E-contact: Creating Friendships Between Adolescents from Different Backgrounds to Increase Positive Outgroup Feelings

By

Rachael Morgan Prow

A dissertation submitted in partial satisfaction of the

requirements for the degree of

Doctor of Philosophy

in

Education

in the

Graduate Division

of the

University of California, Berkeley

Committee in charge:

Professor Frank C. Worrell, Chair
Professor Glynda Hull
Professor Rodolfo Mendoza-Denton

Fall 2018

Abstract

E-contact: Creating Friendships Between Adolescents from Different Backgrounds to Increase Positive Outgroup Feelings

By

Rachael Morgan Prow

Doctor of Philosophy in Education

University of California, Berkeley

Professor Frank C. Worrell, Chair

In this study, the effects of adolescent intergroup friendship development on positive outgroup feelings (POF) are examined through an E-contact collaboration in drama classrooms between a Majority-White high-income (WHI) school and a Majority-Minority low-income (MLI) school. Forty-eight students participated in the study, six from the MLI school and 42 from the WHI school. A single cohort longitudinal approach was employed across two time-intervals and a 2 (Intervention Condition: control or experimental, between participants) by 2 (School: School 1 or School 2, between participants) by 2 (Data collection time: Time 1, Time 2, within participants) pre-post-control design. Students from the WHI and MLI high schools were split into control and experimental groups and friendship was enhanced in the experimental group.

The first hypothesis was that participants who were in the experimental E-contact condition would experience more feelings of friendship with their partner, thus also report more POF than those in the control condition. The results indicated that group assignment did not have a significant effect on the relationship between POF at Time 1 and POF at Time 2. However, Time—independent of group assignment—was significantly associated with change in mean POF ($p = 0.0038$). The second hypothesis was that the four known mediators—anxiety, knowledge about the outgroup, empathy and perspective taking, and inclusion of other in self (IOS)—would have an impact on the relationship between friendship at Time 2 and POF at Time 2. The only mediator found to have an impact on the relationship between friendship at Time 2 and POF at Time 2 was IOS. Results and future directions are discussed.

Keywords: adolescents, E-contact, education, friendship, optimal intergroup contact, prejudice reduction

Acknowledgements

This dissertation could not have been completed without the support of mentors, colleagues, family, and friends. I would also like to acknowledge my teacher-collaborators, without whom this study would not have been possible. To all who have helped me along the way, my greatest gratitude.

E-contact: Creating Friendships Between Adolescents from Different Backgrounds to Improve Intergroup Relations

Over half a century ago, Allport (1954) hypothesized that, under the right conditions, contact between peoples of different groups can lead to prejudice reduction. One empirically supported way to reduce prejudice and discrimination is to facilitate optimal intergroup contact (Allport, 1954) and opportunities for intergroup friendship (Pettigrew & Tropp, 2008). Allport defined groups as any number of people whose members "all use the term *we* with the same essential significance" (p. 31). There are many in-groups that a person could belong to, such as a family, a religion, an ethnic or racial group, a gender, a sex, a school, or a nation. An out-group member is a person that an in-group member would not identify within the collective "*we"* (p. 31). Thus, intergroup contact is any contact between and in-group member and an out-group member. However, the opportunity for intergroup contact in the United States can be limited.

There is evidence that the citizens of the United States experience systematic segregation of housing, wealth, income, race, ethnicity, and education (Beeghley, 2016). In 1954, the Brown v. Board of Education decision by the Supreme Court declared that school segregation based on race was unconstitutional. Despite more than 60 years of erratic social progress and legislation, schools today are more segregated than they were in the 1980s even though nearly 40% of students now enrolled in public schools are minorities (Frankerberg, Lee, & Orfield, 2003; Gross & Hannah-Jones, 2017). Students in the public education system are not being provided with ample opportunities to interact with out-group peers.

One solution to this problem could be the use of electronic contact, or E-contact, to facilitate optimal intergroup contact amongst those who could not otherwise interact with each other due to intergroup separation via physical distance (White & Abu Ryaa, 2014). E-contact may be especially useful for high schoolers. High-school-aged students have been found to be more flexible in their thinking regarding prejudice than their older counterparts (Pettigrew & Tropp, 2006). Additionally, adolescents in the 21st century have grown up around technology and are easily able to access online communities. Thus, adolescents can be an effective group to target for an E-contact intervention in schools. If effective, a school-based E-contact intervention could be a simple yet powerful solution to reduce prejudice and to provide intergroup contact to segregated youth.

I will begin by discussing Gordon Allport's (1954) contact hypothesis and the development of intergroup friendship as an important variable in prejudice reduction. I will focus on the four mediators of optimal intergroup contact that have been found to reduce prejudice: (a) anxiety, (b) knowledge about the out-group, (c) empathy and perspective taking, and (d) inclusion of the other in self (IOS). I will then frame intergroup contact within the context of arts education and make the argument that arts classrooms are an ideal setting in schools to address positive social development. Next, I will discuss indirect forms of optimal intergroup contact with a focus on E-contact, both in psychological studies and in educational settings. Finally, I will review the implementation of an E-contact study between youth from a majority-White high-income school and youth from a majority-Minority low-income school.

Contact Hypothesis

Allport (1954) hypothesized that there are four qualities of intergroup contact that would result in reduced prejudice: (a) equal group status, (b) common goals, (c) intergroup cooperation, and (d) support of authorities, laws, or customs. The robber's cave experiment by Sherif et al. (1961) provides a classic example of Allport's contact hypothesis. Sherif and colleagues (1961) first hypothesized that they could create conflict between randomly assigned groups of young

boys at a summer camp, then mend the rift they had created using optimal intergroup contact. They succeeded in creating conflict by creating a strong sense of in-group cohesiveness amongst the members of the groups and by introducing competition for rewards between the groups. After creating strong in-group and out-group attitudes, Sherif and colleagues attempted to repair the rift they had created. To create less intergroup prejudice and conflict, the researchers planned activities that involved a common goal for both groups and that also necessitated the groups working together to complete the activity. In sum, Sherif et al. (1961) found that competition for resources fostered conflict between groups, and that activities with common goals that required teamwork and intergroup cooperation lead to less intergroup prejudice.

More recently, Pettigrew and Tropp (2006) conducted a meta-analysis to examine the results of prejudice reduction studies conducted between 1940-2000. They identified 515 studies that fit their inclusion criterion. Many of the studies were survey-based, but some employed quasi-experimental designs, and some were intervention studies. Pettigrew and Tropp concluded that intergroup contact typically reduces intergroup prejudice (mean r = -.215), and that the more rigorous the study design, the greater the mean effect. Surprisingly, Pettigrew and Tropp also found that, although Allport's (1954) four conditions for optimal intergroup contact enhanced the prejudice reduction effects of intergroup contact, all four were not required for prejudice reduction to occur. This finding was unexpected, as much of the previous literature has assumed that all four of Allport's conditions were necessary for prejudice reduction to occur. Notably, Pettigrew and Tropp found that the support of authorities or institutions was consistently important throughout findings.

Pettigrew and Tropp (2006) also found that the prejudice reduction effects of intergroup contact could be generalized beyond the initial contact situation. Generalization of effects was an important question posed earlier in the literature, and their findings lent credence to the idea that intergroup contact could be an effective and long-lasting intervention for prejudice reduction. Since the meta-analysis in 2006, researchers have expanded their intergroup contact studies to involve both direct and indirect forms of intergroup contact.

In 2015, Lemmer and Wagner conducted a meta-analysis of direct and indirect contact interventions conducted in real-world settings. They found that both direct contact (i.e., face-to-face) and indirect contact (e.g., contact through others, mental conceptualization of contact, or contact through media) had significant positive effects on outgroup attitudes ($\hat{\mu}_\theta$ = 0.29 and $\hat{\mu}_\theta$ = 0.23, respectively), and that the effects of direct and indirect contact did not meaningfully differ from each other. They also found that the effects of direct and indirect contact were stable when tested at one month and when tested at 12 months. It is important to note, however, that they found that virtual contact (i.e., E-contact) did not consistently have positive effects on outgroup attitudes. Currently, researchers have not been able to provide consistent empirical evidence that E-contact is a viable form of intergroup contact.

Mechanisms of Prejudice Reduction

There is strong empirical evidence that intergroup friendship and optimal intergroup contact lead to reduced prejudice (Pettigrew & Tropp, 2006). Now, researchers are working to identify *how* intergroup contact reduces prejudice. Pettigrew and Tropp (2008) identified three mechanisms by which prejudice is reduced through intergroup contact: (a) enhancing knowledge about the out-group, (b) reducing anxiety about intergroup contact, and (c) increasing perspective taking and empathy. IOS has also been proposed as a potential mediator of intergroup contact (Turner, Hewstone, Voci, & Vonofakou, 2008; Wright, Aron, McLaughlin-Volpe, & Ropp, 1997). For example, Turner et. al (2008) tested the effects of extended contact (i.e., when a

person knows that a member of their in-group is friends with someone from an out-group) contact on outgroup attitudes. Turner and colleagues found that IOS mediated the relationship between extended contact and outgroup attitudes.

Enhancing knowledge about the out-group. Allport (1954) discussed how increased knowledge about out-groups was key to reducing prejudice, and he asserted that increased knowledge could help alleviate fears and mitigate false assumptions. Increased knowledge about certain out-groups has been found to lead to more positive attitudes towards out-groups (Pettigrew & Tropp, 2008). Although knowledge has been studied as a mechanism of prejudice reduction, it has not been found to be as effective as the affective mechanisms such as anxiety reduction and empathy (Pettigrew & Tropp, 2008).

Reducing intergroup anxiety. Intergroup anxiety also mediates the relationship between intergroup contact and negative out-group attitudes (Pettigrew & Tropp, 2008; Voci & Hewstone, 2003). Stephan and Stephan (1985) claimed that high levels of intergroup anxiety could negatively influence intergroup interactions because anxiety could "amplify normative behavior patterns, cause cognitive and motivational information processing biases, intensify self-awareness, lead to augmented emotional reactions, and polarize evaluations of outgroup members" (p. 157). Voci and Hewstone (2003) provided further support to Stephan and Stephan's claims when they found that positive intergroup contact in a work setting led to a decrease in anxiety, which then led to a decrease in negative intergroup attitudes. Voci and Hewstone also found that group salience (i.e., how salient an out-group member's out-group status is to a participant) moderated the effects of contact on prejudice.

In 2008, Pettigrew and Tropp made the claim that intergroup anxiety and intergroup friendship were also intercorrelated, which spurred research into intergroup anxiety and friendship. For example, Page-Gould, Mendoza-Denton, and Tropp (2008) found that, over the course of three intergroup friendship interactions, participants with high race-based rejection sensitivity and high implicit prejudice displayed greatly reduced cortisol (i.e., a stress hormone) reactivity in response to intergroup contact. In other words, with the development of intergroup friendships over time, participants with high implicit prejudice and high race-based rejection sensitivity became less anxious when interacting with people of different races. In addition, Page-Gould, Mendoza-Denton, and Mendes (2014) also found that previous intergroup friendships predicted reduced feelings of stress when interacting with out-groups. Pettigrew and Tropp (2008) hypothesized that intergroup anxiety must be reduced first in order for people to be able to access other prejudice reduction mechanisms such as knowledge or empathy.

