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Harmonious Contact: Stories About Intergroup Musical Collaboration Improve Intergroup Attitudes

Jake Harwood, Farah Qadar, & Chien-Yu Chen

Department of Communication, University of Arizona, Tucson, AZ 85721, USA

Watching contact between members of one's ingroup and members of an outgroup in the media (mediated vicarious contact) improves intergroup attitudes. We compare mediated vicarious contact with observing only members of the outgroup (parasocial contact), and examine whether the activity of the portrayed contact matters. Building on theory, we predict that watching outgroup members playing music *should reduce prejudice more than watching them engaged in nonmusical activities, particularly with vicarious (vs. parasocial) contact. Results show that vicarious musical contact enhances perceptions of synchronization, liking, and honesty between ingroup and outgroup actors in a video, which in turn results in more positive attitudes toward the outgroup. Counter to predictions, parasocial musical contact results in* less *positive outcomes than parasocial* non*musical contact.*

When people perform music together they are temporally bound in multiple ways. They are not just "spending time" together, they are *sharing* time in a very specific, synchronized, and coordinated manner. Their physical movements are highly correlated, and they share an identity of purpose that is coordinated at the level of milliseconds. Such coordination requires high-level communication between the performers. The current study examines how audiences respond when learning about people from *different social groups* engaged in such finely synchronized collaboration. The broad research hypothesis is that observing musical cooperation between members of different groups will improve intergroup attitudes and enhance a desire to experience intergroup communication, relative to observing other forms of contact. The research is grounded in intergroup contact theory, social cognitive theory, and literature surrounding the cultural and psychological messages conveyed by music.

Corresponding author: Jake Harwood; e-mail: jharwood@u.arizona.edu

Our work is novel because: (a) we extend contact theory to consider why different intergroup contact *activities* (as opposed to simply valence of contact) might differentially affect attitudes, (b) we investigate some new and theoretically important *mediators* that explain contact's effects, and (c) we explore *music* from a communication perspective, aiming to understand the messages sent to audiences when people make music together. Most media research examines visual and language stimuli rather than audio. We believe that music has some fundamental features that deserve more attention from communication researchers, particularly its ability to convey emotion and portray liking or intimacy between people in a manner that is free of semantic content (Cross & Morley, 2009; Harwood, 2015). That is, music on its own (without lyrics) is experienced as a meaningful and important message, yet has no "meaning" in the traditional sense of referring to objects or events in our lives. Thus, music presents an interesting and important reference point for thinking about messages and meaning for communication researchers (Harwood, 2017).

Intergroup contact theory

When members of different groups have contact with one another, there are opportunities for prejudice to be reduced and stereotypes to be disconfirmed. A massive meta-analysis of intergroup contact research conclusively demonstrates that the majority of intergroup contact experiences are beneficial in this way (Pettigrew & Tropp, 2006). Contact can be direct (face-to-face), or it can be *in*direct in various interesting ways (Harwood, 2010; Vezzali, Hewstone, Capozza, Giovannini, & Wölfer, 2014). *Parasocial contact* occurs when we encounter members of another group through the media (e.g., a straight person sees a media portrayal of a gay person; Schiappa, Gregg, & Hewes, 2005): The "contact" here is between a viewer and a mediated portrayal of an outgroup member. *Extended contact* occurs when someone *learns about* contact between members of an ingroup and an outgroup (e.g., a Black person finds out that her Black friend has a White friend; Wright, Aron, McLaughlin-Volpe, & Ropp, 1997). Extended contact can occur when we observe interaction between an ingroup and outgroup member, and this is called *vicarious contact*; vicarious contact can also occur through the media (Joyce & Harwood, 2014). For a Black person, such mediated vicarious contact is experienced when viewing a television show portraying interaction between a White and a Black character, for instance. Parasocial and vicarious contact have been the subject of considerable research in communication and social psychology, much of which is captured in Vezzali et al.'s (2014) review of 41 such studies (see particularly Table 2 of that study). The processes and effects of indirect contact are similar to those in direct face-to-face contact, and these forms of indirect contact have been fully embraced into the intergroup contact tradition and literature (Vezzali et al., 2014).

The small amount of work on mediated vicarious contact (none of it in the musical arena) shows that there are positive effects when people identify with the ingroup

member in the contact experience, when the outgroup member is seen as somewhat typical of their group, and when the contact is positive (Gómez & Huici, 2008; Joyce & Harwood, 2014; Mazziotta, Mummendey, & Wright, 2011). These effects have been demonstrated not only with television stimuli, but also with children's story books (Cameron, Rutland, Brown, & Douch, 2006). Vicarious contact is a potentially powerful technique to reduce prejudice because it is easily applicable to large populations (via mass media exposure), it typically avoids the anxiety that sometimes accompanies direct intergroup contact, and it can overcome logistical barriers to contact such as intergroup segregation or threats of violence in high-conflict intergroup contexts (Pettigrew & Tropp, 2011). Vicarious contact is also a form of modeling, and hence can be understood in terms of processes allied with social cognitive theory (Bandura, 2001). When we observe ingroup and outgroup members communicating positively, we can learn how to have productive intergroup communication (Mazziotta et al., 2011; Ortiz & Harwood, 2007).

