murphy et al.'s (2011) methodology, we asked participants how the sitcom made them feel with regard to basic emotions: *happiness*, *anger*, *sadness*, *discomfort*, and *satisfaction*. The emotions were analyzed individually and as an aggregate after reverse coding anger, sadness, and discomfort. The aggregated scale thus served as a measure of an emotional state with a positive valence (α = .77).

Procedure

After consenting to partake in the study, all participants completed a baseline survey that included the feelings and liking thermometers. To reduce experimental demand effects, a White experimenter told the participants that the purpose of

the study was to examine television-watching behaviors and that they would be watching one of 12 possible sitcoms. The participants then blindly drew a slip of paper with a sitcom name on it from an envelope, which made it seem as though there were many different sitcoms to choose from (rather than two). Finally, they were directed to a screen that displayed icons for 12 different sitcoms and they had to click on the sitcom they had drawn from the envelope.

Participants then watched six episodes of either *Little Mosque* or *Friends* depending on their condition. To ensure that participants attentively watched the sitcoms, they completed a knowledge quiz with six questions after every second episode. After the fourth episode, half of the participants completed a questionnaire with the measures of emotional reaction, transportation, and group malleability (in addition to the knowledge quiz). After the fifth episode, they completed measures of perceived variability, identification, and imagined contact. The other half of the participants proceeded in the inverse order. Thus, we counterbalanced the order in which the process measures were administered after the fourth and fifth episodes. Finally, after the sixth episode, participants completed a knowledge quiz and the various outcome measures of explicit and implicit prejudice in the order in which they were described before. *Posttest 1* includes all outcome and process measures completed towards the end of or immediately after viewing. The study took about two and a half hours to complete. Participants were given short breaks to prevent fatigue.

Participants were contacted about 4 to 6 weeks later to complete the feeling and liking thermometers and the IAT a second time (*Posttest 2*). After completing the study, participants went through a funneled debriefing in which the experimenter probed them about their awareness of the study's goals.

Results

Preliminary Analyses

We ran several preliminary analyses on our dataset. First, we ensured participants were actively engaged in the viewing process. We examined the number of correct responses to the 18 knowledge questions about the content of the episodes that participants completed throughout the study. One hundred and thirty-four participants got all 18 questions correct, 43 got 17 questions correct, 9 got 16 correct, 6 got 15 correct, and 1 got 14 correct. The number of questions that participants answered correctly did not moderate the results reported in what follows.

Next, we found that scores on the feelings and liking thermometers were highly correlated at all time points. The average correlation across all time points (baseline, Posttest 1, and Posttest 2) for Arabs and Whites was .82 (range .74–.89). We thus combined the feelings and liking thermometer scores to create a single attitude score for each time point. Higher numbers indicate more positive attitudes.

Furthermore, we calculated an *attitude difference* score between participants' attitudes towards Whites versus Arabs for each time point. Higher attitude difference scores indicate a greater preference for Whites. We also calculated two *attitude difference change* scores, which represent the change in participants' preference for Whites from baseline to Posttest 1 and from baseline to Posttest 2. Higher attitude difference change scores indicate a greater reduction in one's preference for Whites from baseline, that is, an improvement in attitudes towards Arabs from baseline.

Note that the degrees of freedom vary because three participants did not complete the baseline measures. Furthermore, those who completed the baseline measures varied in their completion of the Posttest 1 and 2 outcome measures. A subset of the student participants filled out the Posttest 2 measures after the semester was over and they were less likely to complete the IAT than participants recruited for Posttest 2 during the semester or participants who were paid $20. As previously mentioned, recruitment did not moderate any of the effects. Finally, we ran all of the analyses to account for missing data using multiple imputation (Rubin, 1996), but found no substantial differences from the nonimputed data on any of the outcome

measures. Thus, all of the results reported are based on nonimputed data.

Main Analyses

We first examined whether the results supported Hypothesis 1, in which we predicted that exposure to entertainment media with prosocial messaging about an outgroup would decrease prejudice on explicit, implicit, and behavioral measures of prejudice. We tested and met the assumption of constant variance for the models reported next. We ran a series of independent-samples *t* tests to test for differences between the entertainment-education condition and the control condition on the prejudice outcome measures (see Table 1). Participants did not differ on the baseline attitudes towards Whites or Arabs (*p*s > .602). There were, however, a number of significant differences at Posttest 1 (at the end of the main session). Participants exposed to the entertainment-education sitcom had more positive attitudes toward Arabs and preferred Whites over Arabs to a lesser extent than participants who viewed the control sitcom. Participants in the entertainment-education condition also had lower scores on the implicit measure of prejudice, the IAT. The differences on the Modern Racism Scale and the behavioral measures of prejudice were in the predicted direction but did not reach conventional levels of significance. There were no significant differences between conditions with regard to participants' indication that they would like to receive information about campaigns and legislation working to protect Arabs' civil rights χ^2 (1, N = 175) = 0.13, p = .910, or provision of their email address to receive such information, χ^2 (1, N = 178) = 0.032, p = .859.

Next we examined Hypothesis 2, in which we predicted that the effects would be strong enough to last at least 4 weeks. The results for the measures 4–6 weeks later were similar to Posttest 1, albeit generally less significant. Compared to the control group, participants in the entertainment-education condition still had more positive attitudes towards Arabs, had lower attitude difference scores, showed a greater improvement from their baseline attitudes towards Arabs, and displayed marginally less implicit bias for others over Arab-Muslims. In sum, the entertainment-education sitcom was generally effective in reducing participants' prejudice toward Arabs, both immediately afterwards and several weeks later.