Increased perspective taking and empathy. Perspective taking and empathy—the ability to stand in another's shoes and understand another's feelings—have also been found to mediate the relationship between intergroup contact and prejudice (Pettigrew & Tropp, 2008). These two variables are often grouped together due to their similarity, although empathy is considered to be more emotional or affective in nature and perspective taking is considered to be more cognitive in nature (Pettigrew & Tropp, 2008). Hunter and Elias (2000) found that fifth grade girls with high-quality interracial friendships had more social competence and were more sensitive to multicultural differences. Gonzalez (2008) found that students who reported higher empathy on the Balanced Emotional Empathy scale (BEES; Mehrabian, 1997) were more disapproving of racial teasing. Finally, Smith (2011) found that middle school students with better social-perspective taking skills had more cross-ethnic friendships.

Inclusion of other in self. Wright et al. (1997) proposed IOS as one of four mechanisms of extended contact (i.e., indirect contact) that would lead to a reduction in prejudice. Wright

and colleagues argued that people naturally include in-group members into their sense of self. They argued that in-group members have a strong sense of empathy towards their in-group that would encourage them, for example, to share resources with an in-group member or to take pride in in-group members' successes. Intergroup IOS occurs when a person develops a friendship with an out-group member and, through their close connection, that person begins to integrate the out-group friend into their sense of self. When the out-group member is included into the in-group person's sense of self, they too will reap the benefit on in-group membership. A recent example of IOS comes from Turner et al. (2008). Using a sample of college undergraduates, Turner and colleagues found that both cross-group friendship and extended contact with out-groups were associated with greater IOS. Page-Gould, Mendoza-Denton, Alegre, and Siy (2010) studied the impact of cross-group friendships on interactions with new members of an out-group. They found that participants with strong cross-group friendships reported more IOS, and that their high levels of IOS were positively associated with lower stress when they interacted with novel out-group members. Page-Gould and colleagues concluded that reported IOS does mediate the relationship between contact and anxiety.

Intergroup Friendship Development

Pettigrew (1997) was the first to write about the importance of opportunities for intergroup friendship in facilitating prejudice reduction. Since then, intergroup friendship has been widely studied and ultimately adopted as one of the suggested conditions of optimal intergroup contact. Friendship has been found to be a particularly potent form of intergroup contact because friendship indicates strong emotional ties between people which can enhance prejudice reduction (Turner, Hewstone, Voci, Paolini, & Christ, 2007). Pettigrew and Tropp (2006) found that intergroup friendship both mediates and moderates the relationship of contact and prejudice. In other words, the more inter-group friendships a person has, the more effective intergroup contact will be at reducing that person's prejudices against a certain outgroup.

What is friendship? Friendship has been conceptualized and operationalized in many ways (Davies, Tropp, Aron, Pettigrew, & Wright, 2011). In their meta-analysis, Davies and colleagues found that operationalizing friendship as the amount of time spent together (mean r = .271) and the level of self-disclosure (mean r = .255) produced significantly more association with attitudes towards outgroups than other operationalizations of friendships (combined effect of time-spent and intimacy, mean r = .267). Davies et al. concluded that time spent together and level of intimacy were the most effective operationalizations of interpersonal friendship engagement for use in empirical studies.

Studies of friendship and intergroup contact. Several researchers have explored the relationship between friendships and intergroup prejudice reduction (e.g., Kawabata & Crick, 2011; Levin, van Laar, & Sidanius, 2003; Page-Gould et al., 2008; Page-Gould et al., 2014). Recalling Page-Gould et al.'s (2008) study, the development of intergroup friendships lead to decreased intergroup anxiety over time. Page-Gould et al. (2014) also found that having previous intergroup friendships reduced feelings of stress when interacting with novel out-groups. Levin et al. (2003) found that college students with more out-group friendships than in-group friendships had less in-group bias (i.e., preference for their in-group) and less intergroup anxiety than their peers with fewer out-group friendships. In a study with elementary school students, intergroup friendship was found to be protective for minority students (Kawabata & Crick, 2011). More specifically, Kawabata and Crick (2011) found that minority students with majority-group friends reported increased peer support and decreased peer victimization. Finally, researchers who conducted a study in Northern Ireland found that intergroup friendships

between Protestants and Catholics resulted in reduced prejudice and increased perceived out-group variability (i.e., the perception that people in outgroups are heterogeneous rather than homogeneous; Paolini, Hewstone, Cairns, & Voci, 2004).

Bringing Prejudice Reduction into High Schools in Arts Classrooms

Previous research has provided evidence for the utility of both direct and indirect contact for prejudice reduction (Lemming & Wagner, 2015). This study aims to bring indirect contact to high-school-aged youth. When deciding how to integrate optimal intergroup contact into classrooms, arts classrooms became an attractive option because arts classes are often bridging the divide between academia and community engagement.

Arts participation has been correlated with many beneficial outcomes in school. One large-scale study identified the range of outcomes attributable to arts education in English and Welsh secondary schools (National Foundation for Educational Research in England and Wales [NFEREW], 2000). The researchers' original intent was to identify academic outcomes associated with the arts, but they found something very different.

Some notable outcomes for arts participation in school were the development of creativity and the improvement of communication skills (NFEREW, 2000). NFEREW (2000) also found that arts participation heightened student enjoyment and excitement in school and was often used as a therapeutic release for tension. The therapeutic benefit alone is a strong argument for arts education in combating the stresses associated with academic performance, identity development, and peer relationships in schools. The researchers also cited the individual benefits of each type of art-form, as seen in Table 1. For example, visual art was associated with improved expressive skills, dance was associated with greater awareness of body and movement, drama was associated with enhanced empathy and greater valuing of others, and music was associated with increased active listening skills.

A similar study was completed in the United States by Winner and Hetland (2009). Winner and Hetland conducted case studies on two arts-intensive schools in the Boston area; they used one private school and one public school, each of which spent at least three hours a day on the arts (visual, drama, dance, or music). Winner and Hetland identified eight arts-related outcomes: (a) persistence, (b) expression, (c) ability to make clear connections between art and the outside world, (d) understanding social context, (e) observing, (f) envisioning, (g) innovating through exploration, and (h) reflective self-evaluation. The authors emphasized that these skills are often undervalued in education because they do not directly relate to higher test scores. Winner and Hetland concluded that arts can be beneficial to students in many alternate ways:

> For students living in a rapidly changing world, the arts teach vital modes of seeing, imagining, inventing and thinking. If our primary demand of students is that they recall estabilshed facts, the children we educate today will find themselves ill-equipt to deal with probelems like global warming, terrorism, and pandemics. Those who have learned that arts, however—how to see new patterns, how to learn from mistakes, and how to envision solutions—are the ones likely to come up with the novel answers needed for the future. (p. 4)

Further, Costa-Giomi (2004) provided low-income students with piano lessons for three years and examined the effects of the piano lessons on self-esteem. Coast-Giomi. By the end of the study, students with piano lessons had more increased self-esteem in comparison to the control group who did not receive lessons. Other researchers have examined the effects of dance on psychological well-being (Connolly et al., 2011) and the effects of creative writing, drama, and music on students' ability to think critically about social inequality (Sanders, 2004).

Benefits from these studies include increased self-esteem ($p = 0.01$; Connolly et al., 2011) and improved ability to have positive dialogue about social inequalities and differences (Sanders, 2004).

However beneficial these outcomes may seem, other researchers have heavily critiqued the design of arts education studies (Rapp-Paglicci, Ersing, & Rowe, 2007). Limitations often include small sample sizes, issues with attrition from programs and interventions, incomplete data, methodological weakness, and the use of anecdotal data. However, Rapp-Paglicci et al. (2007) still concluded that the studies of arts and education could produce benefits such as improved school attitudes, decreased dropout, increased communication and conflict resolution, and reduced delinquency.

In light of the correlational links among arts, academics, and positive social/emotional outcomes, I propose another potential benefit of arts education—friendship creation and prejudice reduction through optimal intergroup contact. However, because k-12 schools are becoming more and more segregated, traditional direct contact could be more difficult in school settings. Researchers and educators have long been trying to bridge physical and social gaps through indirect forms of colloaboration. With the internet, E-contact is a viable option for intergroup contact.

Indirect Forms of Optimal Intergroup Contact

Although Allport's (1954) hypothesis was originally about direct contact between groups, many researchers have had to wrestle with the lack of availability of out-groups. Street (2005) found that, between 1999-2000, the average White public-school student attended a school that was 78% White and the average Black public-school student attended a school that was 57% Black. Supreme Court rulings have limited school desegregation efforts, and intensely segregated non-White schools have nearly tripled in the past 25 years (Orfield, Ee, Frankenberg, & Siegel-Hawley, 2016). Thus, researchers have expanded the contact hypothesis to include strategies that facilitate indirect contact: (a) extended contact, (b) imagined contact, and (c) vicarious contact. Many of these strategies are used in school settings due to the segregation in public schools in the United States that has led to the unavailability of out-group contacts (Aboud et al., 2012). Indirect forms of contact are not a replacement for direct intergroup contact. However, they provide a *continuum of contact* (Crisp & Turner, 2009) that can prepare students for more direct forms of contact.

Extended contact. Extended contact is when a person knows that a member of their in-group is friends with someone from an out-group (Wright, Aron, McLaughlin-Volpe, & Ropp, 1997). Extended contact researchers make similar claims to Bandura's (1977) social learning theory, which posited that we learn social behaviors through observing others. Wright et al. (1997) proposed four mechanisms of extended contact that would lead to a reduction in prejudice. They argued that extended contact could reduce anxiety and create positive in-group norms because an in-group member could model out-group relations and establish the social acceptability of having an out-group friend. They also argued that the out-group friend would help to change the in-group member's out-group perceptions by acting as a positive exemplar of the out-group. Finally, Wright et al. claimed that IOS would occur. IOS occurs when a person more closely associates himself or herself with another as they integrate the other into their life. Through extended contact an in-group member could begin to include the out-group member into their sense of self.

Turner et al. (2007) reviewed the effects of direct cross-group friendship and extended, or indirect, cross-group friendship. They found that extended friendships were associated with

lower intergroup anxiety, with more positively perceived in-group and out-group norms, and with more reported IOS. However, they also found that indirect contact worked better for those who were more dependent on cognition when making judgments about out-groups than for those who were more dependent on by emotions when making judgments about out-groups. Additionally, the effects of extended contact were found to be completely mediated by anxiety, which lessened the effect of any cognitive factors.

An example of extended contact in schools comes from Turner et al. (2008). Turner et al. (2008) asked White and Asian high school students and undergraduates about their experiences regarding extended contact with each other. They found that extended contact had a negative relationship with intergroup anxiety and a positive relationship with in-group and out-group norms and IOS. In another study of extended contact, teenagers in the experimental group read stories aloud to their classmates about in-group peers having close friendships with people from different countries (i.e., out-group peers; Liebkind & McAlister, 1999). Liebkind and McAlister (1999) found that tolerance towards peers from different countries increased or remained the same in schools that had read the out-group friendship stories and decreased or remained the same in schools that had not read the out-group friendship stories.

Imagined contact. Crisp and Turner (2009) proposed the concept of imagined contact, wherein a person is asked to imagine a positive interaction with an out-group member. Imagined contact is presumed to work through the power of mental imagery, which has been found to elicit similar emotional and motivational responses as actual experiences (Dadds, Bovbjerg, Redd, & Cutmore, 1997). Imagined contact works by training the mind to expect certain outcomes, rehearse scenarios, and prepare for situations of intergroup contact (Crisp & Turner, 2009). Crisp and Turner found that imagined contact can lead to improved intergroup attitudes and reduced stereotyping.