The modeling aspects of vicarious contact set it apart from parasocial contact (i.e., merely observing outgroup members in the media). With parasocial contact, exposure to a positive outgroup member might have a positive effect on the observer's attitudes, but there are no opportunities for modeling effective intergroup contact, nor is there an opportunity for identification with the *in*group member in the message to enhance the effects of the contact experience. We are aware of only one study explicitly contrasting vicarious and parasocial contact using media-related stimuli. Mazziotta et al. (2011, Study 2) compare exposure to ingroup–outgroup interaction (vicarious) with exposure to a single outgroup member engaged in similar activities to the ingroup–outgroup dyad (parasocial). They show stronger prejudice-reduction effects in the vicarious condition. We extend their work by portraying *out*group–*out*group interaction in the parasocial condition, thus rendering the two conditions more directly comparable (both involve interaction). Shapiro, Baldwin, Williams, and Trawalter (2011) explore a similar contrast outside of the media context. Using photographs, they find that White respondents are more inclined to want to befriend a Black target shown with a White person than one shown with another Black person. In other words, and in line with our general argument, outgroup members shown engaged in *inter*group activity are seen as more appealing than those shown in intragroup activity.

Two general conditions favor beneficial (prejudice reduction) outcomes from (direct or indirect) intergroup contact. First, the contact itself should be broadly positive and directed toward a common goal (Allport, 1954); negative contact does not reduce prejudice (Paolini, Harwood, & Rubin, 2010). Second, outgroup people's group memberships need to be salient and/or the outgroup people should be viewed as having good "fit" with their group (Brown & Hewstone, 2005). When group memberships are foregrounded, perceptions of the outgroup *person* generalize to perceptions of their *group*. If you are *not* thinking about someone's group membership or view them as *a*typical of the group ("they're <u>not</u> like *MOST* ____ people")

then contact has weaker effects. We argue next that contact involving music is likely to achieve both these goals.

Intergroup musical contact as vicarious contact

The experiences of playing or listening to music are broadly positive for most people: Music is a favored leisure time activity for large portions of the population (North & Hargreaves, 2008). Music also offers numerous routes for maintaining the salience of group memberships, due to its connections with specific groups (e.g., via national or group-based styles of music: samba, hip-hop, etc.). Hence, musical contact appears promising as a venue in which to examine intergroup contact (Kuchenbrandt, van Dick, Koschate, Ullrich, & Bornewasser, 2014). Indeed, subjective evaluations of programs of intergroup musical contact suggest that contact through music is an effective way of bringing people from different groups together (Odena, 2010; Pruitt, 2011). Controlled empirical research on the topic beyond case studies and interviews is, however, fairly limited (see Gilboa, Yehuda, & Amir, 2009, for a typical case-study type approach).

Widespread musical collaborations across group boundaries are unlikely. Most people are not highly musically proficient, and barriers to collaborations across group boundaries (particularly in conflict-ridden situations) are substantial. However, indirect forms of musical contact offer great promise: Being exposed to outgroup musical artists via music listening is an everyday occurrence.

The current study focuses particularly on exposure to *intergroup musical collaboration* as a form of indirect contact. Intergroup musical collaboration occurs when two musicians from different social groups collaborate on a musical project. When such contact is observed by a third party from one of the relevant groups, that third party experiences *vicarious* musical contact. The observer is exposed to a model of an ingroup member engaged in contact with an outgroup member. Sometimes this might be incidental contact—a band might just "happen" to have, say, a Black drummer and a White guitarist. Often, however, the intergroup dynamics are more explicit, with the music fundamentally *representing* the group memberships. Examples of such collaborations include Dizzy Gillespie's 1940s work collaborating with Latin/Caribbean musicians on Latin-jazz fusions, Stan Getz's 1960s recordings involving jazz and Brazilian Samba, Paul Simon's 1980s *Graceland* album (U.S. and African musicians), 2-Tone (Jamaican Ska and English punk/new wave), and more recent collaborations such as *Baka Beyond* (Afro-Celtic). These collaborations involve musicians from different backgrounds bringing their respective cultures' musical traditions to the collaboration; indeed, the whole "idea" behind the collaborations is achieving a mix/hybrid of the groups' musical styles, and hence the collaborations have high potential for group salience. Such collaborations are sufficiently common that awards are given for cross-cultural musical fusions (e.g., www.songlines.co.uk). One focus of the current study is to compare exposure to ingroup–outgroup musical collaborations against exposure to outgroup music, to understand whether vicarious contact in this context has stronger positive effects than parasocial contact.
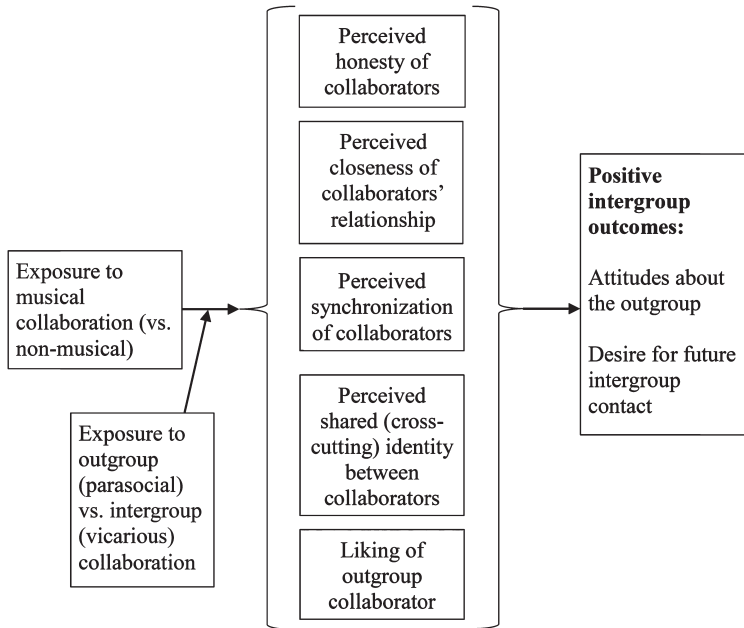
Figure 1 Illustration of theoretical model. Exposure to musical (vs. nonmusical) collaborations involving one or more outgroup members positively influences the mediators (central column), which subsequently are associated with more positive perceptions of the outgroup as a whole and intergroup contact. The first path is moderated by whether the collaboration is intragroup (only outgroup members: parasocial contact) or intergroup (in- and outgroup members collaborating together: vicarious contact). We predict stronger positive effects in the vicarious contact condition.

