

EFFECTS OF MUSICAL COLLABORATION ON INTERGROUP ATTITUDES

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ON INTERGROUP ATTITUDES

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The undersigned, appointed by the dean of the Graduate School, have examined the thesis entitled

EFFECTS OF MUSICAL COLLABORATION ON INTERGROUP ATTITUDES
presented by Abigail M.A. Hollis, a candidate for the degree of master of arts, and hereby certify that, in their opinion, it is worthy of acceptance.

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Abstract

Music is an important presence in our world, thought to be universal in human societies. The ubiquity of music has led some to postulate that it might have an important evolutionary purpose. One theory about the purpose of music is that it helps facilitate the social aspects of our existence. If this is the case, music has the potential to be a powerful tool for change. Indeed, some research has suggested that music can increase positive intergroup interactions. Thus far, the research has shown that music may produce change in intergroup attitudes when accompanied by other intergroup interactions, such as cohabitation. It has also shown promise in relation to music preference and witnessed musical interaction. However, evidence for increased positive intergroup attitudes following actual (instead of imagined, vicarious, or witnessed) musical interaction in a controlled environment is still lacking. The purpose of this study was to test this idea. One hundred eighty-two undergraduate psychology students were recruited to complete musical tasks in collaboration, a non-musical task in collaboration, or a musical task alone (isolation). I hypothesized that (1) relative to intergroup non-musical collaboration, intergroup musical collaboration will lead to an increase in positive intergroup attitudes; and (2) musical isolation will lead to minimal or no increase in positive intergroup attitudes. The results of this study did not support these hypotheses.

Keywords: intergroup attitudes, social bonding, music, social psychology

Introduction

Intergroup relations, within our global societies, constitute a large and pressing social issue. Racism, classism, sexism, homophobia, and transphobia are examples of the ways in which group differences manifest as severe societal problems. Ingroup favoritism, or preference for one's ingroup over others, may explain much of these phenomena (Allport, 1954; Brewer, 1999). Scholars concerned with reducing intergroup bias have investigated various methods for bias reduction (Gaertner et al, 1989; Harwood, Qadar, Chen, 2016; Hewstone & Swart, 2011; Kevin et al, 2016; Pettigrew & Tropp, 2006; Verkuyten, 2005). Many of the previous approaches have proved to be helpful; however, additional approaches are needed in order to more thoroughly promote positive intergroup relations. The current study considers the shared experience of music as a mechanism that may encourage positive intergroup relationships;. Attachment and group cooperation are necessary for social bonding between groups (Allport, 1954; Gaertner et al, 1984); music may be especially useful for promoting such groups to connect in positive ways with each other.

Ingroup Bias and Intergroup Attitudes

“Ingroups” refer to groups which share one's own identities, while “outgroups” refer to groups of people which share an identity different from one's own (Allport, 1954). “Intergroup relations” refer to interactions between groups, while “intergroup attitudes” refer to thoughts and feelings about outgroups (Allport, 1954). Examples of outgroups include the Black and White racial groups; interactions between these two groups constitute intergroup relations and thus involve intergroup attitudes,

Allport (1954) theorized that disparate groups could reduce intergroup biases, or ingroup favoritism, by engaging with each other. These interactions had specific guidelines for reducing, rather than increasing or maintaining, bias. The groups should be on equal standing, should be goal oriented/purposeful, should strive for realistic settings/tasks, and should be conducted within cooperative interdependence and supportive norms. These ideas constitute intergroup contact theory.

Importantly, Allport(1954) also theorized that ingroup favoritism did not require outgroup derogation. In essence, ingroup favoritism trumps outgroup derogation because people are motivated by ingroup interests as opposed to concerned with outgroup issues (Brewer, 1999). Later research examined various ways to reduce bias using intergroup contact theory (Harwood, Qadar, & Chen, 2016; Pettigrew & Tropp, 2006; Pettigrew & Tropp, 2011).

Music and Social Bonding

Music is an important, universal component of human experience. Background tunes in grocery stores, radio and streaming apps, halftime during the super bowl, and theme music for TV shows are all examples of how music permeates Western society. Music also plays central roles in other cultures. For instance, the Malinke tribe in West Africa know “foli” to be the rhythm of everything, viewing daily patterns such as work and conversations as musical (Reobers & Leeuwenberg, 2010). As another example, the Sotho of South Africa are all singers, engaging in singing throughout their daily activities, without concern for talent (Levitin, 2006).