Miles and Crisp (2014) conducted a meta-analysis of both published and unpublished studies of imagined contact. They found that, on average, imagined contact had a small to medium effect size (overall $d = 0.35$) on explicit and implicit attitudes, emotions, behaviors, and intentions. They also found that imagined contact was effective for all out-groups included in their study, including people with disabilities, the elderly, people of different nationalities, and people with mental illness. Husnu and Crisp (2015) found that imagined contact is mediated in part by increased empathy and perspective taking.

One example of imagined contact in a school setting comes from Vezzali, Stathi, Crisp, and Capozza (2015). In a sample of Italian elementary school students, Vezzali and colleagues compared the effects of imagined contact versus direct contact on prejudice against people who were immigrants. In the study, all children were given a story about aliens from planet sun and aliens from planet moon who all arrived on neutral planet. Children were placed in intragroup teams (i.e., all Italian children) or intergroup teams (Italian children and children from different countries), and some were given an intragroup story-task (i.e., aliens all from planet sun or aliens all from planet moon needing to cooperate) and others were given an intergroup story-task (i.e., aliens from planet sun and planet moon needing to cooperate). Vezzali and colleagues found that the most prejudice reduction occurred when the intergroup teams solved an intergroup story-task. Children who worked with the outgroup to solve a problem involving outgroups demonstrated less prejudice after the story-task. Results indicated that the effects of imagined contact are additive when combined with direct contact.

Vicarious contact. The final and newest form of indirect contact is vicarious contact, wherein simply observing two people from different groups interacting positively can result in

greater intergroup positivity (Gómez & Huici, 2008). Vicarious contact is also based on Bandura's (1989) social cognitive theory (Mazziotta, Mummendey, & Wright, 2011). Mazziotta and colleagues (2011) conducted two studies to examine intergroup relationships between Chinese and German peoples, one with German university students as participants and another with German community members as participants. In both studies, participants were shown either a video containing either a positive German-Chinese interaction, a positive German-German interaction, or a neutral video of a library tour. In the second study only, a new condition was added that included a positive video of a Chinese person alone. Mazziotta and colleagues found that witnessing positive intergroup contact (i.e., the video containing a positive German-Chinese interaction), not just a positive example of an outgroup member (i.e., positive video of a Chinese person alone), increased participants' willingness to interact with out-group members.

Mazziotta and colleagues (2011) commented on the utility of vicarious contact as a mass-media technique for reducing intergroup prejudice. Recent commercials and advertising demonstrate that companies in the United States have been capitalizing on this concept. For example, following the 2016 presidential election, many commercials broadcast during the 2017 Super Bowl featured positive intergroup contact and positive images of immigrants and other minority communities.

E-contact: The Future of Intergroup Contact

When direct contact has not been possible, indirect contact has been utilized (White, Harvey, & Abu-Rayya, 2015). However, with rapidly advancing technology now available to many Americans, connecting with people from far way places is not only possible but it is also easy—especially so for adolescents. Adolescents have lived in a world of Wi-Fi and of cell phones with the processing capacity of computers for nearly their entire lives. For these reasons, adolescents could be a fitting sample for an E-contact study. E-contact is defined as "computer mediated contact involving an engagement of the self in intergroup relations" (White & Abu-Rayya, 2012, p. 598). E-contact has the potential to provide direct contact simulation for otherwise inaccessible out-groups.

Two models of E-contact in psychology. There are two theoretical models that provide support for the utility of E-contact. The first model was developed by Hoter, Shonfeld, and Ganayim (2009) and is called the online intergroup contact hypothesis (OICH) model. Hoter et al. created OICH to address the longstanding animosity amongst Secular Jews, Orthodox Jews, and Arabs in Israel. Hoter and colleagues based their model on Allport's (1954) conditions for optimal intergroup contact. However, due to the environmental differences in an E-contact setting versus a real-life setting, they also implemented many new conditions to try and sustain a setting of optimal intergroup contact: (a) participants would have gradual contact over the period of a year with increasing levels of intimacy—starting with text-only E-contact then moving toto voice E-contact, and then to face-to-face E-contact; (b) teachers were required to be representative of the different groups and were required to participate in team-teaching, and (c) the subject of the intergroup learning had to deal with general subjects, such as mathematics or science instruction, not longstanding religious or national conflicts.

The OICH (Hoter et al., 2009) model was originally created through collaboration among Information Technology (IT) departments at three teacher-colleges with the support of the principals at those colleges (i.e., support of legitimate authorities). The colleges included one Secular Jewish College, one Orthodox Jewish College, and one Arab-Islamic College. The OICH intervention was developed and tested on students at the teacher-colleges who took an

advanced course on Internet learning environments. Students from the different colleges worked together for one year on cooperative projects that were coordinated by lecturers at each college. Although no pre-test or post-test data were collected on this project, after the project, participants reported that they felt like they had more in common with their partners from different colleges. They also reported that the gradual introduction to E-contact—that is, moving from text-only to face-to-face—reduced their anxiety and facilitated feelings of equity.

The second E-contact model is the dual identity electronic contact (DIEC) model created by White, Abu-Rayya, and Weitzel (2014). The DIEC model combines Allport's (1954) conditions of optimal intergroup contact with Gaertner, Dovidio, Anastasio, Bachman, and Rust's (1993) dual identity re-categorization framework. In their framework, Gaertner et al. (2000) argued that the optimal way to facilitate prejudice reduction during contact was to have participants identify and focus on a superordinate shared identity rather than on their different identities. Gaertner et al. (2000) referred to this focus as recategorization, or as a common in-group identity. Over time, however, it became clear that focusing on a common in-group identity created two problems: (a) it required participants to somewhat relinquish their identity, and (b) it would prevent positive generalization to other out-group members because the person had relinquished their out-group identity.

In response to these two problems, Gaertner et al. (1993) proposed the dual identity model, wherein both the superordinate identities and the subordinate identities of intergroup contact participants could be highlighted. The dual identity model resembles Hewstone and Brown's model (2005), which posited that out-group members needed to be sufficiently typical or representative of their group to facilitate positive generalization of contact. With the theoretical backing of the Allport (1954) and Gaertner et al. (2000), White et al.'s (2014) DIEC model theorized that the promotion of positive contact for both minority and majority groups by integrating intergroup contact interventions with recategorization strategies could be effective.

Original DIEC study. Using the DIEC model, White and Abu-Rayya (2012) provided a specific example of what E-contact could look like in adolescent education populations. White and Abu-Rayya conducted an E-contact study with approximately 200 Australian adolescents from religiously segregated Christian and Muslim high schools. In the study, students were split into groups of four and were tasked with developing a plan for environmental stability in Australia that they were to be collectively graded on at the end of the project. In the experimental group students were put in groups of four, two from each school, and they worked collaboratively via E-contact, specifically via Internet chat rooms. The students worked to maintain their personal identities with early contact sessions that highlighted the importance of their religion, and their religion's attachment to the environment (i.e., use of water in religious ceremonies). They then formed a shared superordinate identity as conservationists, working cooperatively towards a common goal as mutual stakeholders in environmental sustainability for Australia. In the control group, students were put into groups of four within their school setting and they completed the same conservation project. White and Abu-Rayya found that the experimental group experienced a reduction in intergroup anxiety and bias between pre- and post-surveys. They also claimed that overall participation in the project had a positive effect school-wide because students from the experimental group shared their experiences with peers, and that positive experience with the out-group generalized to their population in the form of vicarious contact and knowledge about the outgroup.

Recent E-contact developments. Since the two pioneering studies of E-contact described above, the literature has produced many more examples of the potential of E-contact. For

example, Žeželj, Ioannou, Franc, Psaltis, and Martinovic (2017) recently conducted an E-contact study with students from Serbia, Croatia, and Cyprus—all countries that were chosen because they are currently experiencing post-conflict societies. They found that online friendships reduced intergroup anxiety (intergroup anxiety scale; Stephan & Stephan, 1985) and reduced perceived ethnic threat (realistic threat measure, Stephan & Stephan, 2000), which in turn promoted more positive intergroup attitudes (thermometer scale).

E-contact in education settings. Although the use of technology to connect students from different schools and countries with the intention of reducing prejudice is relatively new, technology has been present in educational settings for some time now. Original online contact efforts in education were meant to foster online cooperation (Stahl, Koschmann, & Suthers, 2006). Cooperation as defined by Dillenbourg (1999) is when "partners split the work, solve sub-tasks individually and then assemble the partial results into the final output. In collaboration, partners do the work 'together'" (p. 8). More recently, the focus of educational E-contact communication has begun shifting from cooperation to collaboration—a distinction made by Roschelle and Teasley (1995). Roschelle and Teasley defined collaboration as "… a process by which individuals negotiate and share meanings relevant to the problem-solving task at hand…. collaboration is a coordinated, synchronous activity that is the result of a continued attempt to construct and maintain a shared conception of a problem" (p. 70). The study of collaboration rather than cooperation aligns well with Allport's (1954) conditions for optimal intergroup contact by facilitating teamwork towards a common goal.

Online writing collaboration. Writing is a common school subject to target when trying to facilitate online collaboration (Stahl, Koschmann, & Suthers, 2006). Online technology has lent itself well to collaborative writing because of the advanced ability to share text-based documents between two devices. In their review, Stahl et al. (2006) discussed the invention and development of (CSCL). Stahl and colleagues wrote that, at first, computers were only used to provide a mechanism for connecting with outgroups. But as technology progressed, connection has been enhanced to include collaboration due to the development of intelligent student support systems and collaboration software. Stahl et al. argued that the main goal of CSCL is to "create artifacts, activities and environments that enhance the practices of group meaning making" (p. 9). Thus, writing is one good way to introduce collaborative intergroup contact into educational settings.

Recently, Chen and Weng (2018) conducted a meta-analysis on studies that examined the use of computer-supported collaborative learning (CSCL). Chen and Weng examined 425 studies published between 2000 and 2016. They found that, at its most simple application, computer use alone was helpful for knowledge gain in students. Furthermore, they found that CSCL, in comparison to non-collaborative computer supported learning, had significant positive effects on knowledge gain (g = 0.42), skill acquisition (g = 0.64), and student perceptions (g = 0.38).

The Current Study

Decades of evidence (e.g., Lemmer & Wagner, 2015; Pettigrew & Tropp, 2006) suggest that Allport's (1954) and Pettigrew's (1997) conditions of optimal intergroup contact can be used to reduce prejudice (e.g., to increase positive outgroup feeling; POF) in direct and indirect settings. E-contact is an indirect form of contact that has been proposed as a beneficial way to reduce prejudice and increase POF (White et al., 2015). There is still some debate regarding whether or not E-contact can be as useful in reducing prejudice as other forms of direct and indirect contact (Lemmer & Wagner, 2015). However, E-contact has been successfully

implemented and found to reduce prejudice in both a graduate school setting (Hoter et al., 2009) and in a high school setting (White & Abu-Rayya, 2012). The current study will test the utility and effectiveness of an E-contact intervention to facilitate friendship development and increase POF in a high school drama class setting.