Processes

As suggested at the outset, the current research study is premised on the idea that music is a "special" form of communication, and that contact manipulations involving music will have stronger effects than other types of contact. We make this prediction not just from intuition, but due to a number of theoretically interesting processes engendered by music. Below we outline these processes, noting how each might explain a strong effect of musical contact (relative to nonmusical contact), and then why those effects might be stronger for vicarious (vs. parasocial) contact. In short, we attempt to develop a rationale for the moderated mediation model illustrated in Figure 1.

Honesty

Considerable anthropological and evolutionary work suggests that music is a particularly *honest* form of communication (Cross, 2009; Darwin, 1872/1998). It is hard to *lie* in music, in part because music itself (minus lyrics) has little semantic content. Joint musical activity also sends honest messages about relational integrity and solidarity,

even in nonhuman species (Hagen & Hammerstein, 2009). Pairs of birds that have been together longer can sing duets in a more coordinated manner than dyads with shorter tenure, thus accurately advertising the strength of their relationship (Hall & Magrath, 2007). Hence, we expect that people will perceive individuals making music to have a more honest relationship than individuals engaged in nonmusical activity.

When people observe individuals from *different* groups making music together, we argue that they see a particular achievement in honesty, given the perhaps greater barriers to such intergroup collaboration. For people from different groups to work together in this way may be seen as requiring a higher level of mutual trust than for members of the same group. Hence, we expect greater perceptions of perceived honesty in vicarious, as opposed to parasocial, contact conditions. Most broadly, we expect the mediated effects through honesty (illustrated in Figure 1) to be strongest in vicarious musical situations, due to the modeling of honest intergroup contact. Attitudes toward the outgroup should improve when honest intergroup contact is seen as possible.

Closeness

Music is an emotionally powerful code (Juslin & Sloboda, 2011), and is connected with emotions of love and affection (Brandt, 2009; Chesebro, Foulger, Naghman, & Yannelli, 1985; Knobloch & Zillmann, 2003). Playing music with another person results in increased empathy and affiliation with that person (Rabinowitch, Cross, & Burnard, 2013), and observing musicians playing together enhances perceptions that those individuals have a close relationship (Lakens & Stel, 2011). Perceiving outgroup members as being capable of close human relationships should translate to more positive attitudes about the outgroup—intimacy and affection are humanizing and positive perceptions (Haslam, 2006).

In the vicarious setting (ingroup and outgroup collaborating), such perceptions of *closeness* are expected to be stronger still, given the presumed and actual barriers to closeness across groups (Wang, Kao, & Joyner, 2006). A closeness "credit" may accrue to intergroup relationships, based on the implicit knowledge of the difficulties associated with maintaining such associations. Most broadly, as with the previous variable, we expect stronger mediated effects through closeness in the vicarious (vs. parasocial) musical condition, due to the *modeling* of intimate intergroup contact in that condition (again, see Figure 1). Observing closeness between ingroup and outgroup members improves intergroup attitudes (Tausch, Hewstone, Schmid, Hughes, & Cairns, 2011).

Synchronization

Musical collaboration requires more fine-grained real-time *synchronization* than many other forms of collaboration, something most observers probably know. Musical collaboration requires psychological, physical, and communicative coordination at the level of milliseconds. Tight synchronization is associated with inferences of relational closeness and even perceptions of overlapping "selves" for the participants

(Hove & Risen, 2009; Lakens & Stel, 2011). Hence, observing musical collaboration should result in greater perceptions of synchronization between the actors than observing nonmusical collaboration.

We suggest that synchronization perceptions may be particularly strong in the intergroup (vicarious) music condition, given the need for musicians from different cultures to synchronize in musical territory that may be somewhat unfamiliar. Vicarious intergroup musical collaborations thus exemplify highly synchronized *inter*group behavior, and thus should result in positive intergroup perceptions. Again, we expect stronger mediated effects in the vicarious musical condition, due to the modeling of synchronized intergroup contact in that condition. When members of the ingroup and outgroup are seen as synchronized, it should break down cognitive barriers between the groups and hence reduce prejudice (Miles, Lumsden, Richardson, & Macrae, 2011).

Shared identities

Crosscutting and superordinate group memberships occur when people from different groups are recategorized into a single *shared group* (Brewer, 2000; Gaertner & Dovidio, 2000). We suggest that "musician" is a meaningful group identity—more so than many other potential shared identities that collaborators might possess (e.g., collaborating on a work task). For many people, music is an elective leisure activity—a hobby—and thus is something people do out of passion rather than being required to do it. As such, people working together on musical activities should be seen as engaged in a mutual passion, and hence as sharing and taking pride in a personally valued identity (Tajfel, 1978). People working together on an organizational task are less likely to be seen as having a shared identity as a result of their task activity.

These effects should be particularly strong in the vicarious condition. To the extent that two collaborators are seen as having *transcended* group boundaries and achieved joint group membership in their medium of collaboration, their shared identity should be seen as stronger. Shared identity should lead to positive intergroup attitudes: When the ingroup and outgroup are seen as overlapping with one another or being subsumed by some larger group membership, intergroup prejudices are reduced (Brewer, 2000). As such, we anticipate exposure to intergroup musical collaboration to result in particularly high levels of perceived shared identity, which should translate into more positive intergroup attitudes.