Notably, music has been argued to have an evolutionary purpose (Freeman, 1998; Dunbar, 2012; Dunbar, Kaskatis, McDonald, & Barra, 2012; Huron, 2001; Loersch &

Arbuckle, 2013). The earliest evidence of human musicality are bone and ivory flutes, dating back to the prehistoric era, discovered in Germany (Conard, Malina, & Munzel, 2009). This finding gives us both historical and evolutionary context for the importance of music. However, many cultures utilize the human body as their primary musical instrument, making the true birthdate of human musicality indeterminable (Trehub, Becker, & Morley, 2015). It also becomes increasingly clear that music and language may have a shared neural basis, in support of Darwin's musical protolanguage model (Brown, 2017; Darwin, 1871; Masataka, 2009; Patel, 2003; Sammler et al., 2013; Yu et al., 2017). One possibility is that the shared roots of music and language indicate that music evolved as a tool for survival, by facilitating group formation. Communication facilitates group functioning and this biological overlap indicates that music likely serves a similar function.

Recently developed theory seeks to merge cultural and evolutionary perspectives on music (van der Schyff & Schiavio, 2017). Creating a thought system that weaves together biological and socio-cultural ideas about the origins of music using research in theoretical biology, archeology, neuroscience, embodied and ecological cognition, and dynamical systems theory. Where debate exists between those who support an evolutionary perspective and those who view music as only culturally relevant, the enactive model may provide a non-dichotomous tool for discourse and research. Such a model, which pulls information from various disciplines and combines the foremost musical perspectives, can better help us understand the implications of music and social bonding.

A theory about music and social bonding seems to fit this model, as it argues that music evolved, both biologically and culturally, to facilitate social groups (Dunbar, 2012; Freeman, 1998; Loersch & Arbuckle, 2013). We are more likely to survive in groups, and music seems to provide an avenue for increased group bonding. This function of musicality could be utilized in many ways. One way is the reduction of ingroup favoritism, defined as preference for one group over another. If music can be used to facilitate social bonding across groups, perhaps ingroup favoritism can be reduced. Social identity theory posits that everyone is motivated to maintain a positive self-representation, which is partially accomplished through group membership (Tajfel & Turner, 1979). In collaborating musically, members of traditional outgroups may be motivated to create new, broader group identities that include individuals who typically would not be ingroups members.

Given that social bonding is a likely function of music, it seems possible that musical interaction could increase ingroup bonding, rather than decreasing social divide. In all likelihood, music does increase ingroup bonding. We often see anecdotal evidence of this phenomenon in bands and sports teams that sing fight songs. Band members are unlikely to behave in similar ways with audience members as they do with each other. Somewhat similarly, sports team members are unlikely to behave with rival teams as they do with each other.

However, music's role in increasing ingroup bonding does not mean that music cannot also be effective for promoting intergroup interaction. The common ingroup identity model (Gaertner, Mann, Murrell, & Dovidio, 1989; Gaertner, Rust, Dovidio, Bachman, & Anastasio, 1994) suggests that factors that increase ingroup bonding also

can be leveraged to improve intergroup attitudes. As noted previously, if certain contact conditions are met during intergroup interactions, such as cooperative interdependence and supportive norms, members of disparate groups may experience shifts in group identity and merge into a single group (Allport, 1954). If a new ingroup identity is developed, ingroup favoritism for the original groups should be lessened and favoritism for the new group should increase. Therefore, attitudes about former outgroup members should increase in positivity.

There is some research suggesting that music may play a role in facilitating more positive intergroup perceptions and interactions. For example, in one study individuals in different experimental groups were more likely to have positive intergroup attitudes if they shared musical preferences (Bakagiannis & Tarrant, 2006; Harwood, Qadar, & Chen, 2016). Another study examined Germans' attitudes after collaboration between German and Polish musicians (Kuchembrandt, Dick, Koschate, Ullrich, & Bornewasser, 2013). They found that German group members held improved outgroup attitudes toward Polish group members, when the interactions took place in Poland. However, their study included several other contact factors (e.g. cohabitation), making it difficult to isolate musical interaction as the cause for improved attitudes. Additionally, all participants in this study were trained musicians and likely to have different affective shifts than untrained musicians after performing.