Next we examined differences in the process measures between conditions. Table 2 presents the means and the results of the independent-samples *t* tests for the process measures. Not surprisingly, White participants identified (marginally) less with the characters and reported being less involved with the narrative when most of the characters were Arabs/Muslims (*Little Mosque*) than when they were all White (*Friends*). Compared to those in the control condition, participants in the entertainment-education condition also imagined being in contact with an Arab individual more frequently. They were also more likely to believe that groups are malleable and reported less positive emotional reactions compared to those in the control condition. No significant condition differences emerged on the perceived variability measures. A table with the bivariate correlations between all process measures and outcome measures can be found in Appendix A.

We next ran a series of analyses relevant to Hypothesis 3, in which we predicted that the reduction in prejudice would be driven by participants' identification with members of the target group. In order to examine if identification with members of the target group played a key role in prejudice reduction, we ran several analyses. Note that by the nature of the experimental procedure, we cannot examine the effect of the manipulated independent variable on identification with members of the target outgroup because the latter construct was not assessed in the control condition. One would expect, however, the degree of identification with members of the target group to predict prejudice reduction in the entertainment-education condition. We ran a series of correlation analyses with participants in the entertainment-education condition only (see Table 3). As predicted, the more participants

Table 1. Prejudice measures as a function of condition in Experiment 1. Also shown are inferential statistics.

Measure of prejudice	Control $n = 98$	Entertainment education $n = 95$	Test of difference
Baseline			
Attitude towards Whites	76.79 (18.55)	75.37 (18.99)	$t(188) = -0.52$, $p = .602$, $\eta^2 = .00$, 95% CI [−6.79, 3.95]
Attitude towards Arabs	64.11 (20.97)	64.37 (20.03)	$t(188) = 0.09$, $p = .930$, $\eta^2 = .00$, 95% CI [−5.61, 6.13]
Attitude difference	12.68 (15.57)	11.00 (17.25)	$t(188) = -0.71$, $p = .481$, $\eta^2 = .00$, 95% CI [−6.39, 3.02]
Posttest 1			
Attitude towards Whites	77.47 (18.95)	75.81 (19.29)	$t(173) = -0.57$, $p = .567$, $\eta^2 = .00$, 95% CI [−7.36, 4.05]
Attitude towards Arabs	64.16 (21.64)	70.52 (18.55)	$t(173) = 2.09$, $p = .038$, $\eta^2 = .02$, 95% CI [0.34, 12.39]
Attitude difference	13.31 (16.87)	5.29 (13.73)	$t(173) = -3.44$, $p < .001$, $\eta^2 = .06$, 95% CI [−12.62, −3.43]
Attitude difference change	−0.86 (9.50)	4.65 (8.00)	$t(171) = 4.13$, $p < .001$, $\eta^2 = .09$, 95% CI [2.88, 8.15]
Modern Racism Scale	2.67 (0.88)	2.49 (0.78)	$t(177) = -1.44$, $p = .151$, $\eta^2 = .01$, 95% CI [−0.43, 0.07]
IAT	0.07 (0.37)	−0.10 (0.47)	$t(183) = -2.80$, $p = .006$, $\eta^2 = .04$, 95% CI [−0.30, −0.05]
Time willing to volunteer	1.44 (0.69)	1.48 (0.73)	$t(173) = 0.36$, $p = .720$, $\eta^2 = .00$, 95% CI [−0.17, 0.25]
Posttest 2			
Attitude towards Whites	77.79 (17.25)	75.89 (19.44)	$t(152) = -0.63$, $p = .528$, $\eta^2 = .00$, 95% CI [−7.80, 4.01]
Attitude towards Arabs	65.29 (19.76)	70.30 (17.98)	$t(152) = 1.65$, $p = .102$, $\eta^2 = .02$, 95% CI [−1.00, 11.03]
Attitude difference	12.50 (16.24)	5.60 (15.18)	$t(152) = -2.72$, $p = .007$, $\eta^2 = .05$, 95% CI [−11.91, −1.90]
Attitude difference change	0.97 (10.60)	5.95 (14.15)	$t(149) = 2.40$, $p = .018$, $\eta^2 = .04$, 95% CI [0.87, 9.09]
IAT	0.03 (0.45)	−0.11 (0.37)	$t(122) = -1.80$, $p = .074$, $\eta^2 = .03$, 95% CI [−0.28, 0.01]

Note. The values reported in columns 2 and 3 are means; standard deviations are in parentheses. The 95% confidence intervals are reported in column 4. To compute Cohen's *d* from the listed effects, use the following formula: $d = (2\sqrt{\eta^2})/(\sqrt{1-\eta^2})$.

identified with the characters in *Little Mosque*, the lower their prejudice scores after the experiment. Given the close link between identification with the characters and transportation into the narrative ($r = .63$, see Appendix A), we also report the correlations between the outcome measures and transportation in Table 3. As can be seen, these latter correlations tend to be similar yet smaller than those with identification when considering the average of the absolute values (identification average $r = .23$ and transportation average $r = .20$).

For exploratory purposes, we ran a number of mediation analyses with the other process measures we had collected: imagined contact, perceived variability, group malleability, and emotional

Table 2. Process measures as a function of condition at Posttest 1 in Experiment 1.

Process measure	Control $n = 98$	Entertainment education $n = 95$	Test of difference
Identification	50.86 (16.66)	46.15 (18.64)	$t(184) = -1.82$, $p = .071$, $\eta^2 = .02$, 95% CI [−9.82, 0.41]
Transportation	4.01 (0.87)	3.74 (0.95)	$t(188) = -2.08$, $p = .039$, $\eta^2 = .02$, 95% CI [−0.53, −0.01]
Imagined contact	1.24 (0.52)	2.68 (0.99)	$t(184) = 12.41$, $p < .001$, $\eta^2 = .46$, 95% CI [1.21, 1.67]
Perceived Variability 1	68.30 (28.57)	62.97 (28.78)	$t(174) = -1.23$, $p = .219$, $\eta^2 = .01$, 95% CI [−13.86, 3.20]
Perceived Variability 2	65.33 (27.52)	66.82 (24.83)	$t(183) = 0.38$, $p = .701$, $\eta^2 = .00$, CI [−6.12, 9.09]
Group malleability	4.32 (0.78)	4.54 (0.78)	$t(188) = 1.98$, $p = .049$, $\eta^2 = .02$, CI [−0.45, 0.00]
Emotional reaction	5.61 (0.78)	5.11 (0.98)	$t(188) = -3.87$, $p < .001$, $\eta^2 = .07$, 95% CI [−0.75, −0.24]

Note. The values reported in columns 2 and 3 are means; standard deviations are in parentheses. The 95% confidence intervals are reported in column 4. To compute Cohen's *d* from the listed effects, use the following formula: $d = (2\sqrt{\eta^2})/(\sqrt{1-\eta^2})$.