Liking the outgroup musician

Music is a creative cultural art. As such, it humanizes the producer—creative cultural arts are inherently human activities and engaging in them is a critical element in what differentiates us from animals (Haslam, 2006). Given the humanizing elements of music as a cultural activity, we anticipate that *out*group members involved in music making will be liked more than outgroup members involved in nonmusical activities, and that such liking will translate into more positive intergroup attitudes. Such mediation patterns have been shown previously as a function of the quality of

contact (i.e., more positive contact with outgroup person X leads to more liking of person X, which translates to more positive attitudes toward the entire outgroup; e.g., Joyce & Harwood, 2014). Our work extends this to look at the effects of contact *activity* (musical vs. nonmusical) rather than valence.

Moreover, we believe such effects to be moderated by the composition of the collaborating dyad. When the outgroup person collaborates with an *in*group member, we suspect that liking for that outgroup member is enhanced: Not only are they human, but they are a *fellow* human engaged in joint human activity with a member of our ingroup. Moreover, in general we like outgroup members who shift their position toward or collaborate with the ingroup (Levine & Moreland, 2002); outgroup members working "with us" are seen more positively than those who work with other members of the outgroup. Thus, the mediating effects of liking for the outgroup should be strongest in the vicarious musical condition.

Together, these arguments suggest that (as illustrated in Figure 1) the various mediator variables will operate most strongly when respondents are exposed to musical (vs. nonmusical) contact, and when that contact is vicarious (featuring ingroup and outgroup members collaborating) rather than parasocial (featuring just outgroup members).

Outcomes

Most contact research (including this study) examines attitudes toward the specific outgroup as the main dependent variable. However, we also examine intentions for future contact with the outgroup. To the extent that indirect forms of contact "work" to reduce prejudice, one hope is that they encourage a self-sustaining desire to enter into relationships that would maintain more tolerant attitudes on a permanent basis. A desire to engage with the outgroup in the future is the relevant behavioral intention measure for such a process (Turner, West, & Christie, 2013). The "modeling" notions underlying our earlier arguments apply equally (perhaps even more so) for this outcome. When we witness successful (honest, synchronized, etc.) intergroup interaction, our intentions to engage in such contact should be enhanced via basic social learning processes.

Method

Participants

Subjects were recruited from a large southwestern U.S. university to participate in a two-part study. Students received course credit for their participation. In total, 270 participants were recruited. Of these, 18 were removed because they completed only the pretest but not the main study. A further four were removed for indicating that they did not want their data used, and 17 were removed for failing attention check items (e.g., "select option '4' in response to this question") or manipulation checks. Three ethnically Arab cases were discarded because "Arab" was the target outgroup for our study. Finally, due to our interest in the respondents identifying with an ingroup

character who was White, all non-White respondents ($N = 46$) were excluded, resulting in a final sample of 182 (68% female, 32% male). The average age was 21.10 years ($SD = 1.97$).

Procedure

Approximately a week before the main study, subjects were given a pretest including measures of desire for future contact with Arabs, and general attitude toward Arabs (details are provided below). In the main study, participants viewed a randomly assigned video "news story" describing a collaboration between either, (a) one White American and one Arab Middle-Easterner (*vicarious* condition), or (b) two Arab Middle-Easterners (*parasocial* condition). The collaboration in which the two targets were engaged was either musical (creating a song called "Yalla" together) or technological (creating an app called "Yalla" together). After viewing the randomly assigned video, participants completed a posttest that (a) assessed the mediators (described below) and (b) reassessed the pretest attitudinal measures.

Manipulations

Subjects viewed one of four experimenter-constructed "news story" videos about a dyadic collaboration. The story was manipulated in a 2 (*collaboration activity*: music vs. technology, coded 2/1) × 2 (*dyadic composition of story protagonists*: White American and Arab (vicarious) vs. two Arabs (parasocial), coded 2/1) factorial design. We also manipulated the presence of music in the video—half of the videos included background music and half did not. The manipulation of background music resulted in only a few uninterpretable three-way interaction effects. Hence, this variable is not discussed further, but it is treated as a covariate in all analyses.

The manipulations consisted of narrated audio accompanied by a video slideshow; the video lasted 4 minutes in all conditions. The text was recorded by a female actor who had experience in radio journalism. The text itself was identical in structure and wording across all conditions, except where it specified the nature of the collaboration. For example, in the *vicarious-music* condition the narration began: "Music production major Seth Smith, a UCLA Junior, and rapper Qusai Farooq, a UCLA exchange student, have been getting a lot of attention due to their musical collaboration on the song *Yalla*." The same portion of the *parasocial-technology* condition said: "Computer Engineering major Khalil Abbas and computer programming major Qusai Farooq, both UCLA exchange students, have been getting a lot of attention due to their collaboration on the app *Yalla*." The study was not performed at UCLA; it was used as the setting because it would be familiar to our participants, but sufficiently distant for them not to be aware of current events on that campus.

The images in the slide shows were drawn from two sources. First, we organized a photo shoot with volunteer actors (one White American and two Arab Middle-Easterners). The actors modeled a series of scenes portraying the collaborative activities (either playing musical instruments together, or working at a computer together). Aspects such as the physical environment of the pictures and

facial expressions of the actors were controlled. One Arab actor was held constant across conditions, while the other actor was either the second Arab actor (parasocial condition) or the White actor (vicarious). Second, we used pictures from the Internet to complement the theme of the video (either musical or technological), and the parasocial/vicarious nature of the collaboration. For example, when the narration discussed an Arab character's home in the United Arab Emirates, images of Dubai were shown. When the White American character's home in California was mentioned, scenes of the California coast were shown. Visual elements were controlled across conditions, except where they related to the two core manipulations.