Stewart (2015) tested the efficacy of imagined musical intergroup collaboration in facilitating social bonding. In study 1, participants imagined interaction with racial outgroup members while listening to music. The hypothesis was that imagined musical interactions would facilitate bonding with outgroup members, reducing outgroup

prejudice. The results were not consistently supportive of the hypotheses. While White participants demonstrated reduced explicit bias toward African Americans, they did not exhibit reduced implicit bias. In a following study, the researcher modified the imagined contact task in attempt to clarify the results. This resulted in reduced bias toward individuals that did not extend to the larger outgroup. Neither study produced evidence that imagining musical interaction with a racial outgroup member reduces bias toward that outgroup.

Importantly, the small number of previous relevant studies produced somewhat mixed results regarding the role of music in promoting positive change in intergroup attitudes, and more research is warranted. Also, no previous controlled experimental studies have been conducted that tested whether the shared experience of creating music (without additional confounding variables) promoted positive intergroup attitudes and interaction.

The Present Study

The purpose of this study was to explore whether musical interaction may reduce ingroup favoritism through the creation of a new ingroup identity, effectively merging ingroup and outgroup. As attachment and involvement are necessary for social bonding, music could be useful for bonding across cultural groups because of its emotional components. Using a task that involves music, particularly singing, during intergroup contact could be particularly effective because of this. Many of the social issues currently facing us pertain to ingroup favoritism, resulting in phenomena such as racism, sexism, homophobia, etc. As scarcity of resources increase, these issues will likely increase as

well. We need every tool we can acquire to face challenges of these nature, so music could be a helpful tool for enacting social change.

This study utilized a singing task, as the experimental task, to investigate these ideas. Singing may be the most consistently present form of music, as it is also the most accessible. Everyone with a voice “can” sing, and most do, whether it is performative or not (e.g., in the shower vs. on stage). Singing is also, typically, the first form of music we encounter. Nearly all humans, across cultures, are introduced to song as infants through lullaby (Cohen, 2011). Additionally, we appear to be capable of recognizing the purpose of songs, regardless of the culture from which the music is derived (Mehr, Singh, York, Glowacki, & Krasnow, 2018). This evidence provides further support for the universality of music and suggests that singing may be a useful exercise in social bonding. Another group of participants were included in one of two control conditions. In the first control condition, participants completed a problem-solving task, the Winter Survival Problem (Johnson & Johnson, 1975). In the second control condition, participants sang a song, recreated the song, and sang the recreation individually and separately. Hypotheses include: (1) relative to intergroup non-musical collaboration, intergroup musical collaboration will lead to an increase in positive intergroup attitudes; and (2) musical isolation will lead to minimal or no increase in positive intergroup attitudes.

Methods

Participants

Participants were 182 undergraduates at the University of Missouri who received credit toward a course requirement for compensation. This number was determined with an a-priori power analysis assuming a one-way ANOVA ($\alpha = .05$) with three between-subjects conditions and assuming a small effect size for the primary between-subjects manipulation ($\eta^2_p = .01$). The subject population was introductory psychology students at the University of Missouri. No one under the age of 18 was included. 68.5% of the participants self-identified as female, cis-female, or woman, while 31% self-identified as male. .005% of the participants self-identified as non-binary. 78% of the participants self-identified as White/Caucasian, 10% self-identified as Black/African American, 4% self-identified as Asian/Pacific Islander, 3% self-identified as Mixed, Mixed race, or Biracial, .06% self-identified as Mexican/Latino, .06% self-identified as other(American), and 3% of participants did not identify their race.

Research Design

The design was experimental, between subjects. The independent variable was group interaction, with three conditions: musical collaboration, non-musical collaboration, and musical isolation (control). The dependent variables were group favoritism and group identification. All variables were measured both pre- and post-task. Every session utilized mixed groups (some participants were over-estimators, and some were under-estimators).

Given the mixed nature of the design and that participants completed the experiment in groups, observations were not independent. Thus, data was analyzed using

multilevel modeling (MLM) with participants nested within sessions. Unlike traditional ANOVA, MLM can handle varying numbers of observations within levels of the nested structure and is not bound by the assumption of independence of observations (Raudenbush & Bryk, 2001).