Table 3. Correlations between identification and transportation and outcome measures for participants in the entertainment-education condition in Experiment 1.

	Identification	Transportation
1. Attitude towards Whites	.13	.15
2. Attitude towards Arabs	**.32**	**.33**
3. Attitude difference	**−.24**	**−.24**
4. Modern Racism Scale	**−.33**	−.12
5. IAT	−.15	−.09
6. Time willing to volunteer	**.31**	.12
7. Attitude towards Whites T2	.02	.04
8. Attitude towards Arabs T2	**.22**	**.32**
9. Attitude difference T2	**−.24**	**−.33**
10. IAT T2	**−.34**	**−.31**

Note. Measures 1–6 are from Posttest 1 and measures 7–10 are from Posttest 2. Bolded values indicate $p < .050$.

reaction. None of the other process measures mediated the effect of condition on outcome measures. None of the indirect effects were statistically significant, regardless of the prejudice measure that was used as the outcome variable.

To summarize, Experiment 1 supported Hypotheses 1 and 2. We found that exposure to entertainment media with prosocial messages about a target outgroup led to a decrease in prejudice towards that outgroup, both immediately after exposure and several weeks later. Furthermore, the more participants identified with the characters from the target outgroup, the less prejudice they showed toward that group—preliminary evidence in support of Hypothesis 3.

Experiment 2

There were five goals for Experiment 2. First, we wanted to test Hypothesis 1 again and generalize

our findings to another entertainment medium, a music video. We made this choice because, similar to TV sitcoms, music videos can easily contain prosocial messages and provide consumers with a representation of an outgroup. Furthermore, music videos are less time-consuming and are among the most accessed media forms through websites like YouTube.

Second, we wanted to test Hypothesis 4 by examining whether entertainment-education produces stronger effects than other established methods of prejudice reduction. We compared our music video with two prominent methods used by researchers to improve intergroup attitudes: an imagined contact exercise (Crisp & Turner, 2009) and a group malleability article (Halperin et al., 2011). The imagined contact exercise entailed participants simply imagining a positive interaction with a member of an outgroup and writing about it. The group malleability article, which was read by participants, made salient that groups do not have a fixed mentality, but can change over time. Both of these methods have been tested in a variety of settings, using different samples, and measuring prejudice toward several outgroups (Halperin et al., 2012; Miles & Crisp, 2014). These methods were chosen because they have been shown to be effective and they are comparable in length to typical YouTube videos.

Third, we wanted to provide more convincing empirical evidence that the results of Experiment 1 were not due to experimental demand. Although we made a lot of effort to reduce experimental demand in Experiment 1—cover story with 12 TV sitcoms, target groups embedded in a list of 10 social groups—it is nevertheless possible that participants in the entertainment-education condition felt more pressured than those in the control condition to respond in a socially desirable way. In Experiment 2, we compared the effects of entertainment-education to conditions in which experimental demand was even stronger.

Fourth, we wanted to test Hypothesis 3 again and provide better empirical evidence for our hypothesized mediator, identification with members of the target outgroup. In the first experiment, we measured this construct in only one experimental condition and were not able to conduct full mediational analyses. In Experiment 2, we addressed this shortcoming by using a slightly different measure of identification. We were thus able to assess it in all experimental conditions and provide solid empirical evidence for its role as an underlying mechanism.

Fifth, we wanted to test intergroup anxiety as an additional candidate for the underlying process. Feeling anxious about interacting with outgroup members amplifies prejudice and impacts how interactions with outgroup members transpire (Stephan & Stephan, 1985). Research shows that decreasing intergroup anxiety can reduce prejudice (Voci & Hewstone, 2003). We therefore wanted to examine whether reduced intergroup anxiety, rather than increased identification with members of the target outgroup, might be the mechanism underlying the beneficial effect of entertainment-education on prejudice reduction.

Method

Participants

Three hundred and seventeen individuals completed an online study, which was planned to take place over a 2-month period. We removed seven participants who identified as Muslims. This resulted in a total of 310 participants ranging from 18 to 60 years old. There were no significant age or gender differences between any of the experimental conditions (ps > .845). There were 106 males and 204 females. Based on an a priori power analysis for a one-way ANOVA with four groups, we needed at least 45 participants in each condition to detect a medium effect ($\eta^2 = .06$, equivalent to $f = .25$, $d = .50$) with 80% power and a significance level of $\alpha = .05$. We sought to detect a medium effect based on a meta-analysis that showed that the imagined contact exercise had a reliable small-to-medium effect across all measures of intergroup bias (Miles & Crisp, 2014). The target number of 180 participants was surpassed during the 2-month period. Participants were recruited from across the US through online advertisements on Craigslist.com. Participants

were entered into a raffle to win one of 10 Amazon.com gift cards for $20. Participants were randomly assigned, through Qualtrics, to one of four experimental conditions: entertainment-education video, imagined contact exercise, group malleability article, and control. In order to maximize the precision of the estimates in the control condition, the likelihood of being assigned to this condition was slightly higher than that of being assigned to one of the other three conditions (see *N*s in Table 4), but the assignment was still random.