In this study, intergroup E-contact is examined amongst students from a majority White high-income school (WHI) and a majority Minority low-income school (MLI). Students from both schools were put into intergroup pairs, and the pairs were split into control and experimental conditions. In the experimental condition, friendship was enhanced prior to the online collaboration. The first hypothesis was that participants who were in the experimental E-contact condition would report more feelings of friendship with their partner, thus also report more POF than those in the control condition. The second hypothesis was that all four mediators (i.e., anxiety, knowledge about the outgroup, empathy and perspective taking, and IOS) would have an effect on the relationship between friendship at Time 2 and POF at Time 2, but that the affective mediators (i.e., anxiety, empathy and perspective taking, and IOS) would have a greater effect on the relationship than the cognitive mediators (Pettigrew & Tropp, 2006).

Method

Participants

One hundred and twenty-eight participants were recruited for the study based on their enrollment in high school drama classes, 71 students from the WHI school and 57 students from the MLI school. Of the 128 eligible participants, 71 consented to participate in the study. Of the 71 consenting participants, 45 (63%) were from the WHI school and 26 (37%) were from the MLI school. However, of the 71 consenting participants, only 48 participants successfully completed data collection both at Time 1 and at Time 2. Thus, the final sample for this study was 48 participants, six from the MLI school and 42 from the WHI school. Of the total 48 participants, 26 were in the experimental group (n_{MLI} = 3, n_{WHI} = 23) and 22 were in the control group (n_{MLI} = 3, n_{WHI} = 19).

Two-thirds of the participants (n = 32) were female and one-third were male (n = 16). Twenty-three percent of participants were in 9th grade (n = 11), 35% were in 10th grade (n = 17), 29% were in 11th grade (n = 29), and 13% were in 12th grade (n = 6). Sixty-four percent of participants racially/ethnically identified as White (n = 30), 9% identified as Asian (n = 6), 9% identified as Latinx (n = 4), 13% identified as Mixed-Race (n = 6), and 2% identified as Other (n = 1). Income of the sample was reported as follows: 54% (n = 26) of the sample reported a parental income of more than $100,000 annually, 23% ($n$ = 11) of the sample reported a parental income between $50,000 and $99,0000 annually, 13% ($n$ = 6) of the sample reported a parental income below $50,000 annually, 8% ($n$ = 4) of the sample did not respond to this question.

Materials and Measures

All data were collected online via Qualtrics. Data were stored in a password-protected account. Online contact occurred via the website platform Google Chat. Google Chat is an online text-based communication software that used the students' school-based Google email accounts to provide access to secure chat rooms. Participants used school computers and personal cellular devices to access Google Chat and to complete online data collection.

Positive outgroup feeling (POF). A feeling thermometer question was used to assess POF (i.e., an operationalization of prejudice). Students were given a feeling thermometer scale to determine the direction of their attitude and the intensity of their attitude towards the out-group (see Appendix A for a full copy of the questionnaire used for Time 1 and Time 2 Data collection). Higher scores on the feeling thermometer indicated more POF and lower scores on

the feeling thermometer indicated less POF. Increases of POF were expected between Time 1 and Time 2, indicating that participants reported more positive feelings for the outgroup over time.

Out-group knowledge and previous out-group contact. Participants were asked two questions regarding how much they knew about the out-group using a 5-point Likert scale. They were also asked two sets of five questions—10 questions in total—regarding the quantity and the quality of their previous out-group contact experiences. These questions were adapted from questions posed in a study by Islam and Hewstone (1993). Scores from Islam and Hewstone's study had good internal consistency ($0.77 \leq \alpha \leq 0.86$). Scores from these three sets of questions were combined and averaged to create one out-group knowledge score. Scores from the current data had poor internal consistency ($\alpha = 0.45$), and the data were neither skewed nor kurtotic.

Anxiety. Stephan and Stephan's (1985) 12-item intergroup anxiety scale was adapted to reflect the study population (see Paolini et al., 2004; White & Abu-Rayya, 2012). Scores from the original 12-item intergroup anxiety scale were found to have good internal consistency ($\alpha = 0.90$). Participants read the following questions:

> How would you feel if you were in a group made up entirely of people from [in-group]?
> How would you feel if you were the only person from [in-group] in a group made up entirely of students from [out-group]?

Participants rated the extent to which they would feel happy, awkward, self-conscious, confident, relaxed, and defensive (1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Undecided*, 4 = *Agree*, 5 = *Strongly Agree*). Positive responses were reverse coded and then scores were averaged. Higher scores indicated higher intergroup anxiety. Scores from the current data had good internal consistency ($0.61 \leq \alpha \leq 0.81$), and the data were neither skewed nor kurtotic.

Empathy/perspective taking. Empathy and perspective taking were measured using the Adolescent Measure of Empathy and Sympathy (AMES; Vossen, Piotrowski, & Valkenburg, 2015). The AMES is a 12-item measure with a 5-point Likert scale format that consists of three constructs: (a) cognitive empathy, (b) affective empathy, and (c) sympathy. The AMES was validated in a study of 450 adolescents ($m_{age} = 12$) and met reliability and validity standards. Validity evidence was provided by correlating their measure of perspective-taking to a previous empathy measure—the cognitive empathy scale (Vossen et al., 2015). Vossen and colleagues reported that the scores had good internal consistency for all constructs: cognitive empathy $\alpha = 0.86$, affective empathy $\alpha = 0.75$, and sympathy $\alpha = 0.76$. Test-retest correlations were $r = .56$ for affective empathy, $r = .66$ for cognitive empathy, and $r = .69$ for sympathy. In the current study, scores from the AMES were averaged to create one overall empathy/perspective taking score. Scores from the current data had good internal consistency ($\alpha = 0.75$) and the data were neither skewed nor kurtotic.

Inclusion of other in self. Participants were given the 1-item IOS scale from Aron, Aron, and Smollan (1992). The scale is comprised of many images of different degrees of overlapping circles, one circle is labeled self and the other circle is labeled other. Participants were asked to select the picture that most represent their relationship to their out-group collaboration partner. Scores from the original IOS measure had good alternate form reliability ($r = 0.92$) and good test-retest reliability ($r = .83$). Scores from the current data were skewed and kurtotic.

Friendship. Participants were given the 16-item McGill friendship questionnaire-respondent's affection (MFQ-RA). The MFQ-RA was developed by Mendelson and Aboud (2012) to measure a person's feelings towards a friend and a person's satisfaction with a friendship. Scores on the MFQ-RA had strong internal consistency ($\alpha = 0.92 – 0.96$). Scores

from the current data had good internal consistency ($0.63 \leq \alpha \leq 0.87$), were not skewed, and were slightly kurtotic.

Project enjoyment. A one-item question was added to the Time 2 survey to measure project enjoyment. The question stated "I enjoyed participating in this project," and the students used a 5-point Likert scale ranging from *strongly disagree* to *strongly agree*. Higher scores indicated more project enjoyment.

Procedure

High school drama teachers were recruited for this study in the spring of 2017. The first two criteria for recruitment were that the schools needed to be in different cities at least 50 miles apart and not easily connected by public transit. Secondly, one school needed to represent a WHI population and one school needed to represent a MLI population. For recruitment, both primary connections and secondary connections were contacted at high schools within a 150 mile radius of the researchers' university. The first correspondence that the teachers received was a pre-scripted e-mail inviting them to participate in the study. If the researchers did not receive a response to the email within one work week, a follow up call was made to the teacher and a reminder email was sent.

Within one week of eliciting participation, a WHI drama teacher agreed to participate in the study. For the purposes of this study, this teacher will be referred to as Mr. W. Mr. W and the primary researcher then connected via phone to clarify any questions that Mr. W had about the proposed project. It took nearly three months to obtain an MLI drama teacher to participate in the study. For the purposes of this study, this teacher will be referred to as Mr. M. Mr. M and the primary researcher then connected via phone to clarify any questions that Mr. M had about the proposed project. After they agreed to participate, each drama teacher was instructed to request approval from their school administration to participate in the study. Both schools' principals consented to the process. After receiving administrative permission to proceed, Mr. W and Mr. M were introduced to each other via Google Hangout—an online video-chat platform—so that they could collaborate for the study.

Creating the intervention. Mr. W., Mr. M, and the primary researcher met many times during the summer of 2017 to prepare for the study. First, the researcher provided lessons regarding basics of research participation and the experimental manipulation of the fast friends (FF) procedure (Aron, Mellinat, Aron, Vallone, & Bator, 1997). The teachers also received lessons from the primary researcher about Allport's (1954) requirements of optimal intergroup contact that had to be facilitated during the activity. With an understanding of the theory and the methodology, the teachers worked with the researcher to create an activity that could take place during the optimal intergroup contact situation. Both teachers agreed that a collaborative writing activity would be easiest for their students to do online because technologies such as Google Docs and DropBox allowed for easy file sharing.

Thus, the E-contact intervention was to occur during a script-writing portion of the drama classes. The teachers worked together over the summer of 2017 to create lesson plans for the collaborative activity. The activity was designed to be simple in execution. Students were required to write a one-page script with their partner based upon the following prompt: "You and your partner will write a short, two-person scene. The scene should be no longer than one page. The only requirement is that your scene must start with the line, 'Well, aren't you going to congratulate me'"? Prior to this collaborative writing activity, both classes were to receive

introductory lessons regarding how to write an effective script.

After the lesson plans were in place, the teachers identified class periods that had overlapping schedules at both school sites. After receiving their final teaching schedules in fall 2017, the teachers each identified two classes that were scheduled for the same time of day to allow for collaboration between school sites. The teachers then worked together to choose what days in the fall semester that the project would take place. All students enrolled in these four classes were required to participate in the collaborative activity, as it was required for their class, but they and their parents had the opportunity to opt out of data collection.

Data collection. The primary researcher first visited the two classes at the MLI school to present the study and to distribute consent forms, assent forms, and media releases. For both classes at the MLI school, the primary researcher read a prewritten recruitment script about the study. The students were then allowed to ask questions regarding the study. Consent forms, assent forms, and media releases were then distributed to all students with instructions to return the forms, signed or unsigned, by the end of the week. Procedures were repeated for the second MLI class. One week later, all procedures were repeated with the WHI classes.

After collecting consent forms, assent forms, and media releases forms from the MLI and the WHI participants, Time 1 surveys were administered online remotely via Qualtrics during class time. Students used school computers to complete most data collection and activities. In some instances, due to internet connectivity issues at the school sites, students elected to use their cellphone with wireless data to complete the Time 1 survey rather than the school computers and Wi-Fi. Time 2 data were also collected remotely via Qualtrics during class time two-to-three weeks following the end of the collaborative script-writing project. During data collection, students were instructed to sit far apart from each other in the classroom to allow for privacy.

Partner assignment. Once Time 1 data were collected, participants were assigned collaboration partners from the alternate school. When possible, students were matched with same-gender-identified students. Students were also paired based upon whether or not they consented to data collection. Student pairs and triads were then randomly assigned to the control or the experimental group. The collaborative activity began one week following Time 1 data collection.

Collaborative writing activity. Students were given instruction on script writing independently in their classes prior to their collaboration. After receiving in-class instruction, the collaboration began. Over the course of the study, the students collaborated online for a total of 46 chat-based interactions. For the first online interaction, participant-groups in the experimental condition began the FF procedure (Aron et al., 1997). To complete the FF procedure, participants in the experimental group answered a series of pre-written questions about their personal experiences, beliefs, and opinions. The questions were printed out by the teachers and given to the students prior to their first online interaction. Participants read the questions at their desks and then wrote their answers in Google Chat to their partner/partners at the alternate school. The partner/partners then responded and provided their own answers to the questions.