Measures

Musical Reactivity was measured to assess participants' general responsiveness to music (Loersch & Arbuckle, 2013). The scale includes 15 items that are rated on a 7-point scale, ranging from 1 (Not at all) to 7 (Completely). An example item: "When I choose music, I select it based on how it will make me feel" ($\alpha \geq .90$ in all samples). The full measure is available in Appendix A.

Intergroup Favoritism was measured using a scale adapted from Tarrant (2002) (Bakagiannis & Tarrant, 2006). Specifically, participants were asked to rate members of their own group and members of a designated outgroup in terms of the extent to which they possess each of 10 traits (e.g., Nice, Thoughtful, Mean, Snobbish, etc.). Each trait was rated on a scale with response options ranging from 0 (*Describes us/them poorly*) to 10 (*Describes us/them very well*). Both subscales demonstrated reasonable internal consistency (ingroup ratings $\alpha = .71$, outgroup ratings $\alpha = .77$). The complete measure is available in Appendix A.

Group Identification was measured using a 5-item scale adapted from Mlicki and Ellemers (1996), to assess participants' identification with their assigned minimal group. Items were rated on a scale of 1 (*Not at all*) to 7 (*Very much*). Example items are "I see myself as a member of group A" and "I am glad that I am a member of group A". This measure has good reliability ($\alpha = .86$). The full measure is available in Appendix A.

Participants were asked to assess their current mood state, using the Abbreviated POMS Questionnaire (Grove & Prapavessis, 2016). The measure asks people to rate 40 items on a scale of 0(Not at all) to 4(Extremely) base on how they currently feel. Examples of the feelings are “tense”, “lively”, and “competent”. Reliability for this questionnaire is reasonable, with a mean α of .798. This measure was included to consider mood state as a potential moderator. However, none of the data for this measure were analyzed.

Social Identity Theory (Tajfel, 1979) highlights the relationship between self-esteem and group membership as important when examining social identity. Therefore, the State Self-Esteem Scale (Heatherton & Polivy, 1991) was administered to assess participants’ general ideas of their self-esteem. Twenty items were rated on a scale ranging from 1 (*Not at all*) to 5 (*Extremely*). Example items are, “I feel confident about my abilities,” and “I am worried about whether I am regarded as a success or failure”. Reliability for this scale is very good ($\alpha = .92$). This measure was included to consider self-esteem as a potential moderator. However, none of the data for this measure were analyzed.

At the end of the musical collaboration task, participants were also asked to answer a few questions about the difficulty and involvement of the task (i.e. How difficult was it for you to choose a song? How difficult was it for you and the other participants to agree on a song?). Responses were made using scales ranging from 1 (*Not at all*) to 6 (*Extremely*).

Lastly, participants were asked to volunteer demographic information: age, race, ethnicity, and gender.

Winter Survival Problem

Participants in the non-musical collaboration task were asked to solve the Winter Survival Problem (Johnson & Johnson, 1975). They were given a scenario: their plane has crash landed, leaving a number of surviving passengers who must rank the importance of the twelve items they managed to salvage (e.g. ball of steel, compass, hand ax). They were also be given written and vocal instructions. The complete task is included in Appendix B.

Procedure

Participants completed the experiment in groups of one or two. Upon arrival to the lab, and after engaging in an informed consent process, participants were divided into two groups using a minimal group paradigm manipulation (Tajfel et al., 1971), completed individually (so as not to influence each other's responses). The experimenter showed each participant a large glass jar filled with jellybeans and asked them to guess the number of jellybeans in the jar. Based on random assignment, half of the participants were told that their estimate was low (i.e., *under-estimators*) and half were told their estimate was high (i.e., *over-estimators*). This procedure is known to be effective in creating group identifications (Billig & Tajfel, 1973; Gaertner & Insko, 2000); Tajfel & Billig, 1974; Tajfel et al., 1971) while keeping the integrity of the experiment and minimizing risk (instead of using pre-existing groups based on identities such as race). The participants were then asked to complete a set of questionnaires (musical reactivity, self-esteem, and mood) prior to being assigned to one of the three group tasks.