Measures: Mediators
Honesty
Perceived honesty of the characters in the video was measured using five items adapted from Rempel, Holmes, and Zanna (1985; e.g., "I feel these two people were honest with each other," "I feel these two people relied on each other"). Ratings were on a 7-point scale (*strongly disagree* (1) to *strongly agree* (7); α = .86).

Perceived closeness
Closeness was measured using four items adapted from Mendelson and Aboud (1999; e.g., "How much do you feel that the two characters like each other a lot?"). The response scale ranged from 0 to 100 (*not at all* to *totally*; α = .94).

Synchronization
Perceived synchronization was measured using six items developed for this study, derived from research on interpersonal rapport and synchronization (e.g., Faraj & Sproull, 2000; Hall, Roter, Blanch, & Frankel, 2009). Respondents rated how much the characters in the video: felt "in synch" with one another; engaged in highly synchronized behavior; felt like they "clicked" with one another; worked smoothly together; coordinated with one another; cooperated seamlessly in their activities. Ratings were on a 0–100 scale (*not at all* to *totally*; α = .93).

Shared identification
Respondents evaluated three statements regarding how much they felt the two collaborators in the video had, and took pride in, their shared identity as musicians (or engineers). The items were adapted from Soliz's (2007) measure of shared family identity. In the music condition, subjects rated their agreement with "They are proud to be musicians together," "Because they are musicians they feel as if they are members of one group," and "Above all else, they think of themselves as musicians." In the app condition, items were adapted to that activity (e.g., the last item was adapted to read "Above all else they think of themselves as computer engineers"). Ratings were on 5-point Likert scales (*not at all agree* to *completely agree*, α = .63).

Liking outgroup collaborator
Liking for the Arab character, which appeared in all conditions ("Qusai"), was measured by participants rating four items from Joyce and Harwood (2014) (e.g.,

"While watching the video, how much did you feel like you had an emotional con-nection with Qusai?"). Ratings were on a 0–100 scale (*not at all* to *totally*; α = .91). A photo of Qusai was shown on screen with this measure to ensure participants knew which character the questions referenced.

Measures: Dependent variables
Future contact with Arabs
Desire for future contact with Arabs and Arab culture was measured with three ques-tions derived from previous research (Harwood et al., 2015; Husnu & Crisp, 2010): "How much do you intend to interact with Arabs in the future?," "How important do you think it is to interact with Arab people?", and "How much time do you think you might spend learning about Arabs in the future?" Responses were on 9-point scales (*not at all* to *very much*, or *none at all* to *a lot of time*: α [pre/posttest] = .86/.86).

Attitudes toward Arabs
Participants rated "Arabs as a group" on nine traits from Brambilla, Hewstone, and Colucci (2013; trustworthy, honest, sincere, friendly, warm, likable, intelli-gent, competent, and skillful). Ratings were on a 1–6 scale (*not at all* to *very*; α [pre/posttest] = .93 / .92). The two dependent variables are significantly, but not massively, correlated (*r* = .45).

Manipulation checks
Participants indicated what "Yalla" referred to ("Yalla was which of the following?" with options of *song*, *painting, app, explosive, or dance*). They also indicated the cul-tural background of the two collaborators in the video ("two Arabs," "one Arab and one American," or "two Americans"). Participants who failed manipulation checks were removed from the data.

Results

We explored the hypothesized conditional indirect effects using model 7 from the Process macro for SPSS (Hayes, 2013) with 5000 bootstrap resamples in all analy-ses. We treated collaboration activity (musical vs. technology collaboration) as the independent variable. Dyadic composition (outgroup–outgroup actors [parasocial] or ingroup–outgroup actors [vicarious]) was included as a moderator of the path from collaboration activity to the mediators (see Figure 1). Each of our five media-tors and our two dependent variables were examined in separate models, resulting in 10 tests of conditional indirect effects. Pretest measures of the respective depen-dent variables were included in all of these analyses, although their removal does not change the results.

Results for the desiring future contact dependent variable are displayed in Table 1. Three of the five hypothesized conditional indirect effects were significant, as indi-cated by a significant index of moderated mediation (IMM: first column in the table).

Table 1 Statistics for the Conditional Indirect Effects Analysis Pertaining to the Desiring Future Contact Dependent Variable

Mediators	IMM[a]	Indirect Effect of Collaborative Activity (Music vs. Tech) in …		Effect of Moderator Term on Mediator[b]	Effect of Mediator on Dependent Variable
		… Parasocial Condition	… Vicarious Condition		
Perceived honesty of actors in video	.13*	−.11*	.02	.41†	.32**
Perceived closeness of actors	.10*	−.05†	.06*	17.13**	.01
Perceived synchronization of actors	.09*	−.06†	.04†	11.56*	.01†
Perceived shared identity between actors	.06	.04	.10*	5.17	.01**
Liking for Qusai	.02	.00	.02	.25	.07

Notes: Statistics are unstandardized regression coefficients (*b*) except the IMM column. All analyses represent the effects of musical (vs. nonmusical) contact through the mediators (left-hand column) onto the dependent variable (desiring future contact with Arabs). In all cases, moderation by dyadic composition of actors (parasocial vs. vicarious) is on the path from the independent variable to mediator (see Figure 1).
[a]IMM indicates point estimates for Hayes' (2015) index of moderated mediation. This is a global index that tests whether the indirect effects in the two subsequent columns (parasocial vs. vicarious conditions) are significantly different.
[b]The moderator term is the interaction between collaborative activity (music vs. technology) and dyadic composition (vicarious vs. parasocial).
†*p* < .10. *p* < .05. **p* < .01.