The questions in the FF procedure were designed to increase in intimacy over time (Aron et al., 1997). At the beginning of the activity, students answered questions that did not require much personal disclosure and were not intimate in nature, such as "Would you like to be famous? In what way?" By the end of the FF procedure, the questions were much more personal and required more intimate disclosure of information, such as "When was the last time you cried

in front of another person? By yourself?" and "Do you believe in any sort of God?" The increase of intimacy over time simulates close friendship in a short period of time (Aron et al., 1997). The FF procedure used in this study was modified from the Page-Gould et al. (2009) FF task to accommodate for time constraints and age-appropriateness. A total of nine questions from the original FF procedure were thought to be overly triggering or overly mature for adolescents, and were removed and replaced with alternate questions.

Rather than completing the FF procedure for their first interaction, the participants in the control group began the collaborative script-writing project immediately. The control group participants began by creating a shared Google document that they could both see while they chatted and collaborated online. During the second interaction, the participants in the experimental group concluded the FF procedure, and the participants in the control group continued with the collaborative script-writing project. For interactions three through six, both the participants in the control group and the participants in the experimental group worked on the collaborative script-writing project. At the end of the project all students were graded. Student pairs and triads received a group grade rather than an individual grade.

Results

All data from Qualtrics were downloaded and analyzed using a combination of software including Microsoft Excel (2016), Python, and R. As stated above, a total of 48 participants completed both the Time 1 and the Time 2 data collection, and only six were from the MLI school. Preliminary analyses include the complete sample collected from Time 1 (n = 71; i.e. complete sample), and the final sample collected from Time 1 for the students who completed both Time 1 and Time 2 data collection (n = 48; i.e., final sample), and data collected from Time 2 (n = 48; i.e., final sample). Hypotheses are only tested using the final sample.

Preliminary Analyses

Table 2 contains means, standard deviations, confidence intervals, and estimates of internal consistency, skewness, and kurtosis for the both the complete sample and the final sample. Distributions were not substantially skewed ($< |2.22|$) or kurtotic ($< |4.21|$). Table 3 contains intercorrelations for Time 1 for both the complete sample and the final sample. For the complete sample at Time 1, knowledge was significantly correlated with POF and these were many meaningful correlations. Notably, friendship and IOS were correlated at r = .81 for the complete sample at Time 1. No significant correlations were found for the final sample at Time 1, though there were some meaningful correlations (i.e., $r \geq .30$). Table 4 contains correlations for the final sample between Time 1 and Time 2. Friendship and knowledge were significantly correlated. Although the only significant correlation was between friendship and POF, meaningful correlations were also found between IOS and friendship, between IOS and prejudice, and between anxiety and knowledge.

Effect of Friendship Development on POF

A two-way repeated measures ANOVA was run to determine if group assignment affected the increases in POF between Time 1 and Time 2 (see Table 5). The results from the two-way repeated measures ANOVA indicated that group assignment did not have a significant effect on the relationship between POF at Time 1 and POF at Time 2. Thus, the hypothesis was not confirmed, and the experimental group did not experience more prejudice reduction than the control group. However, Time—independent of group assignment—was significantly associated with change in mean POF, with a substantial effect size (see Table 5).

Post-hoc analyses exploring the control and experimental conditions. Results from the two-way repeated measures ANOVA did indicate that POF changes over time, but not why

this change occurred. Thus, several post-hoc analyses were conducted. The only variables that were significantly correlated between Time 1 and Time 2 were friendship and POF (see Table 4 and Figure 1), indicating that the more friendship the partners developed, the more POF they reported. However, when considered in tandem with the results of the ANOVA, it is apparent that the experimental group did not develop stronger friendships than the control as hypothesized.

For this reason, the effect of project enjoyment on friendship was also examined. Results indicated that participants who reported that they enjoyed the project had statistically significantly more positive friendships with their partner than those who did not enjoy the project—regardless of their assignment to the control or experimental group ($t = 2.80$, $df = 44.41$, $p = 0.01$, $d = 1.198$; see Figure 2). Another *t*-test was run to see if enjoyment at Time 2 was significantly related to POF at Time 2. Results of the *t*-test indicated that participants who reported that they enjoyed the project had significantly more POF at Time 2 ($t = 3.24$, $df = 22.31$, $p = 0.004$, $d = 0.809$) than those who reported that they did not enjoy the project.

Mediation Effects on Outgroup Attitude at Time 2

The second hypothesis was that all four mediators (i.e., knowledge, anxiety, empathy, and IOS) would have an effect on the relationship between friendship at Time 2 and POF at Time 2, but that the affective mediators (i.e., anxiety, empathy, and IOS) would have greater effects than the cognitive mediators (Pettigrew & Tropp, 2006). In order to test this hypothesis, fold change (FC) was analyzed. FC is primarily used in biological sciences as an alternate way to examine effect size. FC measures how a variable changes between measurements. To interpret Table 6, refer to the test statistic, which measures the significance of the finding relative to the null expectation. Then examine the FC in the test statistic after altering the model. The magnitude of change in the test statistic indicates the influence of a particular model on the rejection of the null hypothesis. So, for example, if the test statistic yields a *p*-value of 0.000001, a change in the model yielding a p-value 0.000001 has had no effect on the significance of the finding. On the other hand, a change in the model yielding a p-value of 0.05 has indicated that the finding is no longer significant.

Results indicated that only one of the proposed mediators had any effect on the relationship between friendship at Time 2 and POF at Time 2, IOS. The effect of friendship on POF at Time 2 was statistically significant before and after adjusting for reported IOS (see Tale 6). The FC, which is a type of odds ratio, indicated that IOS mediated the relationship between friendship development and POF nearly 11-fold. The proportion of variance was also calculated, and IOS explained approximately 20% of the variance between friendship at Time 2 and POF at Time 2.

Discussion

The goal of this study was to examine the effectiveness of an E-contact friendship intervention between adolescent outgroups in two racially/ethnically and socioeconomically different public high schools. Two hypotheses were proposed. Firstly, that students who were in the experimental E-contact condition would experience more feelings of friendship with their partner and more POF than those in the control condition. Analyses indicated that group assignment did not have a significant effect on the relationship between POF at Time 1 and POF at Time 2. Thus, the hypothesis was not confirmed, and the experimental group did not experience more prejudice reduction than the control group. However, Time—independent of group assignment—was significantly associated with change in mean POF (see Table 5). In post-hoc analyses, project enjoyment was found to be significantly related to friendship

development over time regardless of group assignment. Further, results indicated that participants who reported that they enjoyed the project had significantly more POF at Time 2 than those who reported that they did not enjoy the project.

Secondly, all four mediators (i.e., anxiety, knowledge about the outgroup, empathy and perspective taking, and IOS) were hypothesized to have an effect on the relationship between friendship at Time 2 and POF at Time 2, and the affective mediators were hypothesized to have greater effects on the relationship than the cognitive mediators (Pettigrew & Tropp, 2006). Results indicated that only one of the proposed mediators, IOS, had any effect on the relationship between friendship at Time 2 and POF at Time 2.

Findings in the Context of Previous Literature

Results of the first hypothesis did not align with the previous literature. If this study had followed previous trends, the experimental group should have experienced heightened friendship following the FF procedure (Page-Gould et al., 2009) and thus should have experienced greater change in their POF between Time 1 and Time 2 following the intergroup contact situation (Pettigrew & Tropp, 2006; Turner et al., 2007). However, this study was not effective in the manipulation of the control and the experimental groups. Although the FF procedure occurred only for the control group, the FF procedure was not reliably implemented within those in the control condition due to environmental constraints—as described below.

The findings in this study did align with some previous studies because POF did positively change over time (Pettigrew & Tropp, 2006) following intergroup contact. The DIEC study (White & Abu-Rayya, 2012) is most similar to the current study in population and methodology, and the researchers in that study found a reduction in bias over time. In the current study, POF were increased over time—which is theoretically consistent with the DIEC finding.

Results of the second hypothesis were somewhat consistent with previous literature. Pettigrew and Tropp (2008) found that affective mediators had more power than cognitive mediators. In the current study, IOS was found to be the only meaningful mediator between friendship at Time 2 and POF at Time 2. It is possible that IOS had a mediational effect because the FF procedure is meant to create close and intimate friendships, and for this study, friendship was operationalized as interpersonal intimacy (Davies et al., 2011). IOS occurs when a person develops a friendship and, through their close connection, that person begins to integrate the new friend into their sense of self (Wright et al., 1997). Thus, it would then make sense that the only significant mediator would be IOS because the FF procedure simulates interpersonal intimacy.

However, this study diverged from previous findings because anxiety was not found to mediate the relationship between friendship at Time 2 and POF at Time 2. This finding was unexpected because anxiety is generally the strongest mediator in prejudice reduction research (Pettigrew & Tropp, 2008). Two things could have occurred to lessen the mediational effect of anxiety. Firstly, the measure of anxiety may not have worked for the purposes of this study, which is supported by the low internal consistency for the anxiety items in the preliminary analyses. Secondly, anxiety could have been a less significant factor because students did not have face-to-face interactions. The amount of intimacy involved in a text-chat session is likely less than a video-chat session, and students would have had more time to decide how to respond to their partner. Thus, less anxiety would be involved in the partners' relationships in the first place.

Failure to Reliably Produce Friendship

There are many possible reasons that the experimental group did not report more positive

change in POF at Time 2 than the control group: (a) something occurred during the FF procedure that lessened its effectiveness to enhance friendships, or (b) students from the control group were able to achieve friendship similarly to students in the experimental group without the experimental manipulation. As discussed in the results, neither the control nor the experimental group experienced a statistically significant increase in POF between Time 1 and Time 2. However, Time—independent of group assignment—was significantly associated with change in mean POF ($p = 0.0038$), and participants who reported that they enjoyed the project had significantly more POF at Time 2 than those who reported that they did not enjoy the project.

The FF procedure implemented with the experimental group did not successfully enhance friendship development as anticipated. To examine this relationship, researchers examined which participants from the control and experimental group reported that they made a friend during the project. Approximately half of the experimental group (53%) reported that they did not make a friend and did not enjoy the project, and about half of the control group (47%) did make a friend and did enjoy the project. For the students in the experimental group who did not enjoy the project, most of their complaints had to do with connectivity and technology problems. Thus, perhaps it is not that the FF procedure was ineffective, but was that these participant pairs did not have the time to complete the procedure or found the process frustrating. For the students in the control group who did like the project, they commented on the fun nature of getting to know someone new and getting to work with students from a different school. For the students in the control group who did not like the project, they commented on connectivity issues and issues with interpersonal disputes. Thus, it seems that technological access to a partner rather than group assignment influenced the intervention's capacity to produce friendship.

Limitations

Although this experiment did not yield the hypothesized results, analyses supported the premise that intergroup contact is related to increases in POF. However, this project had many limitations which likely influenced the overall results of study. Most of the limitations stemmed from the unanticipated challenges of working in public schools. After accounting for the challenges, three primary limitations could have affected study's success: (a) the sample was small and not equitably representative of both WHI and MLI students; (b) the design of the experiment failed to create a setting of optimal intergroup contact, and (c) the manipulation of friendship using the FF procedure in the experimental group was not successful.