Stimulus Materials

Entertainment-education video. Participants viewed a 4-minute music video designed to reduce prejudice towards Muslims. The video presents Muslim Americans as a heterogeneous group of individuals who come across as relatable and likable (http://youtube.com/watch?v=sbcmPe0z3Sc). Throughout the video, a number of diverse Muslim Americans are seen holding up posters with statements they have chosen to share about themselves. The individuals enjoy activities typical Americans do (e.g., watching TV), admire popular icons (e.g., Justin Timberlake), do kind things (e.g., write inspirational messages on dollar bills), recognize their flaws (e.g., admit to being annoyed by their parents sometimes), and have admirable life goals (e.g., changing the world). The video includes a country music song with an overall positive tone that describes the benefits of leading a life as a good person. Participants then answered three knowledge questions about the content of the video, which served as a manipulation check.

Imagined contact exercise. We used an experimental procedure developed by Husnu and Crisp (2010) and Stathi and Crisp (2008). Participants were prompted to imagine a positive interaction with a Muslim and to write about that interaction. The web interface was designed such that participants could not start writing before the first 2 minutes had passed. They then had 2 minutes to write about the imagined interaction. Participants were told each part of the activity would take 2 minutes and informed that the page would automatically advance when the time was up. The entire manipulation took 4 minutes.

Group malleability article. We used Halperin et al.'s (2011) stimulus materials. Participants read a two-paragraph passage presented as a *Psychology Today* article that discussed scientific research that found that ethnic and religious groups change over time. The article remained on the screen for 4 minutes to give participants sufficient time to read through it. Participants then answered three knowledge questions about the content of the article as a manipulation check.

Outcome and Process Measures

For outcome measures, we used the same explicit measures of prejudice as in Experiment 1, that is, the feelings and liking thermometers and the Modern Racism Scale (α = .86). In addition, we included a semantic differential measure: Participants indicated how *pleasant*, *trustworthy*, *sympathetic*, *agreeable*, and *likable* they found Muslims to be (α = .97).

To assess the underlying psychological process we modified the identification measure from Experiment 1 so that it assessed participants' identification with Muslims in general. Participants were asked five questions about how much they liked, how similar they were, how much they felt like they knew, how much they would like to be like, and how much they identified with Muslims (α = .82). We included the same measures of perceived variability (Perceived Variability 1: α = .94) and group malleability (α = .67) used in Experiment 1. We also added two measures of *intergroup anxiety*. The first, *Intergroup Anxiety 1*, was an 11-item scale developed by Britt, Boniecki, Vescio, Biernat, and Brown (1996), which evaluates agreement with statements related to intergroup anxiety (α = .86). The second, *Intergroup Anxiety 2*, was a six-item scale developed by Stephan and Stephan (1985). Participants were asked to indicate how they would feel in response to mixing socially with complete strangers who were Muslims (α = .77).

Table 4. Prejudice measures and process measures as a function of experimental condition in Experiment 2. Also shown are the inferential statistics from the contrasts analyses.

	Control $n = 99$	Group malleability article $n = 65$	Imagined contact exercise $n = 69$	Entertainment-education $n = 71$	Contrast 1 (1, 1, 1, −3)	Contrast 2 (−2, 1, 1, 0)	Contrast 3 (0, −1, 1, 0)
Outcome measure							
Attitudes toward Whites	71.37 (19.51)	68.52 (18.91)	70.46 (22.97)	68.68 (21.61)	$F(1, 300) = 0.26, p = .611,$ $\eta^2_p = .00$, 95% CI [−1.03, 1.75]	$F(1, 300) = 0.47, p = .493,$ $\eta^2_p = .00$, 95% CI [−2.43, 1.17]	$F(1, 300) = 0.29, p = .588,$ $\eta^2_p = .00$, 95% CI [−2.55, 4.49]
Attitudes toward Muslims	63.98 (20.22)	60.69 (21.73)	64.41 (24.42)	70.93 (22.83)	$F(1, 300) = 6.86, p = .009,$ $\eta^2_p = .02$, 95% CI [−3.46, −0.49]	$F(1, 300) = 0.24, p = .627,$ $\eta^2_p = .00$, 95% CI [−2.40, 1.45]	$F(1, 300) = 0.94, p > .332,$ $\eta^2_p = .00$, 95% CI [−1.91, 5.63]
Attitude difference	7.39 (18.46)	7.82 (24.42)	6.04 (27.81)	−2.25 (20.81)	$F(1, 300) = 9.14, p = .003,$ $\eta^2_p = .03$, 95% CI [0.82, 3.85]	$F(1, 300) = 0.02, p = .880,$ $\eta^2_p = .00$, 95% CI [−2.13, 1.82]	$F(1, 300) = 0.21, p = .650,$ $\eta^2_p = .00$, 95% CI [−4.75, 2.97]
Modern Racism Scale	2.92 (1.14)	2.80 (1.19)	2.85 (1.35)	2.56 (1.31)	$F(1, 300) = 3.19, p = .075,$ $\eta^2_p = .01$, 95% CI [−0.01, 0.16]	$F(1, 300) = 0.36, p = .548,$ $\eta^2_p = .00$, 95% CI [−0.14, 0.07]	$F(1, 300) = 0.04, p = .833,$ $\eta^2_p = .00$, 95% CI [−0.19, 0.23]
Semantic differentials	4.82 (1.39)	4.88 (1.40)	4.88 (1.51)	5.53 (1.36)	$F(1, 300) = 12.10, p < .001,$ $\eta^2_p = .04$, 95% CI [−0.26, −0.07]	$F(1, 300) = 0.08, p = .776,$ $\eta^2_p = .00$, 95% CI [−0.11, 0.14]	$F(1, 300) = 0.00, p = .996,$ $\eta^2_p = .00$, 95% CI [−0.24, 0.24]
Process measure							
Identification	44.23 (20.14)	45.62 (18.92)	47.11 (21.91)	52.66 (20.60)	$F(1, 300) = 6.36, p = .012,$ $\eta^2_p = .02$, 95% CI [−3.11, −0. 38]	$F(1, 300) = 0.62, p = .431,$ $\eta^2_p = .00$, 95% CI [−1.06, 2.49]	$F(1, 300) = 0.18, p = .674,$ $\eta^2_p = .00$, 95% CI [−2.73, 4.21]
Perceived Variability 1	36.38 (32.50)	44.72 (34.75)	48.60 (38.63)	54.72 (39.19)	$F(1, 300) = 5.41, p = .021,$ $\eta^2_p = .02$, 95% CI [−5.30, −0.44]	$F(1, 300) = 4.59, p = .033,$ $\eta^2_p = .02$, 95% CI [0.28, 6.58]	$F(1, 300) = 0.38, p = .536,$ $\eta^2_p = .00$, 95% CI [−4.22, 8.02]
Perceived Variability 2	60.75 (28.79)	64.98 (29.15)	68.94 (28.16)	64.87 (32.72)	$F(1, 300) = 0.06, p = .808,$ $\eta^2_p = .00$, 95% CI [−2.23, 1.74]	$F(1, 300) = 2.50, p = .115,$ $\eta^2_p = .01$, 95% CI [−0.51, 4.65]	$F(1, 300) = 0.59, p = .441,$ $\eta^2_p = .00$, 95% CI [−3.07, 7.03]
Group malleability	4.38 (0.84)	4.50 (1.03)	4.35 (0.98)	4.44 (0.93)	$F(1, 300) = 0.05, p = .821,$ $\eta^2_p = .00$, 95% CI [−0.06, 0.7]	$F(1, 300) = 0.14, p = .706,$ $\eta^2_p = .00$, 95% CI [−0.10, 0.07]	$F(1, 300) = 0.87, p = .351,$ $\eta^2_p = .00$, 95% CI [−0.08, 0.23]
Intergroup Anxiety 1	3.10 (1.25)	2.79 (1.12)	3.09 (1.24)	2.86 (1.24)	$F(1, 300) = 0.69, p = .408,$ $\eta^2_p = .00$, 95% CI [−0.05, 0.12]	$F(1, 300) = 0.96, p = .328,$ $\eta^2_p = .00$, 95% CI [−0.16, 0.05]	$F(1, 300) = 2.02, p = .156,$ $\eta^2_p = .01$, 95% CI [−0.06, 0.36]
Intergroup Anxiety 2	3.36 (1.17)	3.22 (1.08)	3.31 (1.26)	3.15 (1.14)	$F(1, 300) = 0.87, p = .351,$ $\eta^2_p = .00$, 95% CI [−0.04, 0.12]	$F(1, 300) = 0.43, p = .513,$ $\eta^2_p = .00$, 95% CI [−0.14, 0.07]	$F(1, 300) = 0.19, p = .660,$ $\eta^2_p = .00$, 95% CI [−0.15, 0.24]