This index shows that the mediated effects of collaborative activity on desiring future contact are significantly different in the parasocial and vicarious conditions (see next two columns in the table). Stronger positive effects in these next two columns indicate that musical contact (compared to the technology contact condition) positively influences the mediator, which positively influences the dependent variable. Negative effects indicate that scores on the mediator are higher in the technology than the musical contact condition. The vicarious condition column indicates that the music (vs. technology) has positive mediating effects via perceived closeness, synchronization (marginal), and shared identity. These effects support our predictions. Participants exposed to vicarious musical contact are more likely to perceive the actors as synchronized, close, and as sharing identity, and those perceptions translate to a greater desire for future contact with Arabs (compared to technology contact). The effect sizes for these effects were explored by examining the change in R^2 attributable to the moderator term (in predicting the mediator) for the significant moderator effects. These effects were small to moderate (honesty: $\Delta R^2 = .02$; closeness: $\Delta R^2 = .05$; synchronization: $\Delta R^2 = .03$).

Meanwhile, in the parasocial condition the effects of collaborative activity are in the opposite direction. When respondents watched two Arabs engage in *technological* collaboration the indirect effects through honesty, closeness (marginal), and synchronization (marginal) indicated respondents desiring more future interaction

Table 2 Means (and Standard Deviations) for Mediators Across Experimental Conditions

		Parasocial	Vicarious	Interaction Statistics
Perceived honesty of actors	Technological collaboration	6.16 (0.63)	6.03 (0.02)	$F(1, 176) = 1.91^†$ Partial $\eta^2 = .02$
	Musical collaboration	5.81 (0.84)	6.08 (0.62)	
Perceived closeness of actors	Technological collaboration	83.89 (16.56)	76.01 (23.98)	$F(1, 176) = 9.31^{**}$ Partial $\eta^2 = .05$
	Musical collaboration	77.27 (21.41)	85.60 (12.21)	
Perceived synchronization of actors	Technological collaboration	78.81 (16.57)	76.74 (14.26)	$F(1, 176) = 5.79^*$ Partial $\eta^2 = .03$
	Musical collaboration	72.19 (20.62)	81.18 (12.72)	

Notes: Findings are from 2 × 2 ANCOVAs featuring the same predictors and covariates as the regression analysis and with the significant mediators from the regression analysis as the dependent variables (left-hand column). Simple main effects follow-ups to ANCOVA were used to explore pairwise differences within each block above (i.e., for each analysis). For each block, pairs of means connected by solid brackets differ significantly ($p < .05$). Pairs of means connected with broken line brackets differ at levels approaching significance ($p < .10$).
$^†p < .10.$ $^*p < .05.$ $^{**}p < .01.$

with Arabs than when they watched two Arabs engaged in *musical* collaboration. These effects are in contrast to our predictions (i.e., we had predicted that musical collaborations would generally result in more positive effects).

The effects may be more easily understood by breaking the mediated model into its component paths, as shown with the final two columns in Table 1. These indicate that the path from the independent variable to the mediator is significantly moderated for the first three mediators (marginally for honesty). In addition, the path from the mediator to the dependent variable is significant for honesty, synchronization (marginal), and shared identity. The moderated path is further broken down in Table 2, which shows means for the first three mediators (those with significant indexes of moderated mediation), by condition. As predicted, the vicarious musical condition results in higher means than the parasocial musical condition (marginally or fully significant for all three mediators). Similarly, the vicarious musical condition resulted in a significantly higher mean than the vicarious technology condition for the closeness variable. Our predictions were reversed in the parasocial technology condition (as previously noted). That condition scored higher than the parasocial musical condition for all

Table 3 Statistics for the Conditional Indirect Effects Analysis Pertaining to the Attitudes Toward Arabs Dependent Variable

Mediators	IMM[a]	Indirect Effect of Collaborative Activity (Music vs. Tech) in …		Effect of Moderator Term on Mediator[b]	Effect of Mediator on Dependent Variable
		… Parasocial Condition	… Vicarious Condition		
Perceived honesty of actors in video	.06*	−.06*	.01	.41†	.16*
Perceived closeness of actors	.10*	−.04†	.05*	17.04**	.01*
Perceived synchronization of actors	.07*	−.04†	.02†	11.57*	.01†
Perceived shared identity between actors	.04	.02	.06†	5.32	.01**
Liking for Qusai	.00	.00	.00	.25	.01

Notes: Statistics are unstandardized regression coefficients (*b*) except the IMM column. All analyses represent the effects of musical (vs. nonmusical) contact through the mediators (left-hand column) onto the dependent variable (attitudes about Arabs). In all cases, moderation by dyadic composition of actors (parasocial vs. vicarious) is on the path from the independent variable to mediator (see Figure 1).
[a]IMM indicates point estimates for Hayes' (2015) index of moderated mediation. This is a global index that tests whether the indirect effects in the two subsequent columns (parasocial vs. vicarious conditions) are significantly different.
[b]The moderator term is the interaction between collaborative activity (music vs. technology) and dyadic composition (vicarious vs. parasocial). Effects in this column are substantially redundant with the same column in Table 1, differing only because of the inclusion of one different covariate in the model (the pretest score on the respective dependent variable).
†$p < .10.$ *$p < .05.$ **$p < .01.$

three mediators (marginally for closeness), and significantly higher than the vicarious technology condition for closeness. The partial η^2 for the significant pairwise comparisons in Table 2 ranged from .02 to .05. Hence, the effects are small but not trivial in size.

