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Abstract

Building personal relationships with out-group members is an important catalyst of positive intergroup attitudes. In a 2×2 experimental design, Caucasian and African American individuals and couples were randomly assigned to interact in either cross-race or same-race individual dyads and couple pairs. Participants completed pretest measures of race attitudes and engaged in a high self-disclosure closeness-induction task with an in-group or out-group race member in pairs of couples or individuals and completed measures of self-disclosure and intergroup attitudes. These results suggest that intergroup contact in the presence of romantic partners may be particularly effective for improving intergroup attitudes. We explore the implications of these results for developing compassionate love toward out-groups.

Keywords

Attitudes, closeness, couples, friendship, intergroup relations, prejudice, romantic relationships

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A wealth of social psychological research and theory has focused on how individuals represent themselves in relation to other groups and individuals (e.g., Aron, Aron, & Norman, 2004; Brewer & Gardner, 1996; Markus & Kitayama, 1991; Tajfel & Turner, 1986). This research is importantly related to intergroup relations, as contact with out-group members is both interpersonal and intergroup in nature. For instance, holding an identity or characteristic in common with an out-group member leads to more positive attitudes toward out-group members (Gaertner & Dovidio, 2000, 2009, 2012). By recategorizing out-group members as being part of the in-group, the favorable bias individuals have toward in-group members can then be applied to the out-group. One mechanism of creating a common in-group identity and recategorization is positive intergroup contact. Through closely interacting with out-group members, individuals are able to exchange information, thoughts, and feelings that can lead them to realize commonalities with out-group members and facilitate recategorization. An additional process at work could also be self-expansion (Aron et al., 2004), whereupon by becoming close, one's self-concept expands to include identities another person shares, which can include social categories.

The notion that positive intergroup contact creates positive attitudes toward out-group members emerges from a long history of research (e.g. Allport, 1954; Sherif, Harvey, White, Hood, & Sherif, 1961; Watson, 1947), starting with Allport's "Contact Hypothesis." Allport posited that intergroup contact will have positive effects when individuals have equal group status, common goals, cooperation, and support from authorities and custom. Recent meta-analytic work (Pettigrew & Tropp, 2006) has confirmed these early predictions across 515 studies. Pettigrew and Tropp found that, in particular, experimental manipulations of intergroup contact effects are especially effective at reducing prejudice. Cross-group friendships, the type of intergroup contact where self-expansion is most likely to occur, have been suggested to be the most effective form of intergroup contact for reducing prejudice and intergroup anxiety (Davies, Tropp, Aron, Pettigrew, & Wright, 2011; Page-Gould, Mendoza-Denton, & Tropp, 2008; Pettigrew & Tropp, 2006). These close intergroup relationships are likely to involve self-disclosure (Collins & Miller, 1994; Reis & Shaver, 1988), a very important variable for leading to closeness and self-other overlap.

Self-expansion theory and intergroup friendships

Self-expansion theory (Aron & Aron, 1986, 1996; Aron et al., 2004) holds potential for integrating both the interpersonal and intergroup domains of contact with out-groups (Brody, Wright, Aron, & McLaughlin-Volpe, 2009). Integrating both intergroup and interpersonal identities, self-expansion theory holds that close individuals share cognitive overlap between their self-concepts. When an individual has close, positive interactions with another person, rapid expansion occurs to facilitate self-concept overlap. For instance, individuals in close relationships and friendships expand their self-concept to include self-descriptions that pertain to their significant other (Aron, Paris, & Aron, 1995; Mashek, Aron, & Boncimino, 2003; Slatcher, 2010; Slotter & Gardner, 2009) and both members think of themselves as one cognitive unit (Aron, Aron, Tudor, & Nelson, 1991; Sedikides, Olsen, & Reis, 1993). Similarly, cognitive interdependence theory

holds that close relationship members share not only individual identities but a collective identity as well (Agnew & Etcheverry, 2006; Slotter & Gardner, 2009).

This self-concept overlap involves more than just personal identities, but group-level identities as well. Tropp and Wright (2001) found that individuals expand their self-concepts to include identities of groups they belong to. Accordingly, empathizing with a group is likely to lead to incorporating the other group into one's self concept (Cialdini, Brown, Lewis, Luce, & Neuberg, 1997). This closeness with a group will in turn lead to positive evaluations for that group (Smith & Henry, 1996). This notion is similar to that of the common in-group identity model (Gaertner & Dovidio, 2000, 2009, 2012), but instead of belonging to the same social category, members of different groups instead include each other in their own self-concepts. Thus, creating interpersonal closeness between individuals from out-groups should also extend to self-concept overlap with the out-group (Page-Gould & Mendoza-Denton, 2011).

Fast friends methodology and intergroup contact

One effective way of creating close interpersonal contact is the “Fast Friends” closeness-induction procedure developed by Aron, Melinat, Aron, and Vallone (1997). This task has individuals take turns asking and answering questions that gradually increase in required self-disclosure, such as “What would be a perfect day for day for you?” (lower disclosure) and “How close and warm is your family? Do you feel your childhood was happier than most other people's?” (higher self-disclosure).