Note. The values reported in columns 2–5 are means; standard deviations are in parentheses. The 95% confidence intervals are reported in columns 6–8.

All measures were modified so that Muslims were the target minority in each measure for all four experimental conditions.

Participants made their ratings on 7-point Likert scales with appropriately labeled endpoints, except for the two intergroup anxiety scales where participants gave their responses on 5-point Likert scales, as done in the original (see supplemental materials for all measures).

Procedure

After participants completed an online consent form, they were randomly assigned to one of the four experimental conditions. Participants either watched the entertainment-education video, completed the imagined contact exercise, read the group malleability article, or were not exposed to any stimuli (control group). Next, participants in the entertainment-education and group malleability article conditions completed knowledge questions (three each) that inquired about details from the video or the article, respectively. Next, participants completed the outcome measures followed by the process measures. Finally, participants were thanked and debriefed.

Results

Preliminary Analyses

Before analyzing the data, we calculated the number of knowledge questions participants in the entertainment-education and group malleability article conditions had answered correctly as a manipulation check. We found that one participant in the entertainment-education condition and five participants in the group malleability article condition had gotten all three knowledge questions incorrect. These participants were removed from the dataset. The condition effects described in the following lines did not change when these participants were left in the dataset. We also examined the written responses of those in the imagined contact exercise condition to ensure all of them had engaged in the second part of the exercise. This was indeed the case.

Next, we found that scores on the feelings and liking thermometers were highly correlated for both Whites and Muslims as the target groups (rs = .80 and .76). As done in Experiment 1, we combined them into a single attitude score with higher numbers indicating more positive attitudes. We also calculated an *attitude difference* score between participants' attitudes towards Whites versus Muslims. Higher attitude difference scores indicate a greater preference for Whites.

Main Analyses

First, we tested Hypothesis 1, which predicted that entertainment-education effectively reduces prejudice, and Hypothesis 4, which predicted that entertainment-education is more effective than some established methods of prejudice reduction. We tested and met the assumption of constant variance for the models reported in what follows. The means and standard deviations for the prejudice measures are reported in Table 4 (top panel). The means show that participants in the entertainment-education condition had lower prejudice scores than participants in the other three conditions. We analyzed the data using a series of contrasts. The first contrast tested the entertainment-education condition against the three other conditions (1, 1, 1, −3). Following Abelson and Prentice's (1997) recommendation, we also included two other orthogonal contrasts. The second contrast compared the two remaining prejudice reduction conditions against the control condition (2, −1, −1, 0), whereas the third contrast tested the two remaining prejudice reduction conditions against each other (0, 1, −1, 0). The inferential statistics derived from these contrasts are shown in the last three columns of Table 4. Participants in the entertainment-education condition showed less prejudice on all of the outcome measures than those in any of the other three conditions. This effect was significant at the $p = .050$ level for attitudes towards Muslims and for the semantic differential, but was only marginally significant for the Modern Racism Scale.