In summary for this dependent variable, findings from the conditional indirect analysis (Table 1) and examination of means (Table 2) converge on a similar picture. Musical (relative to technology) contact indeed has favorable prejudice-reducing effects in the vicarious setting, but musical contact results in *less* favorable effects when it is parasocial.

Very similar patterns of effects are apparent with the second dependent variable (attitudes toward Arabs). While Table 3 illustrates a few small differences in terms of significance levels, the general pattern is largely unchanged. The global IMM is significant for the same three mediators (column 1). Significant mediation effects in the parasocial condition (column 2) are negative, indicating technological contact has more positive effects than musical contact. Mediation effects in the vicarious condition are positive (favoring music: column 3). The same mediators (plus perceived closeness) positively influence the dependent variable (column 5). The information

in column 4 of Table 3, and all of Table 2, is essentially unchanged for this analysis. Those data represent effects between predictors and mediators; the only difference when the dependent variable changes is the inclusion of one different covariate (the relevant pretest measure of the dependent variable). Changing that variable results in identical patterns of significant effects as well as effect sizes and means that differ only by trivial amounts.

Supplementary analyses

Direct effects of the manipulations on the outcomes were tested using two 2 (collaborative activity: technology vs. music) × 2 (type of contact: vicarious vs. parasocial) ANCOVAs, with attitudes about Arabs or intentions for future Arab contact as the dependent variable. Pretest scores on the respective outcomes were covariates. No main effects or interaction effects were significant (all Fs < 2.5, all ps > .10). Hence, the effects described above occur *through* the mediators, and not as direct effects from independent to dependent variable.

Discussion

Witnessing intergroup connection can be an engaging and sometimes moving experience. Whether watching *Romeo and Juliet* or the *Lethal Weapon* movies, or cheering a moment when members of a sports team collaborate across racial or national boundaries, the fact that a collaboration has transcended intergroup boundaries can add an additional frisson to the experience. Many musical performances feature artists from different backgrounds merging their unique styles to yield a harmonious outcome. Our study predicted a variety of effects of witnessing such intergroup musical contact, as modeled in Figure 1. At the most general level, we predicted that witnessing *vicarious musical contact* would be particularly powerful in improving intergroup attitudes, and that it would do so via a set of theoretically derived mediators.

While not all of the predicted effects were significant, we found noteworthy evidence for the hypothesized relationships. In particular, vicarious musical (vs. nonmusical) contact yielded more positive intergroup perceptions through the mediators of closeness, synchronization, and shared identity between the actors (i.e., Tables 1 and 3, column 3). The prejudice-reducing effects of musical contact were significantly more positive in the vicarious condition than the parasocial condition for the mediators' honesty, closeness, and synchronization (i.e., IMM columns in Tables 1 and 3). Finally, simple comparisons of means indicate that vicarious musical contact yields higher (in most cases significantly higher) perceptions of honesty, closeness, and synchronization between the two actors than parasocial musical contact or vicarious nonmusical contact (Table 2). We used a stringent test of our hypothesis: We did not test musical contact against a "do nothing" control group, but instead used a comparison collaboration that was equally positive and successful, in an area (app development) that would appeal to our student subject population.

Across these conditions, our design featured a high level of control of the language and visual imagery in the presentation. Therefore, we are confident that the pattern of effects we hypothesized is real, and provides evidence that vicarious musical contact is a promising prejudice-reduction tool.

Contrary to our predictions, in the parasocial contact condition (viewing two Arabs making music or creating technology together), observing musical contact was *less* effective than observing technological contact. The indirect effects in Tables 1 and 3 (column 2) yielded three out of five significant or marginally significant *negative* effects—negative effects here indicate that prejudice is more effectively reduced in the technology than the music condition. The means in Table 2 similarly indicate that actors in the parasocial musical condition were viewed as *less* honest, *less* close, and *less* synchronized than those in the parasocial technology condition.

We have two (rather speculative) explanations for these unexpected effects. First, it is plausible that our respondents associated Arab ethnicity with technological expertise, and hence found the description of two Arabs participating on a technology project more convincing. This might have been enhanced by the details of the musical project, which was grounded in rap and funk music—forms of music perhaps not associated with Arab culture (albeit rap is very popular in the Arab world; Aidi, 2014). The study was also conducted on a campus where fairly large numbers of students from the Arab world study abroad, and those students tend to cluster in STEM fields (Institute of International Education, 2015). In other words, the musical contact between two Arabs might have appeared unrealistic or excessively counterstereotypical and hence been discounted (Kunda & Oleson, 1997), while the technological activity was seen as fitting existing group perceptions. Second, and given that the most consistent effect in the parasocial condition was for the honesty variable, it is possible that our respondents read "honesty" more literally than we intended. We meant honesty to refer to emotional honesty, as well as honest signaling of cooperative strength and relational history. However, honesty may have been interpreted as "telling truthful facts": Such an interpretation would clearly favor a technological collaboration in which specific information might need to be exchanged, as opposed to the more creative and less "fact-based" musical collaboration. The technological condition might prime the likelihood of this "fact-based" interpretation of honesty more than the musical condition.