Unanticipated challenges. Many problems occurred during the implementation of this study. One major unanticipated difficulty was unpredictable access to technology and Wi-Fi connectivity within public high schools. The project was initially projected to span a period of two weeks and to include at least five video-conferencing interactions between partners. In the first week of attempted connection the groups were unable to use video software due to outdated system technology, faulty Wi-Fi connections, and school-based firewalls preventing downloading (for virus and security reasons). Thus, the first two weeks of this project were spent troubleshooting technological issues in class when the collaborative activity was supposed to be happening. The students did not respond favorably to the delay as demonstrated by teacher-reported in-class complaints regarding the project and possibly by study attrition at Time 2.

Most, but not all, of the technological issues that occurred were on the part of the MLI school. First, the MLI school had difficulty obtaining access to their mobile computer carts because the MLI school did not have enough carts on campus for Mr. M to have daily access. The MLI teacher had to share his computer resources with other teachers more than the WHI

teacher. Second, the students from the MLI school had less experience using their school-based email accounts because the MLI school used fewer web platforms for assignments, likely due to the shortage of computer availability. The WHI school had problems with their internet blockers. They had many more protections built into their email accounts, and for a time they were not able to receive outside emails to their school-based accounts.

Finally, both schools experienced problems with not having strong enough Wi-Fi connections to support 10-15 video conferences simultaneously along with all other campus Wi-Fi needs. After the troubleshooting, both schools discovered that the only software they could both use was a chat software. So, from the start of the project there were issues of connection, and the students had negative experiences associated with trying to complete the project. Students also reported that they were disappointed that they could not do video-conferencing and had to do text-only conferencing. By the time the technical difficulties were solved, the project timeline had spread from two weeks to six weeks, and students were reportedly becoming irritated with the delay.

Sample size. The smaller sample size limited the practical effect that could be detected in the data, and thus limited the researcher's ability to fully understand the effects of the study. Although 71 participants originally consented to study participation (approximately 55% of the potential participant pool), only 48 participants completed the surveys from both Time 1 and Time 2. Attrition between Time 1 and Time 2 amongst the WHI students was only seven percent. However, attrition between Time 1 and Time 2 amongst the MLI students was 77%. Attrition greatly reduced the sample size and thus the potential power of the findings. There are many reasons that this study might have suffered such attrition.

Firstly, the researcher's relationship with the WHI teacher was very different from the relationship with the MLI teacher. The primary researcher and the WHI teacher had a long-standing friendship spanning more than 10 years, which could have created an imbalance of investment between the WHI and MLI teacher. Conceptually, the WHI teacher was friend assisting a friend to conduct a study, and the MLI teacher was a teacher assisting a stranger to conduct a study. The personal imbalance between the participating teachers could have changed their level of investment and commitment to the project and to data collection.

Secondly, the extent of technical difficulties could have dissuaded the students from wanting to complete the study. The study extended much past the initial timeline, and students reported to their teachers that they were tired of working on the same project for so long. Additionally, due to many technical difficulties and class-time constraints, some students did not have access to the resources (i.e., computer connected to Wi-Fi) or the in-class time to complete the surveys. Although technical difficulties affected data collection, the difficulties also affected the teachers' ability to maintain a setting of optimal intergroup contact.

As stated, most of the attrition between Time 1 and Time 2 was from the MLI students. The loss of this student population greatly affects the generalizability of findings to both MLI and WHI students. Following attrition, this study was less about two populations than it was about one population. In examining the Time 1 complete data and Time 1 final data, it is clear that the MLI students contributed meaningfully to the relationships amongst variables. So it is likely that the loss of these students at Time 2 affected the findings overall. More care should be used in the future when collecting data from MLI populations, and future studies could benefit from a similar study that focuses solely on MLI populations to better understand potential differences and similarities between groups.

Lack of optimal intergroup contact. After solving the technical difficulties, it became

clear that the study no longer facilitated a setting of optimal intergroup contact. Only two of the four tenets of optimal intergroup contact were met with fidelity: (a) cooperation and (b) working towards a common goal. The other two of the four tenets of intergroup contact, that is, (a) equal group status and (b) support of authorities, laws, or customs, were not met. Equal status was only achieved in some areas. During the project itself, student status was equal because both partners had the same responsibilities and duties and received the same grade. However, status was unequal in the access and ability to use technology. Because the MLI school had the majority of the technological problems, the WHI school was often waiting for them to connect. This imbalance likely confounded the premise of equal status.

Lastly, there was likely an imbalance in the support of authorities, laws, and customs. In reviewing how the primary researcher was introduced to the students by the teachers, it is probable that the previous friendship between Mr. W and the primary researcher confounded the findings, especially in the area of data collection and attrition. At the WHI school, the primary researcher was presented as the teacher's long-standing friend of over 10 years. In addition, the WHI teacher often reminded his students of the friendship and used this fact to motivate them to do their best. At the MLI school, the primary researcher was introduced as a neutral party who presented an opportunity for research. The MLI teacher also reminded his students that they needed to do their best, but their level of motivation could have been affected by the lack of the teacher's personal investment in the project. In their meta-analysis, Pettigrew and Tropp (2006) found that the support of authorities, laws, and customs was the most important variable in optimal intergroup contact, and this study did not meet this requirement.

Future Directions

Researchers need to explore minority samples in future examinations of E-Contact. Although it was the original intent of this study to do so, it was not successful. From comparing the preliminary data between the complete sample and the final sample, it is clear that the addition of minority voices in this study would yield different results. Most of the minority responses were not included in the final analyses due to attrition of the minority sample, and the reliability of scores on some subscales decreased.

Researchers interested in this area should take great care when assessing the technological abilities and resources at school sites. It would be ideal for researchers to be able to provide the collaboration hardware and software to the schools that are participating. By controlling the internet connection, the hardware, and the software, many technical and relational issues could be avoided and study designs could have more fidelity. Additionally, the use of the same technology, hardware, and software, would save time and promote equity between schools that might otherwise have different access to resources.

It would also be valuable to engage in studying more long-term collaborations in non-arts classrooms. A longer collaboration would allow for more organic friendship development as well as more time to troubleshoot any difficulties with scheduling and technology. Although arts classrooms are desirable because they do not take away from academic instructional minutes, they are also often the last priority for students and teachers in a school day. Using an academic class, such as English, could be more effective because all high school students are required to take English courses all four years. If schools are interested in implementing more permanent intergroup collaborations into their curriculum, they can guarantee access to all students by placing the collaborations in required classes. Additionally, collaborations in English classrooms lend themselves better to online collaborations because there are many more software programs available for collaborative writing online.

Finally, the results of this study have contributed to the E-contact literature. Lemmer and Wagner (2015) asserted that E-contact may not be as effective as other kinds of indirect contact. Results from this study did not indicate as great a utility in using E-contact in schools as previous school-based studies (e.g., White et al., 2015). However, this study does help researchers to better understand the nuances of facilitating online interactions in public schools. There could great potential in this type of intervention to reduce prejudice, increase school equity, and unite youth in our public-school system nationwide. I hope that this study can inspire other researchers, teachers, and administrators to explore the benefits of E-contact and intergroup friendships in schools.

References

Aboud, F. E., Tredoux, C., Tropp, L. R., Brown, C. S., Niens, U., & Noor, N. M. (2012). Interventions to reduce prejudice and enhance inclusion and respect for ethnic differences in early childhood: A systematic review. *Developmental Review, 32,* 307–336. doi:10.1016/j.dr.2012.05.001

Adderley, C., Kennedy, M., & Berz, W. (2003). "A home away from home": The world of the high school music classroom. *Journal of Research in Music Education, 51,* 190–205. doi:10.2307/3345373

Allport, G. W. (1954) *The nature of prejudice.* New York, NY: Basic Books.

Alo, T. (2010). The effect of visual arts education on at-risk students' critical thinking skills and the Maryland English II high school assessment. *Dissertation Abstracts International Section A: Humanities and Social Sciences*, *70*(12-A), 4552.

American Psychological Association, Presidential Task Force on Preventing Discrimination and Promoting Diversity. (2012). *Dual pathways to a better America: Preventing discrimination and promoting diversity.* Washington, DC: American Psychological Association.

Aron, A., Aron, E. N., & Smollan, D. (1992). Inclusion of other in the self scale and the structure of interpersonal closeness. *Journal of Personality and Social Psychology*, *63,* 596–612. doi:10.1037/0022-3514.63.4.596

Aron, A., Melinat, E., Aron, E. N., Vallone, R. D., & Bator, R. J. (1997). The experimental generation of interpersonal closeness: A procedure and some preliminary findings. *Personality and Social Psychology Bulletin*, *23,* 363–377. doi:10.1177/0146167297234003

Bandura, A. (1977). *Social learning theory.* New York, NY: General Learning Press.

Bandura, A. (1989). Human agency in social cognitive theory. *American Psychologist, 44,* 1175–1184. doi:10.1037/0003-066x.44.9.1175

Barrett, M. S., & Smigiel, H. M. (2007). Children's perspectives of participation in music youth arts settings: Meaning, value and participation. *Research Studies in Music Education, 2,* 39–50. doi:10.1177/1321103X070280010204

Beeghley, L. (2016). *The structure of social stratification in the United States.* New York, NY: Routledge.

Connolly, M. K., Quin, E., & Redding, E. (2011). Dance 4 your life: Exploring the health and well-being implications of a contemporary dance intervention for female adolescents. *Research in Dance Education*, *12,* 53–66. doi:10.1080/14647893.2011.561306

Costa-Giomi, E. (2004). Effects of three years of piano instruction on children's academic achievement, school performance and self-esteem. *Psychology of Music, 32,* 139–152. doi:10.1177/0305735604041491

Crisp, R. J., & Turner, R. N. (2009). Can imagined interactions produce positive perceptions?: Reducing prejudice through simulated social contact. *American Psychologist, 64,* 231–240. doi:10.1037/a0014718

Dadds, M. R., Bovbjerg, D. H., Redd, W. H., & Cutmore, T. R. (1997). Imagery in human classical conditioning. *Psychological Bulletin, 122,* 89–103. doi:10.1037/0033-2909.122.1.89

Davies, K., Tropp, L. R., Aron, A., Pettigrew, T. F., & Wright, S. C. (2011). Cross-group friendships and intergroup attitudes: A meta-analytic review. *Personality and Social Psychology Review, 15,* 332–351. doi:10.1177/1088868311411103

Dillenbourg, P. (1999). What do you mean by "collaborative learning"? In P. Dillenbourg (Ed.), *Collaborative learning: Cognitive and computational approaches* (pp. 1–16). Amsterdam, NL: Pergamon, Elsevier Science.

Dovidio, J. F., Gaertner, S. L., & Kawakami, K. (2003). Intergroup contact: The past, present, and the future. *Group Processes & Intergroup Relations, 6,* 5–21. doi:10.1177/1368430203006001009

Dovidio, J. F., Love, A., Schellhaas, F. M., & Hewstone, M. (2017). Reducing intergroup bias through intergroup contact: Twenty years of progress and future directions. *Group Processes & Intergroup Relations, 20,* 606–620. doi:10.1177/1368430217712052

Frankerberg, E., Lee, C., & Orfield, G. (2003). *A multiracial society with segregated schools: Are we losing the dream?* Los Angeles, CA: UCL; The Civil Rights Project/Proyecto Derechos Civiles. Retrieved from https://escholarship.org/uc/item/3rh7w18g

Gaertner, S. L., Dovidio, J. F., Anastasio, P. A., Bachman, B. A., & Rust, M. C. (1993). The common ingroup identity model: Recategorization and the reduction of intergroup bias. *European Review of Social Psychology, 4,* 1–26. doi:10.1080/14792779343000004

Gaertner, S. L., Dovidio, J. F., Banker, B. S., Houlette, M., Johnson, K. M., & McGlynn, E. A. (2000). Reducing intergroup conflict: From superordinate goals to decategorization, recategorization, and mutual differentiation. *Group Dynamics: Theory, Research, and Practice, 4,* 98–114. doi:10.1037//1089-2699.4.1.98

George, D., & Mallery, M. (2010). SPSS for Windows Step by Step: A Simple Guide and Reference, 17.0 update (10a ed.) Boston: Pearson. Skewness citation. -2 to 2.