We then examined the condition difference on the process measures (see bottom part of Table

4). The entertainment-education video was more effective at increasing the degree to which participants identified with Muslims and perceived them as a heterogeneous group (Perceived Variability 1). However, those in the entertainment-education condition did not significantly differ from those in the other three conditions on the other process measures. A table with the bivariate correlations between all process and outcome measures is presented in Appendix B.

Finally, we examined Hypothesis 3 by running several mediational analyses to determine whether identification with the target group was the underlying process driving the condition effect. We regressed each of the outcome measures on Contrast 1, Contrast 2, Contrast 3, and identification. We found that the effect of Contrast 1 was no longer significant when controlling for the effect of identification on attitude difference scores, and the semantic differentials. We followed Preacher and Hayes's (2004) recommendations, which suggests a bootstrapping procedure to compute a confidence interval around the indirect effect (i.e., the path through the mediator). When the confidence interval of the indirect effect does not include 0, the effect is statistically significant. Results revealed that the indirect effects of Contrast 1 on attitudes difference scores, $b = .86$, 95% CI [0.21, 1.66] and on semantic differentials, $b = -.07$, 95% CI [−0.12, −0.02] were significant (see Figure 1). Our analyses did not find that perceived variability mediated the condition effect on any of the outcome measures. Together, these analyses are consistent with the idea that identification with the target group is the underlying process responsible for the differences in prejudice reduction between the four experimental conditions.

General Discussion

We examined the effect of entertainment media containing prosocial messages on prejudice against Arabs/Muslims. In Experiment 1, participants exposed to an entertainment-education sitcom depicting the daily lives of several relatable Muslim characters were significantly less prejudiced than participants who were exposed to a control sitcom. Significant differences emerged on both explicit and implicit measures of prejudice. Contrary to most other prejudice reduction methods, the effects of the entertainment-education sitcom persisted for at least 4 weeks. As predicted, greater identification with members of the target group was associated with reduced prejudice in the entertainment-education condition.

In Experiment 2, exposure to a 4-minute music video portraying Muslims as relatable and likeable led to a significant reduction in prejudice, compared to the control, and did so to a greater extent than two other well-established prejudice reduction methods, imagined contact exercise and group malleability article. Participants in the entertainment-education condition reported greater warmth and liking for Muslims and rated them more positively on multiple traits than those in the imagined contact exercise condition, in the group malleability article condition, or in the control condition. The effect of condition on prejudice was mediated by the extent to which participants identified with Muslims. Curiously, we did not replicate findings regarding the imagined contact exercise and group malleability article. It is possible that the effectiveness of the imagined contact exercise was limited because it was administered online. For the group malleability article, it may be the case that this intervention's potential to improve intergroup attitudes is limited to factions engaged in conflicts of a civil war nature.

In Experiments 1 and 2, the reduction in prejudice was associated with identification with members of the target group. In both the entertainment-education sitcom and music video, Arabs/Muslims were depicted as individuals who encounter very common daily problems and make mistakes just like most people. They came off as very human in both media, making them more likable and relatable. Not surprisingly, in both experiments, participants in the entertainment-education condition felt more similar to Arabs/Muslims, felt as though they knew them more, and wanted to be more like them. And the

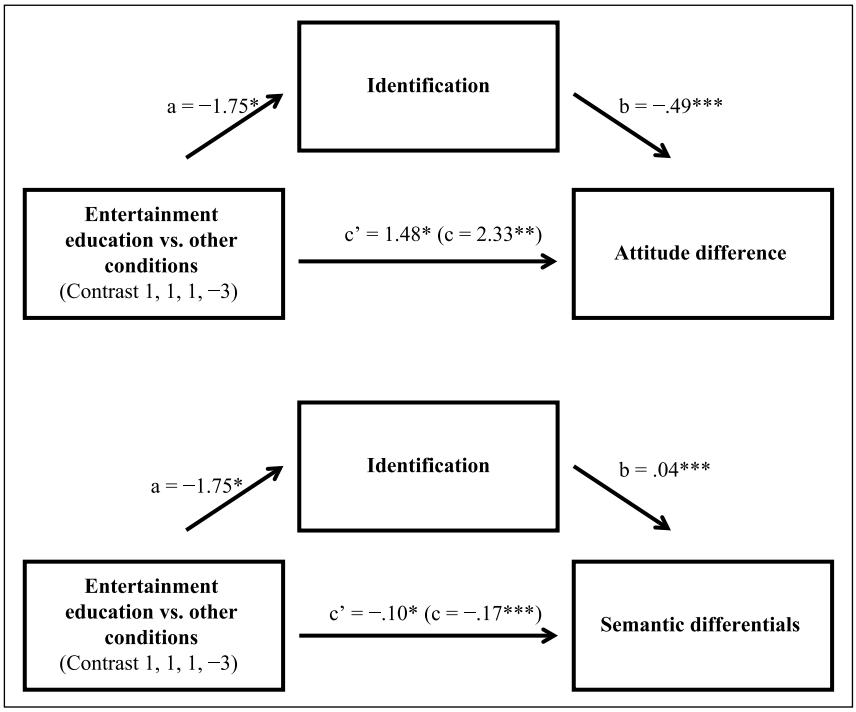

Figure 1. Path-analysis model showing the direct, indirect, and total effect of experimental condition on prejudice outcome measures in Experiment 2. The values in parentheses indicate the total effect. †$p < .10$. *$p < .05$. **$p < .01$. ***$p < .001$.

more participants identified with members of the target group, the more effective the entertainment medium was at reducing prejudice towards that outgroup. We did not find that perceived variability, imagined contact, belief in group malleability, emotional reactions, and intergroup anxiety served as the underlying processes driving the effects. Our results do show, however, that entertainment-education is effective because it transports viewers into a world in which they identify with, understand, and become involved with members of the outgroup.