Whatever the explanation, this unexpected finding actually supports our broader point: *What people are doing* when they engage, or are observed engaging, in intergroup contact *matters* for the outcomes that might emerge. As illustrated in Table 2, we find essentially opposite effects for the parasocial versus vicarious manipulation depending on the collaboration activity, despite controlling all other aspects of the presentation. Allport (1954) of course recognized this general point in noting that contact should be cooperative and pleasant; we suggest that it is time to consider in a more detailed manner the actual activities in which people are engaged in addition to the valence of their contact. At a basic level, activities that require specific skills should be good at sending the message that a particular group has

such skills. At a more complex level, activities convey broader messages about what groups can and should be doing, including (in the case of vicarious contact) general messages about their ability and willingness to work cooperatively and in synchrony with "us."

The unexpected findings in the technology-parasocial condition suggest similar (if unexpected) avenues for future contact–prejudice interventions. If our speculations above hold weight, these findings suggest that when outgroup members are portrayed working together (rather than working with ingroup members), such portrayals may be most effective in improving attitudes when the outgroup members are shown doing positive and predictable or "expected" activities (e.g., Arabs doing technical tasks). In a sense, such portrayals confirm positive stereotypes of the group. While psychologists and communication scholars often work to break down stereotypes, emphasizing specific positive stereotypes may offer a first step in reducing negative attitudes and encouraging broader contact intentions, which subsequently may broaden ideas about the outgroup and reduce the applicability of all stereotypes. The appeal of such "expected" positive outgroup activities might reside in their ability to reduce uncertainty about the outgroup—when outgroup members behave in predictable and expected ways they are less likely to be seen as a threat (Hogg, 2000). Such contact also is more likely to retain high levels of group typicality (outgroup members doing normal "outgroup things" are more likely to be seen as representing the outgroup), and hence such contact should generalize to perceptions of the outgroup as a whole more easily, as indeed occurred in our research. We refer readers to our introduction comments concerning the importance of group typicality in achieving generalization of contact's effects (Brown & Hewstone, 2005).

The mediators we examined derived from theorizing about the nature of musical collaboration. The support found for these mediators encourages their further investigation, and offers novel prescriptions for ideal forms of mediated vicarious intergroup contact. Such contact should portray intergroup relationships that explicitly display closeness, honesty, and synchronization—the latter two are new to the contact literature. These mediators may be particularly powerful in the context of musical contact, but they should also operate with other contact activities (displays of intergroup teamwork or successful intergroup negotiation, for instance). Interestingly, while *hearing* music might intensify the effects described, our findings occur based simply on the "idea" of intergroup musical contact. You *infer* that musicians are close with one another from learning that they have had a successful musical collaboration, even if you never hear the music. This suggests that hearing news coverage about musical collaboration, seeing images portraying such collaboration, or hearing about it from a friend might serve a prejudice-reduction function, independent of actually hearing the music.

Two mediators yielded limited findings—shared identity perceptions and liking for the outgroup member. Shared identity perceptions did influence the attitudinal outcomes, and displayed marginal mediation effects in the vicarious condition,

suggesting that it might have some of the effects we predicted in a design with more statistical power. The means for this variable reflect the pattern for those in Table 2. Liking for the outgroup member demonstrated no effects. However, in unreported analysis it did demonstrate *unmoderated* mediation effects: Musical activity led to greater liking for the outgroup member, which led to improved intergroup attitudes. Hence, we retain some faith in parts of our rationale and would suggest further examination of these mediators (details of unreported analyses are available from the author).

Future work should also examine additional potential mediators—particularly those that are more likely to display effects of actually *listening* to music. Music is a little-studied form of communication, yet one that is incredibly rich and diverse, and one that causes huge emotional responses in the right context (Lamont, 2011). With the appropriate music, we might expect emotional responses such as elevation (Bartsch, Oliver, Nitsch, & Scherr, 2016; Oliver et al., 2015), and subsequent positive effects on intergroup attitudes. We already know that elevation is associated with reduced prejudice (Lai, Haidt, & Nosek, 2014), including when it is media-induced (Oliver et al., 2015; Shade, Kim, Jung, & Oliver, 2015). In the current study, we did explore effects of musical exposure on elevation; however, our musical stimulus was in the background and was a dance song designed to appeal to our under-graduate subjects. These factors made it unlikely to yield elevation-type responses, and indeed we did not find substantial effects for elevation (details available from the author). Nonetheless, future work should continue to explore such emotional responses, given that they represent a core reason why people listen to music (Lamont, 2011).

We also encourage future work looking broadly at the *humanizing* effects of certain forms of contact. Music as a cultural activity portrays the outgroup as sophis-ticated and operating at a level that negates dehumanizing or animalistic perceptions (Haslam, 2006). As observers experience emotional elevation from music, they may also be lifted cognitively to higher and broader levels of categorization emphasizing shared humanity with the outgroup (Ellithorpe, Oliver, & Ewoldsen, 2015; Giles, Denes, Hamilton, & Hajda, 2009). Music is not the only activity that might yield such effects: Playing sports, engaging in activities related to peace-building or social justice, or fighting a common enemy might elicit similar outcomes (Ellithorpe, Ewoldsen, & Porreca, 2015). We also need to understand more about why people might be drawn to voluntarily *consume* outgroup music (Knobloch-Westerwick, 2014), music which at times might be unfamiliar or difficult to understand (Higgins, 2012). Here, we come full circle to our initial interest in *vicarious* musical contact. One factor that may make outgroup music more appealing is the involvement of *in*group members in the musical production and the achievement of hybrid musical forms. Intergroup musical contact may be the foot in the door that leads some people to more wholesale interest in and appreciation of outgroup cultural produc-tions, and hence increases their desire to engage with the outgroup more broadly,

thus increasing the potential for positive and rewarding intergroup contact in the future.

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