Gómez, Á., & Huici, C. (2008). Vicarious intergroup contact and the role of authorities in prejudice reduction. *The Spanish Journal of Psychology, 11,* 103–114. doi:10.1017/s1138741600004169

Gonzalez, L. L. (2008). *Why can't we all be friends? Do friendships influence a person's perception of racial teasing* (Doctoral dissertation)? Retrieved from ProQuest Dissertations & Theses A&I: Social Sciences. (AAT 3370705)

Gross, T. & Hannah-Jones, N. (2017, January 6) How the systemic segregation of schools is maintained by individual choices. *Fresh Air*. Podcast retrieved from http://npr.org

Hancock, G. R., Mueller, R. O., & Stapleton, L. M. (2010). *The reviewer's guide to quantitative methods in the social sciences*. New York, NY: Routledge.

Harvey, S. (1989). Creative arts therapies in the classroom: A study of cognitive, emotional, and motivational changes. *American Journal of Dance Therapy, 11,* 85–100. doi:10.1007/BF00843773

Hoter, E., Shonfeld, M., & Ganayim, A. (2009). Information and communication technology (ICT) in the service of multiculturalism. *The International Review of Research in Open and Distributed Learning, 10,* 1–15. doi:10.19173/irrodl.v10i2.601

Hunter, L., & Elias, M. J. (2000). Interracial friendships, multicultural sensitivity, and social competence: How are they related? *Journal of Applied Developmental Psychology, 20,* 551–573. doi:10.1016/s0193-3973(99)00028-3

Husnu, S., & Crisp, R. J. (2015). Perspective-taking mediates the imagined contact effect. *International Journal of Intercultural Relations, 44,* 29–34. doi:10.1016/j.ijintrel.2014.11.005

Islam, M. R., & Hewstone, M. (1993). Dimensions of contact as predictors of intergroup anxiety, perceived out-group variability, and out-group attitude: An integrative model. *Personality and Social Psychology Bulletin, 19,* 700–710. doi:10.1177/0146167293196005

Kawabata, Y., & Crick, N. R. (2011). The significance of cross-racial/ethnic friendships: Associations with peer victimization, peer support, sociometric status, and classroom diversity. *Developmental Psychology, 47,* 1763–1775. doi:10.1037/a0025399

Levin, S., Van Laar, C., & Sidanius, J. (2003). The effects of ingroup and outgroup friendships on ethnic attitudes in college: A longitudinal study. *Group Processes & Intergroup Relations, 6,* 76–92. doi:10.1177/1368430203006001013

Liebkind, K., & McAlister, A. L. (1999). Extended contact through peer modeling to promote tolerance in Finland. *European Journal of Social Psychology, 29,* 765–780. doi:10.1002/(sici)1099-0992(199908/09)29:5/6<765::aid-ejsp958>3.0.co;2-j

Mazziotta, A., Mummendey, A., & Wright, S. C. (2011). Vicarious intergroup contact effects: Applying social-cognitive theory to intergroup contact research. *Group Processes & Intergroup Relations, 14,* 255–274. doi:10.1177/1368430210390533

Mehrabian, A. (1997). Relations among personality scales of aggression, violence, and empathy: Validation evidence bearing on the risk of eruptive scale. *Aggressive Behavior, 23,* 433–445. doi:10.1002/(SICI)1098-2337(1997)23:6<433::AID-AB3>3.0.CO;2-H

Mendelson, M. J., & Aboud, F. (2012). McGill Friendship Questionnaire—Respondent's affection (MFQ-RA). Galway, Ireland: *Measurement Instrument Database for the Social Science*.

Microsoft Office Excel [Computer software]. (2016). Retrieved from http://microsoft.com/

Miles, E., & Crisp, R. J. (2014). A meta-analytic test of the imagined contact hypothesis. *Group Processes & Intergroup Relations, 17,* 3–26. doi:10.1177/1368430213510573

National Foundation for Educational Research in England and Wales. (2000). *Arts education in secondary schools: Effects and effectiveness.* Slough, Berkshire: National Foundation for Educational Research.

No Child Left Behind Act of 2001, P.L. 107-110, 20 U.S.C. § 5551 (2002)

Orfield, G., Ee, J., Frankenberg, E., & Siegel-Hawley, G. (2016). *Brown at 62: School segregation by race, poverty and state.* Los Angeles, CA: UCLA; The Civil Rights Project/Proyecto Derechos Civiles. Retrieved from https://eric.ed.gov/?id=ED565900

Page-Gould, E., Mendoza-Denton, R., Alegre, J. M., & Siy, J. O. (2010). Understanding the impact of cross-group friendship on interactions with novel outgroup members. *Journal of Personality and Social Psychology, 98,* 775–793. doi:10.1037/a0017880

Page-Gould, E., Mendoza-Denton, R., & Mendes, W. B. (2014). Stress and coping in interracial contexts: The influence of race-based rejection sensitivity and cross-group friendship in daily experiences of health. *Journal of Social Issues, 70,* 256–278. doi:10.1111/josi.12059

Page-Gould, E., Mendoza-Denton, R., & Tropp, L. R. (2008). With a little help from my cross-group friend: Reducing anxiety in intergroup contexts through cross-group friendship. *Journal of Personality and Social Psychology, 95,* 1080–1094. doi:10.1037/0022-3514.95.5.1080

Paolini, S., Hewstone, M., Cairns, E., & Voci, A. (2004). Effects of direct and indirect cross-group friendships on judgments of Catholics and Protestants in Northern Ireland: The mediating role of an anxiety reduction mechanism. *Personality and Social Psychology Bulletin, 30,* 770–786. doi:10.1177/0146167203262848

Pettigrew, T. F. (1997). Generalized intergroup contact effects on prejudice. *Personality and Social Psychology Bulletin, 23,* 173–185. doi:10.1177/0146167297232006

Pettigrew, T. F. (1998). Intergroup contact theory. *Annual Review of Psychology, 49,* 65–85.

doi:10.1146/annurev.psych.49.1.65
Pettigrew, T. F. (2008). Future directions for intergroup contact theory and research. *International Journal of Intercultural Relations, 32,* 187–199. doi:10.1016/j.ijintrel.2007.12.002
Pettigrew, T. F., & Tropp, L. R. (2006). A meta-analytic test of intergroup contact theory. *Journal of Personality and Social Psychology, 90,* 751–783. doi:10.1037/0022-3514.90.5.751
Pettigrew, T. F., & Tropp, L. R. (2008). How does intergroup contact reduce prejudice? Meta-analytic tests of three mediators. *European Journal of Social Psychology, 38,* 922–934. doi:10.1002/ejsp.504
Rapp-Paglicci, L. A., Ersing, R., & Rowe, W. (2007). The effects of cultural arts programs on at-risk youth: Are there more than anecdotes and promises?. *Journal of Social Service Research,* 33, 51–56. doi:10.1300/J079v33n02_05
Roschelle, J., & Teasley, S. (1995). The construction of shared knowledge in collaborative problem solving. In C. O'Malley (Ed.), *Computer-supported collaborative learning* (pp.69–197). Berlin, Germany: Springer Verlag.
Sanders, M. (2004). Urban odyssey: Theatre of the oppressed and talented minority youth. *Journal for the Education of the Gifted, 28,* 218–241. doi:1177/016235320402800205
Sherif, M. (1936). *The psychology of social norms.* Oxford, England: Harper.
Sherif, M., Harvey, O. J., White, B. J., Hood, W. R., & Sherif, C. W. (1961). *Intergroup cooperation and competition: The robbers cave experiment.* Norman, OK: The University Book Exchange.
Smith, R. L. (2011). *Youths' cross-ethnic friendships and associations with socioemotional adjustment* (Unpublished doctoral dissertation). University of Missouri, Columbia, MO.
Stahl, G., Koschmann, T., & Suthers, D. (2006). Computer-supported collaborative learning: A historical perspective. In R. K. Sawyer (Ed.), *Cambridge handbook of the learning sciences* (pp. 409–426). Cambridge, UK: Cambridge University Press.
Stephan, W. G., & Stephan, C. W. (1985). Intergroup anxiety. *Journal of Social Issues, 41,* 157–175. doi:10.1111/j.1540-4560.1985.tb01134.x
Stephan, W. G., & Stephan, C. W. (2000). An integrated threat theory of prejudice. In S. Oskamp (Ed.), *Reducing prejudice and discrimination* (pp. 230–245). Mahwah, NJ: Erlbaum.
Street, P. (2005). Still and increasingly separate. In K. J. Saltman & R. Scapp (Eds.), *Segregated schools: Educational apartheid in post-civil rights America* (pp. 11–48). New York, NY: Routledge.
Turner, R. N., Hewstone, M., Voci, A., Paolini, S., & Christ, O. (2007). Reducing prejudice via direct and extended cross-group friendship. *European Review of Social Psychology, 18,* 212–255. doi:10.1080/10463280701680297
Turner, R. N., Hewstone, M., Voci, A., & Vonofakou, C. (2008). A test of the extended intergroup contact hypothesis: The mediating role of intergroup anxiety, perceived ingroup and outgroup norms, and inclusion of the outgroup in the self. *Journal of Personality and Social Psychology, 95,* 843–86. doi:10.1037/a0011434
U.S. Census Bureau. (2010). *Table 15-3. In Geographical mobility: 2008 to 2009 detailed tables.* Washington, DC: U.S. Census Bureau. Retrieved from http://www.census.gov/population/www/socdemo/migrate/cps2009.html
U.S. Department of Education, Office of Planning, Evaluation and Policy Development, Policy and Program Studies Service. (2016). *The state of racial diversity in the educator*

workforce. Retrieved from https://www2.ed.gov/rschstat/eval/highered/racial-diversity/state-racial-diversity-workforce.pdf

U.S. Census Bureau. (2009). *United states population projections: 2000 to 2050.* Retrieved from https://www.census.gov/population/projections/files/analytical-document09.pdf

Vezzali, L., Stathi, S., Crisp, R. J., & Capozza, D. (2015). Comparing direct and imagined intergroup contact among children: Effects on outgroup stereotypes and helping intentions. *International Journal of Intercultural Relations, 49,* 46–53. doi:10.1016/j.ijintrel.2015.06.009

Voci, A., & Hewstone, M. (2003). Intergroup contact and prejudice toward immigrants in Italy: The mediational role of anxiety and the moderational role of group salience. *Group Processes & Intergroup Relations, 6,* 37–54. doi:10.1177/1368430203006001011

Vossen, H. G. M., Piotrowskis, J. T., Valeknburg, P. M. (2015). Development and validation of the Adolescent Measure of Empathy and Sympathy (AMES). *Personality and Individual Differences, 74,* 66–71. doi:10.1016/j.paid.2014.09.040

Warren, C. J. E. (1954). Brown v. Board of Education. *United States Reports, 347*(1954), 483.