The musical collaboration task involved group interaction through singing/humming and clapping. Participants in the musical collaboration condition were

asked to sing or hum a short song together, while clapping along. They were given 12 minutes to select a song, from a list the researcher gave to them, and perform the song. Participants assigned to the non-musical collaboration group were asked to complete the Winter Survival Problem together (Johnson & Johnson, 1975). The researcher played a recording of the instructions for them and gave them a printed copy. The participants then had 12 minutes to complete the task. In the musical isolation condition, participants were asked to sing or hum a song by themselves, while clapping along. The researcher handed out the song list and left the subject in a private room for 12 minutes. After completing the task, participants in all conditions repeated the musical reactivity, self-esteem, and mood measures. They also completed the group favoritism, group identification, and demographic questionnaires. Lastly, participants answered a few questions pertaining to the difficulty and involvement of the task.

Participants may have experienced mild discomfort at being asked to sing. However, the discomfort was thought to be minimal, as they had the option to hum instead of singing. In the condition where the participants were asked to sing/hum and clap by themselves, they were given a room to do so, instead of performing in front of the researcher. Additionally, all song choices were widely known and familiar to most participants (e.g. Happy Birthday). Participants approximately 45 minutes on this study. They received credit, as partial course satisfaction, for compensation.

Data Analysis

Data for this study were analyzed using multilevel models (MLMs), controlling for number of participants per session. A separate MLM was fit for each dependent variable. All models used the same random effects structure without an intercept, while

controlling for effect of session number. Four models were analyzed for each dependent variable and each model tested whether the post-task scores were significantly different than the pre-task scores. Musical collaboration was coded as 0, with effect of Condition.d0 representing whether post-task scores were significantly different from pre-task scores in that condition. Non-musical collaboration was coded as 1, with effect of Condition.d1 representing whether post-task scores were significantly different from pre-task scores in that condition. Musical isolation was coded as 2, with effect of Condition.d2 representing whether post-task scores were significantly different from pre-task scores in that condition. Each of these were fixed predictors.

Results

Ingroup Favoritism

The first model tested for changes in ingroup favoritism from pre-task to post-task across the conditions (see Figure 1). Although no significant difference was found between pre- and post-task ingroup favoritism scores for the musical collaboration condition, $b = 0.71$, $t(178.0) = 1.71$, $p = 0.088$, participants in both the non-musical collaboration condition, $b = 1.14$, $t(178.0) = 2.85$, $p = 0.004$, and the musical isolation condition, $b = 0.99$, $t(178.0) = 2.36$, $p = 0.020$, displayed greater ingroup favoritism at the post-task assessment relative to the pre-task assessment. The number of participants per session had no significant effect on Ingroup Favoritism for any of the conditions, $b = -0.18$, $t(178.0) = -1.595$, $p = 0.112$.

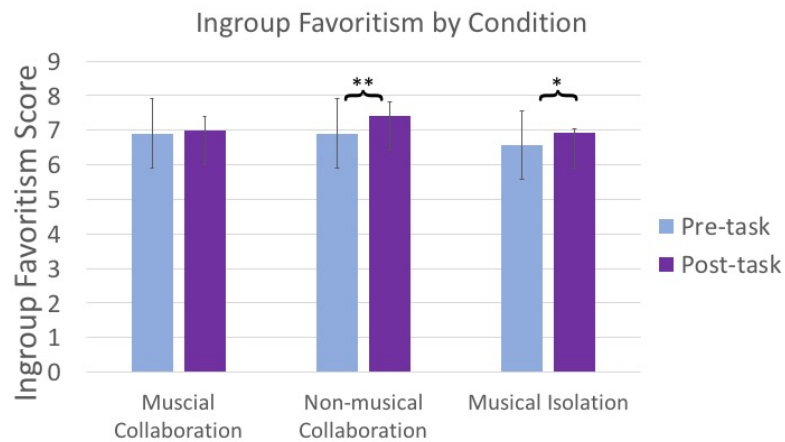


Figure 1. Mean Ingroup Favoritism score as a function of condition. Error bars represent the standard error for each condition.

Outgroup Favoritism

The second model tested for effects of condition on changes in outgroup favoritism (see Figure 2). Mean scores indicated a slight increase in outgroup favoritism for the musical collaboration condition, but this difference was not significant, $b= 0.25$, $t(73.0) = 0.52$, $p= 0.604$. For the non-musical collaboration and musical isolation conditions, the mean scores indicated a slight negative change in outgroup favoritism, but these differences were not significant, $b= -0.23$, $t(76.2) = -0.50$, $p= 0.621$, and $b= -0.56$, $t(72.7) = -1.14$, $p= 0.259$, respectively. Number of participants per session had no significant effect on outgroup favoritism for any the conditions, $b= -0.00$, $t(66.1) = -0.01$, $p= 0.990$.