The present studies go beyond the current literature on prejudice reduction by using randomized controlled trials to test the impact of commonly consumed entertainment-education media programs on prejudice. We used established and validated measures of prejudice on explicit, implicit, and behavioral dimensions. Data were acquired from both student and nonstudent populations. We used both television sitcoms and a music video demonstrating the generalizability of the effect. We also provided evidence for identification as the mediating process and demonstrated the long-term benefit of entertainment-education (i.e., 4–6 weeks later). Additionally, we compared the effectiveness of entertainment-education to other well-established prejudice reduction methods. Finally, for both experiments, we chose Arabs/Muslims as the target outgroup because negative attitudes towards them are prevalent and stable in the US and are highly resistant to change (Arab American Institute, 2015). Therefore, using Arabs/Muslims as the target outgroup in these experiments was the most stringent test of our predictions. By creating more positive attitudes towards this particular group, we provide strong evidence for the effectiveness of entertainment-education at reducing prejudice more broadly. In short, the

present research gives evidence that entertainment-education can be an effective way to reduce prejudice and provides a more nuanced understanding of why it is effective.

The experiments allowed us to exclude alternative interpretations for the observed effects. In Experiment 1, we chose two sitcoms that were comparable on a number of dimensions known to affect prejudice. In both experiments, we devoted a lot of effort to minimizing experimental demand (see Method sections). Although experimental demand is a possible, yet unlikely, alternative explanation for the findings in Experiment 1, the same is not true in Experiment 2 where three of four conditions explicitly addressed intergroup relations, but a reduction of prejudice was observed in only one of them.

By transporting people into a narrative in which they gain exposure to and identify with members of a target outgroup, entertainment-education has the potential to influence a variety of psychological processes. In future research, it would be interesting to explore whether entertainment-education is equally effective in triggering other psychological processes known to reduce prejudice. Entertainment-education may help people take on the perspectives of (Galinsky & Moskowitz, 2000) and feel greater empathy for (Zillmann, 1991) members of the outgroup, perceive the outgroup as being more heterogeneous (Brauer & Er-rafiy, 2011), or perceive social norms as more inclusive (Bandura, 2006)—all of which have been shown to be important for reducing prejudice.

Entertainment-education has several notable advantages over traditional methods of prejudice reduction. First, when exposed to entertainment-education, consumers invest so much of their cognitive resources into the events playing out in front of them that they become less likely to critically assess (Kreuter et al., 2007) or counterargue (Slater & Rouner, 2002) the messages embedded in the narrative. Contrary to other types of influence attempts, entertainment-education reduces the viewer's sense that they are being "sold" something (Brown & Walsh-Childers, 2002), which makes them more open to prosocial messages embedded in a narrative. Thus, when audience members are exposed to entertainment-education programming that includes characters, information, and messages about positive intergroup relations and behaving in nonprejudiced ways, they are more receptive to those characters and messages simply because they are immersed in the entertaining program. Two other advantages offered by entertainment-education are that it can be easily applied in the real world and it is highly scalable. According to Okdie et al. (2014), the average American spent over 3,515 hours consuming media in 2012. Entertainment-education easily reaches millions of people who need not make a conscious choice to be exposed to prosocial messages (unlike, for example, the choice to attend a voluntary diversity workshop). Even if the effects of entertainment-education were rather small—which they are not—it would still have a large impact on a societal level, simply through the number of people who would be exposed to it.

A limitation of this research is that it does not explore the moderating conditions under which entertainment-education is most effective at reducing prejudice. One could speculate a number of conditions that may increase or decrease the effectiveness of entertainment-education at improving intergroup attitudes. For example, it may be the case that depicting counterstereotypical characters, cross-group friendships, or marriage between characters from different social groups is the necessary ingredient for optimizing the effectiveness of entertainment-education programming in reducing prejudice. Future research should focus on examining such questions. Another limitation of this research is that entertainment-education programming such as *Little Mosque* may not be viewed by those who need it the most (i.e., those with prejudice) because it explicitly depicts members of a target outgroup. Future research should seek to address how to solve this problem. One approach may be to introduce characters from a target minority group after several episodes of programming or to include fewer minority characters. These approaches may result in entertainment-education

programs that are slightly less effective at reducing prejudice, but are viewed by a wider audience, which may cause a greater cumulative beneficial effect on a societal scale.

In 2000, the Center for Disease Control set up an Entertainment-Education Program in Hollywood, through which health specialists provide script writers with information on how to integrate prohealth messages into scripts. However, writers who wish to create entertainment media programs that reduce tensions between social groups currently lack the appropriate guidance. Their intuitions may lead them to adopt strategies that have been shown to be rather ineffective (Weisbuch, Pauker, & Ambady, 2009). Thus, there is a need to establish clear guidelines on what characteristics make entertainment media highly effective in reducing prejudice, and our research is a step in this direction.

In conclusion, entertainment-education is a powerful way to influence attitudes and behaviors. It conveys prosocial messages through easily understood narratives that reduce resistance. Entertainment-education is highly scalable. Though our research is only a step in building our understanding of entertainment-education as a method of prejudice reduction, the results are encouraging. Entertainment-education has a promising future in reducing prejudice on a broad scale in society.