White, F. A., & Abu-Rayya, H. M. (2012). A dual identity-electronic contact (DIEC) experiment promoting short-and long-term intergroup harmony. *Journal of Experimental Social Psychology, 48,* 597–608. doi:10.1016/j.jesp.2012.01.007

White, F. A., Abu-Rayya, H. M., & Weitzel, C. (2014). Achieving twelve-months of intergroup bias reduction: The dual identity-electronic contact (DIEC) experiment. *International Journal of Intercultural Relations, 38,* 158–163. doi:10.1016/j.ijintrel.2013.08.002

White, F. A., Harvey, L. J., & Abu-Rayya, H. M. (2015). Improving intergroup relations in the internet age: A critical review. *Review of General Psychology, 19,* 129–139. doi:10.1037/gpr0000036

Winner, E., & Cooper, M. (2000). Mute those claims: No evidence (yet) for a causal link between arts study and academic achievement. *Journal of Aesthetic Education, 34,* 11–75. doi:10.2307/3333637

Winner, E., Goldstein, T. R., & Vincent-Lancrin, S. (2013) *Art for art's sake? The impact of arts education*. Paris, France: OECD Publishing.

Winner, E., & Hetland, L. (2009). Art for our sake: School arts classes matter more than ever—but not for the reasons you think. *Colleagues, 4*(2). Retrieved from https://scholarworks.gvsu.edu

Wright, S. C., Aron, A., McLaughlin-Volpe, T., & Ropp, S. A. (1997). The extended contact effect: Knowledge of cross-group friendships and prejudice. *Journal of Personality and Social Psychology, 73,* 73–90. doi:10.1037/0022-3514.73.1.73

Žeželj, I. L., Ioannou, M., Franc, R., Psaltis, C., & Martinovic, B. (2017). The role of inter-ethnic online friendships in prejudice reduction in post-conflict societies: Evidence from Serbia, Croatia and Cyprus. *Computers in Human Behavior, 76,* 386–395. doi:10.1016/j.chb.2017.07.04

Table 1
Positive Outcomes of Art Education in Secondary Schools in England and Wales

1. Heighten sense of enjoyment, excitement, and fullfilment and theraputic relsease of tensions
2. Increase in the knowledge and skills assosiated with certain artforms
3. Enhanced knowledge of social and cultural issues
4. Development of creativty and thinking skills
5. Enrichment of communication and expressive skills
6. Advances in social and personal development
7. Effects that transfor to other contexts, such as learning in other subjects, the world of work and cultural activities outside of and beyond school
8. Institutional effects of the culuture of the school
9. Effects on local community (including parents and governors)
10. Art itself of as an outcome

Note. Taken from the National Foundation for Educational Research in England and Wales (2000).

Table 2

Descriptive Statistics for Time 1 Complete Sample and Final Sample, and Time 2 Final Sample

Variable	*M*	*SD*	[95% CI]	α	*kurtosis*	*skewness*
Time 1, complete sample (*n* = 71)						
POF	6.20	2.06	[5.58, 6.81]	--	-0.20	-0.63
Knowledge	66.69	13.67	[62.72, 70.66]	0.42	-1.36	0.05
Anxiety	72.54	37.98	[64.63, 80.45]	0.80	-1.08	-0.45
Empathy	45.00	5.83	[43.31,46.69]	0.87	-0.12	0.17
IOS	1.97	0.92	[1.77, 2.16]	--	4.18	1.73
Friendship	22.56	6.19	[21.04, 24.08]	0.71	2.25	-1.79
Time 1, final sample (*n* = 48)						
POF	6.82	1.53	[6.29,7.36]	--	-0.15	-0.21
Knowledge	66.69	13.67	[62.72, 70.66]	0.18	-1.36	-0.05
Anxiety	93.73	21.42	[87.51,99.95]	0.81	-0.77	-0.40
Empathy	45.00	5.83	[43.31, 46.69]	0.75	-0.12	0.17
IOS	2.25	0.73	[2.04, 2.46]	--	4.21	2.17
Friendship	22.81	5.68	[21.14, 24.48]	0.63	3.93	-2.22
Time 2, final sample (*n* = 48)						
POF	6.13	2.06	[5.58, 6.81]	--	-0.20	-0.63
Knowledge	64.35	13.67	[62.72, 70.66]	0.45	-1.36	0.05
Anxiety	59.92	37.98	[64.63, 80.45]	0.61	-1.08	-0.45
Empathy	--	--	--	--	--	--
IOS	3.48	0.92	[1.77, 2.16]	--	4.18	1.73
Friendship	52.54	6.19	[21.04, 24.08]	0.87	2.25	-1.79

Note. POF = positive outgroup feeling ; IOS = inclusion of other in self .

Table 3
Correlations for Time 1 by Complete Sample and Final Sample

	prejudice	IOS	knowledge	friendship	anxiety	
Complete Sample						
POF	——					
IOS	-0.12	——				
Knowledge	0.51*	0.51	——			*n* = 71
Friendship	0.15	0.81	0.51	——		
Anxiety	0.45	0.49	0.50	0.53	——	
Final Sample						
POF	——					
IOS	0.00	——				
Knowledge	0.26	0.33	——			
Friendship	0.23	0.34	0.16	——		*n* = 48
Anxiety	0.23	0.00	-0.00	0.30	——	

Note. POF = positive outgroup feeling ; IOS = inclusion of other in self .
*$p < 0.001$.

Table 4
Correlations Between Time 1 and Time 2—Final Sample

	prejudice	IOS	knowledge	friendship	anxiety
POF	——				
IOS	0.40	——			
Knowledge	-0.10	-0.20	——		
Friendship	0.70*	0.46	-0.18	——	
Anxiety	0.23	-0.03	0.77	0.07	——

Note. POF = positive outgroup feeling ; IOS = inclusion of other in self .
*$p < 0.001$.

Table 5
Positive Outgroup Feeling Over Time by Group

	df	Sum Sq.	η^2	Mean Sq.	*F*	*p*
Time	1	38.06	0.7192	38.06	9.20	0.0038*
Group	1	10.84	0.2048	10.84	2.26	0.1117
Group x Time	1	4.02	0.0760	4.02	0.97	0.3287

Note. Sum Sq. = sum of squares ; Mean Sq. = mean square.
*$p < 0.05$.

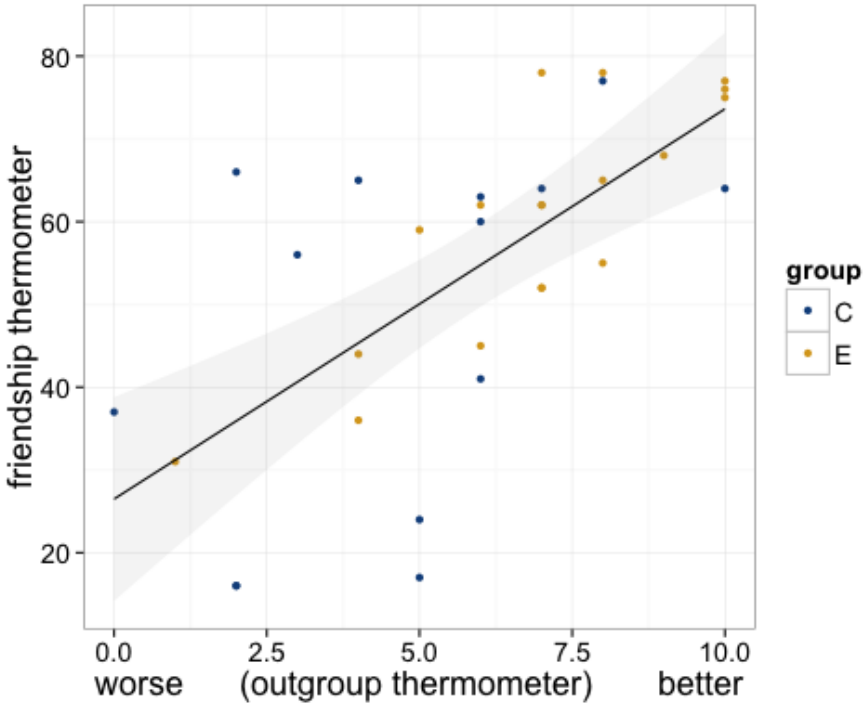
Table 6

Mediational Effect of Anxiety, Knowledge, Empathy, and IOS on the Relationship Between Friendship at Time 2 and POF at Time 2

Mediator	Whole Sample				
	p-b	*p-a*	*FC*	R^2-*b*	R^2-*%*
Anxiety	0.00002	0.00002	1.12994	0.4597	0.0095
Knowledge of Other	0.00002	0.00001	0.51808	0.4864	-0.0481
Empathy	0.00002	0.00003	1.79661	0.4434	0.0446
Inclusion of Other in Self	*0.00002*	*0.00019*	*10.96045*	*0.3750*	*0.1919*

Note. N = 48. Significant mediations are shown in italics. *p-b* = p-value before adjustment; *p-a* = p-value after adjustment; FC = fold change; R^2-*b* = R^2 before adjustment; R^2-*%* = percent of the original R^2 after adjustment.

Figure 1. Positive correlation between friendship and postive outgroup feelings. Reported



friendship is represented on the y-axis and outgroup feeling is represented on the x-axis. C = control; E = experimental.

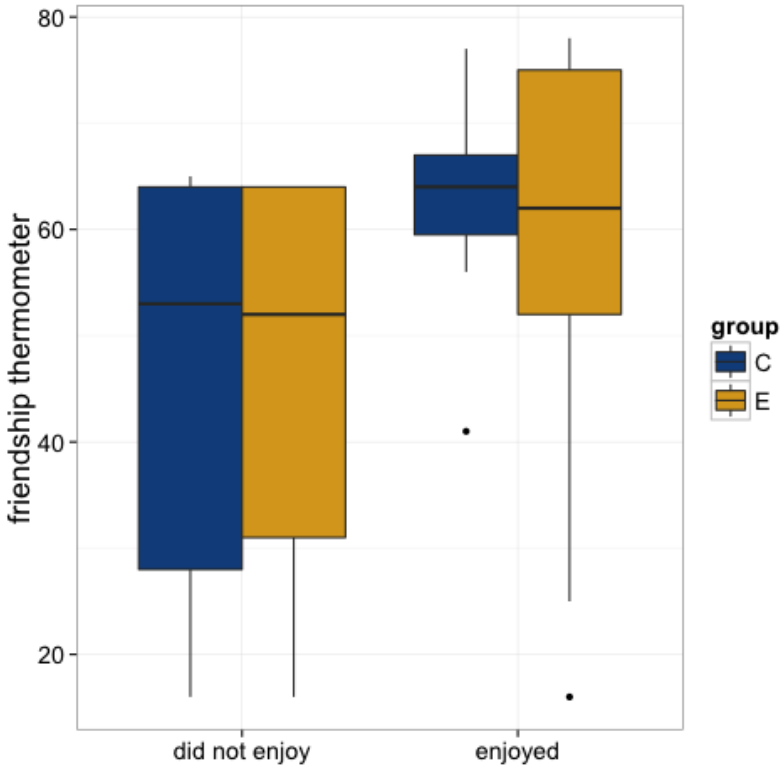


Figure 2. Comparison of friendship based on project enjoyment. Friendship is represented on the y-axis and enjoyment is represented on the x-axis. Students who reported that they enjoyed the project also reported more friendship development at Time 2. C = control; E = experimental.