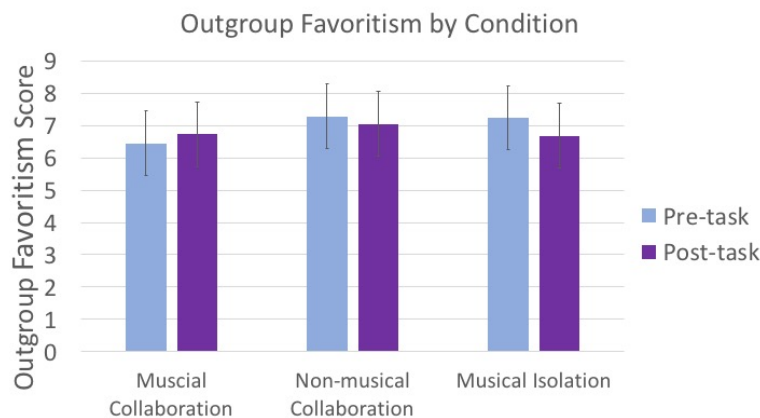


Figure 2. Mean Outgroup Favoritism score as a function of condition. Error bars represent the standard error for each condition.

Ingroup Identification

The next model tested whether scores on ingroup identification changed from pre-task to post-task, and whether condition had any effect on this change (see Figure 3). The model indicated a slight but significant increase in ingroup identification for the musical collaboration condition, $b= 1.79$, $t(174) = 2.42$, $p= 0.017$. For both the non-musical

collaboration and musical isolation conditions, there was a more pronounced and significant increase in ingroup identification, $b = 3.59$, $t(174) = 5.03$, $p = 0.000$, and $b = 3.72$, $t(174) = 4.96$, $p = 0.000$, respectively. Number of participants per session had a significant effect on ingroup identification, $b = -0.52$, $t(174) = -2.60$, $p = 0.000$, suggesting that individuals who participated in sessions with fewer people showed less change in ingroup identification.

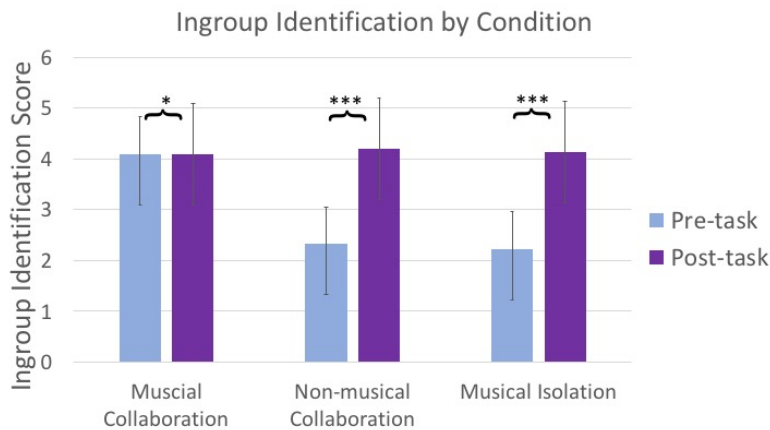


Figure 3. Mean Ingroup Identification score as a function of condition. Error bars represent the standard error for each condition.

Outgroup Identification

Finally, the last model examined whether changes in outgroup identification from pre-task to post-task differed across conditions (see Figure 4). The fixed effects indicated no change in outgroup identification in the musical collaboration group, $b = -0.18$, $t(174) = -0.196$, $p = 0.846$. Similarly, outgroup identification did not change significantly from pre- to post-task in the non-musical collaborations group, $b = 0.07$, $t(174) = 0.076$, $p = 0.940$, or the musical isolation group, $b = 0.74$, $t(174) = 0.777$, $p = 0.438$. Number of

participants per session had no significant effect on outgroup identification for any the conditions, $b = 0.06$, $t(174) = 0.214$, $p = 0.831$.