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Appendix A

Table A1. Correlations between all measures in Experiment 1. The values below the diagonal are bivariate correlations, the values above the diagonal are partial correlations statistically controlling for experimental condition.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. Identification		**.63**	**.26**	.03	−.04	**.14†**	**.48**	.09	**.15**	−.09	.10	−.11	−.07	**.14†**	.10	**.24**	**−.18**	−.03	−.08
2. Transportation	**.63**		**.32**	.03	−.02	**.12†**	**.53**	.12	**.18**	−.08	.07	.01	−.05	.04	**.17**	**.28**	**−.14†**	−.05	−.04
3. Imagined contact	.10	**.13†**		−.03	.02	.09	**−.23**	.05	.10	−.07	.00	−.07	−.06	.18	.08	.12	−.05	.05	−.03
4. Perceived Variability 1	.04	.04	−.04		**.19**	.07	.03	**−.18**	−.01	**−.24**	.08	**−.17**	.03	−.05	**−.21**	−.07	**−.18**	.03	**−.27**
5. Perceived Variability 2	−.04	−.03	.03	**.18**		**.18**	.05	.04	**.29**	**−.34**	.08	**−.27**	.09	.09	.05	**.23**	**−.22**	−.02	−.10
6. Group malleability	.12	.10	**.16**	.05	**.19**		**.19**	.01	**.16**	**−.20**	.01	−.06	.03	**.17**	.01	**.15†**	**−.18**	.05	−.01
7. Emotional reaction	**.50**	**.54**	−.02	.00	.04	**.14†**		**.21**	**.29**	−.12	−.01	**−.15**	−.07	.12	**.25**	**.30**	−.07	−.13	−.07
8. Attitude towards Whites	.09	.12	.02	**−.18**	.03	.00	**.21**		**.69**	**.33**	−.06	−.03	.04	.01	**.70**	**.44**	**.29**	.03	.05
9. Attitude towards Arabs	**.13†**	**.16**	**.18**	−.01	**.30**	**.18**	**.24**	**.68**		**−.45**	.08	**−.31**	−.09	**.22**	**.49**	**.64**	**−.18**	**−.22**	−.10
10. Attitude difference	−.06	−.05	**−.22**	**−.20**	**−.34**	**−.22**	−.05	**.33**	**−.47**		**.18**	**.37**	**.16**	**−.28**	**.24**	**−.26**	**.59**	**.32**	**.20**
11. Attitude difference change	.06	.03	**.21**	.05	.09	.05	−.09	−.07	**.13†**	**−.24**		.08	−.08	.00	**.16†**	.01	**.18**	**.25**	−.06
12. Modern Racism Scale	−.10	.02	**−.13†**	**−.16**	**−.28**	−.08	−.12	−.02	**−.32**	**.39**	.04		**.20**	**−.40**	.03	**−.26**	**.34**	−.01	.07
13. IAT	−.04	−.02	**−.17**	.05	.09	.00	−.01	.04	−.12	**.20**	**−.13†**	**.21**		**−.16**	−.09	−.08	.01	−.03	**.22**
14. Time willing to volunteer	**.14†**	.04	**.14†**	−.05	.09	**.17**	.10	.01	**.22**	**−.28**	.01	**−.40**	**−.17**		−.04	.13	**−.19**	−.06	−.08
15. Attitude towards Whites T2	.10	**.18**	.03	**−.20**	.05	.00	**.25**	**.70**	**.47**	**.25**	.13	.04	−.08	−.04		**.65**	**.40**	**−.11**	−.03
16. Attitude towards Arabs T2	**.21**	**.26**	**.18**	−.08	**.23**	**.16**	**.26**	**.44**	**.64**	**−.28**	.04	**−.27**	−.10	.13	**.63**		**−.44**	.13	−.14
17. Attitude difference T2	**−.14†**	−.10	**−.18**	**−.15†**	**−.21**	**−.19**	−.01	**.29**	**−.21**	**.61**	.11	**.35**	.02	**−.19**	**.40**	**−.45**		**−.29**	.12
18. Attitude difference change T2	−.07	−.07	.11	.01	−.02	.07	**−.18**	.03	**−.18**	**.26**	**.29**	−.01	.00	−.06	−.11	**.15†**	**−.32**		−.10
19. IAT T2	−.05	−.01	−.13	**−.25**	−.09	−.02	.00	.06	−.11	**.22**	−.09	.08	**.24**	−.08	−.02	−.15	.14	−.13	

Note. Measures 1–14 are from Posttest 1 and measures 15–19 are from Posttest 2. Bolded values indicate $p < .050$. Bolded values with † indicate $p < .100$.

Appendix B

Table B1. Correlations between all measures in Experiment 2. The values below the diagonal are bivariate correlations, the values above the diagonal are partial correlations statistically controlling for experimental condition (i.e., statistically controlling for contrasts 1, 2, and 3).

	1	2	3	4	5	6	7	8	9	10	11
1. Identification		−.04	**.24**	**.21**	**−.41**	**−.42**	**.15**	**.59**	**−.44**	**−.25**	**.55**
2. Perceived Variability 1	−.01		**.26**	**.13**	**−.12**	−.02	**−.16**	−.08	−.07	**−.28**	.03
3. Perceived Variability 2	**.24**	**.27**		**.23**	**−.23**	−.05	−.07	**.11†**	**−.17**	**−.31**	**.22**
4. Group malleability	**.21**	**.13**	**.23**		**−.43**	**−.34**	−.04	**.30**	**−.33**	**−.48**	**.29**
5. Intergroup Anxiety 1	**−.41**	**−.13**	**−.23**	**−.43**		**.66**	.00	**−.42**	**.41**	**.57**	**−.41**
6. Intergroup Anxiety 2	**−.43**	.00	−.05	**−.34**	**.66**		**−.15**	**−.44**	**.29**	**.37**	**−.42**
7. Attitudes towards Whites	**.14**	**−.16**	−.07	−.04	.00	**−.15**		**.44**	**.48**	.08	**.25**
8. Attitudes towards Muslims	**.60**	−.06	**.11†**	**.30**	**−.41**	**−.44**	**.43**		**−.58**	**−.40**	**.71**
9. Attitude difference	**−.45**	**−.09†**	**−.17**	**−.33**	**.41**	**.29**	**.48**	**−.58**		**.46**	**−.46**
10. Modern Racism Scale	**−.26**	**−.29**	**−.31**	**−.48**	**.57**	**.37**	.08	**−.40**	**.47**		**−.47**
11. Semantic differentials	**.56**	.06	**.22**	**.29**	**−.41**	**−.42**	**.24**	**.71**	**−.48**	**−.48**	

Note. Bolded values indicate $p < .050$. Bolded values with † indicate $p < .100$.