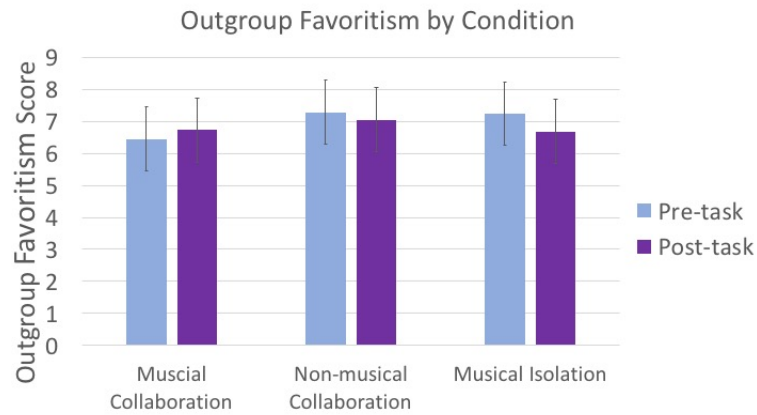


Figure 4. Mean Outgroup Identification score as a function of condition. Error bars represent the standard error for each condition.

Discussion

The data from this study did not support the original hypotheses that (1) relative to intergroup non-musical collaboration, intergroup musical collaboration will lead to an increase in positive intergroup attitudes; and (2) musical isolation will lead to minimal or no increase in positive intergroup attitudes. The musical collaboration task had a significant effect on only the ingroup identification scores, suggesting that singing may slightly increase ingroup identification. The Winter Survival Problem (Johnson & Johnson, 1975) had a significant effect on both the ingroup favoritism and ingroup identification, indicating that non-musical collaboration increases positive ingroup attitudes. The musical isolation task also had a significant effect on both the ingroup favoritism and ingroup identification scores, indicating that musical isolation increases positive ingroup attitudes. None of the tasks had significant effects on outgroup attitudes in this study, but the pattern of means was suggestive of the hypothesized benefits of musical collaboration, in that outgroup attitudes increased somewhat in that condition but decreased somewhat in the other conditions. Taken together, these results may mean that none of the tasks in this study represented strong enough manipulations to affect outgroup evaluations.

When considering the raw mean scores, there is some indication that the musical collaboration task resulted in an increase in outgroup favoritism, as hypothesized (though this was not significant). The raw means also indicate a pattern of slight decrease in outgroup favoritism for the non-musical and musical isolation groups. The lack of significant effects of manipulation on either of the outgroup variables may indicate that participants experienced increased salience of their ingroup attitudes, with little or no

effect on their outgroup attitudes. This outcome seems to support the argument that musical collaboration may increase *ingroup* bonding, rather than *intergroup* bonding. However, because some of the patterns match this author's original predictions (particularly the raw mean scores for musical collaboration's effect on outgroup favoritism), it could be that further studies would produce significant results.

Implications

Taken together, the results of this study do not support the idea that musical collaboration may serve the function of social bonding. This implies that musical collaboration may not be an effective method for reducing ingroup favoritism. However, considering that the raw mean scores did indicate a pattern of increase in outgroup favoritism for the musical collaboration condition. This consideration, paired with the significant positive changes in ingroup attitudes, may warrant further examination. As the common ingroup identity model seeks to merge ingroups, musical interactions could still prove useful for this purpose. Addressing the limitations of this study may provide further information.

Limitations

This study utilized a minimal groups paradigm to study intergroup attitudes. This was done by assigning participants to random groups, under the pretense that they were being divided by their jelly bean jar guesses. Further studies should explore the use of other group paradigms and investigate the effectiveness of a musical task in reducing ingroup favoritism amongst pre-existing groups. Additionally, the participants in this study were made aware of some information about the other conditions during the consent process, so as to minimize participant discomfort. The participants' knowledge of

the study design, prior to their sessions, may have been reflected in the differences in scores across conditions. In future studies, an alternative means of reducing discomfort should be utilized.

Lastly, the tasks utilized for both the musical collaboration and musical isolation conditions were novel tasks. Finding or developing other tasks could allow these hypotheses to be explored more thoroughly. Possibly, participants need to be more musically involved to experience pronounced effects on outgroup attitudes. Dancing and playing instruments are examples of increased musical involvement. A revised musical task may also seek ways to more closely fit Allport's (1954) guidelines for reducing bias through group interactions. For instance, finding ways to facilitate more natural intergroup musical interaction may be challenging, but beneficial. Creating a common goal for group members to work toward would also likely create different effects. The participants in this study also completed the task in a relatively short period of time, so a longer time period could be utilized. These modifications could further elucidate the effectiveness of using such a task to address currently existing social issues such as racism, homophobia, transphobia, ableism, and other bias-based, harmful societal phenomena.

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Appendix A

Measures

Subjective Musical Reactivity (Loersch & Arbuckle, 2013)

On a scale of 1-7, how much do you agree with the following statements?

MR1: When I hear a fast song, I feel like becoming more active.

MR2: When I choose music, I select it based on how it will make me feel.

MR3: When I listen to music, I can feel it in my body.

MR4: When I listen to music, I can feel it affect my mood.

MR5: I feel a strong emotional attachment to my favorite songs.

MR6: When I hear a sad song, my mood begins to darken.

MR7: If music wasn't a part of my life, I would be a completely different person.

MR8: When I hear a slow song, I start to slow down my actions.

MR9: When I hear a happy song, my mood begins to brighten.

MR10: My life would lose meaning if I couldn't listen to music.

MR11: When I listen closely to music, I start to lose track of my immediate surroundings.

MR12: When I listen to music my head moves along with the beat.

MR13: When I hear music, my foot starts tapping along with the beat.

MR14: If the right song comes on, I have trouble following another person's conversation.

MR15: If I close my eyes and listen to music, the rest of the world starts to fade away.

Intergroup Favoritism (Bakagiannis and Tarrant, 2006)

On a scale of 0-10, how well do the following adjectives describe group A?

0= describes us/them poorly 10= describes us/them very well

Nice

Popular

Intelligent

Trustworthy

Thoughtful

Mean

Boring

Unpleasant

Snobbish

Selfish

On a scale of 0-10 how well do the following adjectives describe group B?

0= describes us/them poorly 10= describes us/them very well

Nice

Popular

Intelligent

Trustworthy

Thoughtful

Mean

Boring

Unpleasant

Snobbish

Selfish

Group Identification (Vignoles and Moncaster, 2007)

On a scale of 1-7, how much do you agree with the following statements:

1=not at all 7=very much

I see myself as a member of group A.

I am glad that I am a member of group A.

I feel strong ties with the group A.

I am like other members of group A.

I identify with group A.

I see myself as a member of group B.

I am glad that I am a member of group B.

I feel strong ties with group B.

I am like other members of group B.

I identify with group B.

Appendix B

Winter Survival Problem (Johnson & Johnson, 1975)

This is an exercise in group decision making. Together, you are to rank each of the twelve survival items in order of importance. Not every ranking will meet everyone's complete approval, but try to make each ranking one with which all group members can at least partially agree on. You have twelve minutes to complete this task.

You have just crash-landed in the woods of northern Minnesota and southern Manitoba. It is 11:32 am in mid-January. The light plane in which you were traveling crashed on a lake. The pilot and copilot were killed. Shortly after the crash the plane sank completely into the lake with the pilot's and copilot's bodies inside. None of you is seriously injured and you are all dry.

The crash came suddenly, before the pilot had time to radio for help or inform anyone of your position. Since your pilot was trying to avoid a storm, you know the plane was considerably off course. The pilot announced shortly before the crash that you were twenty miles northwest of a small town that is the nearest known habitation.

You are in a wilderness area made up of thick woods broken by many lakes and streams. The snow depth varies from above the ankles in windswept areas to knee-deep where it has drifted. The weather report indicated that the temperature would reach minus 25 degrees Fahrenheit in the daytime and minus 40 at night. There is plenty of dead wood and twigs in the immediate area. You are dressed in winter clothing appropriate for city wear – suits, pantsuits, street shoes, and overcoats.

While escaping from the plane, several members of your group salvaged twelve items. Your task is to rank these items according to their importance to your survival, starting with 1 for the most important item and ending with 12 for the least important one.

You may assume that the number of passengers is the same as the number of persons in your group and that the group has agreed to stick together.

Items:

- _____ ball of steel wool
- _____ newspapers (one per person)
- _____ compass
- _____ hand ax
- _____ cigarette lighter (without fluid)
- _____ loaded .45-caliber pistol
- _____ sectional air map made of plastic
- _____ 20-ft by 20-ft piece of heavy-duty canvas
- _____ extra shirt and pants for each survivor
- _____ can of shortening
- _____ quart of 100-proof whiskey
- _____ family-size chocolate bar (one per person)