Given its efficacy in creating interpersonal closeness and self-disclosure, the Fast Friends task has been implemented in creating cross-group friendships, showing that it is useful for improving attitudes toward out-groups following a cross-group interaction (Davies et al., 2011; Page-Gould & Mendoza-Denton, 2011; Page-Gould et al., 2008; Wright, Aron, McLaughling-Volpe, & Ropp, 1997). Page-Gould, Mendoza-Denton, and Tropp (2008) have found that extended use of the Fast Friends task (over three meetings) reduces cortisol reactivity (a hormonal index of a stress response) for individuals high in racial rejection sensitivity and implicit prejudice.

Combining couples and ethnicity

An obstacle in creating closeness between members of different racial groups is the anxiety such individuals feel when put together alone into pairs (Stephan & Stephan, 1985). One possible way of reducing this type of anxiety is to have intergroup contact occur between couples, rather than individuals. Individuals—comforted by the presence of their partner—might be more likely to self-disclose with out-group members in a couples context. Although not an intergroup study, Slatcher (2010) paired same-ethnicity couples together to engage in either the high self-disclosure Fast Friends task or a control condition where couples engaged in low self-disclosure, nonemotional small talk. Relative to the small talk condition, couple members in the high self-disclosure condition felt closer to both each other and the other couple.

In addition to self-disclosure, other mechanisms may be important for intergroup interactions between couples. First, each person will have his or her partner as a source

of support and comfort, which has been found to be important for reducing the effects of adverse situations. For example, viewing pictures of a romantic partner can reduce pain perceptions (Eisenberger et al., 2011; Younger, Aron, Parke, Chatterjee, & Mackie, 2010). Further, research suggests that romantic partners can help reduce anxiety caused by stressful experiences (Bodenmann, Meuwly, & Kayser, 2011; Kane, McCall, Collins, & Blascovich, 2012), buffer cortisol responses to stress (Ditzen, Hoppmann, & Klumb, 2008; Slatcher, Robles, Repetti, & Fellows, 2010), and attenuate neural responses to threat (Coan, Schaefer, & Davidson, 2006), although work by Allen, Blascovich, and Mendes (2002) suggests that the presence of romantic partners can increase stress reactivity. Second, couples will also have their relationship as a salient and common characteristic between each other, which could lead to a reduction in intergroup bias (Gaertner & Dovidio, 2000). Several studies suggest that engaging in novel and exciting activities with one's partner (such as meeting another couple) leads to increases in positive affect (Aron, Norman, Aron, McKenna, & Heyman, 2000; Slatcher, 2010), which could also serve to reduce anxiety in intergroup situations.

Overview and rationale

The current study was designed to investigate the effects of creating cross-group friendships within same-race and cross-race couples and individuals under conditions of high self-disclosure. To investigate this, we conducted a 2×2 experiment where we manipulated group racial composition (same-race vs. cross-race) and the type of group interacting (pairs of couples vs. pairs of individuals) using a sample of Caucasians and African Americans. Participants in the couples condition came into the lab and interacted in four-person groups, while participants in the individuals condition came into the lab and interacted in same-sex two-person groups. In the same-race condition, group members were either all Caucasian or all African American. However, in the cross-race condition, one couple or individual was Caucasian, while the other individual or couple was African American. All participants engaged in a high self-disclosure task and two cooperative tasks that were selected to develop interpersonal closeness and solidarity between participants. Participants completed pretest self-report measures of explicit racial attitudes and posttest measures of explicit racial attitudes, implicit racial attitudes, and self-reported self-disclosure. We hypothesized the following:

H1: Consistent with previous literature, we predicted that intergroup contact would have a main effect on out-group attitudes, such that cross-race groups would have more positive out-group attitudes compared with same-race groups after the interaction.

H2: The type of group (i.e., individuals or couples) would moderate the effect of intergroup contact on out-group attitudes. Specifically, couples would show more positive effects of intergroup contact on intergroup attitudes than individuals.

H3: Self-reported self-disclosure to out-group members would moderate the extent to which intergroup contact increases positive out-group attitudes, such that intergroup contact would increase positive attitudes more strongly at high (vs. low) levels of self-reported self-disclosure.

Methods

Participants and design

Caucasian and African American participants were recruited as couples and individually at Wayne State University through flyers, the psychology subject pool, and Facebook and Craigslist advertisements and received partial course credit or a 10–50 dollar honorarium¹ for participation. This study utilized a 2 (racial composition: same race vs. cross-race) \times 2 (group type: individuals vs. couples) experimental design. In total, 62 couples ($n = 124$ individuals; mean age = 23.48 years; 53.2% female, 46.8% male; 51.6% Caucasian, 48.4% African American) and 74 individuals (mean age = 23.86; 75.7% female, 24.3% male; 52.7% Caucasian, 47.3 African American) were assigned to same-race and cross-race individual dyads (19 and 18 dyads, respectively) and pairs of couples (17 and 14 pairs of couples, respectively).² Because the study was designed to assess the effects of cross-race interaction, to avoid the complicating and confounding effects of interracial couples, no interracial couples were recruited or enrolled in the study. After completing an online pretest 1–3 weeks prior to the study, participants who arrived for the experimental session were randomly assigned to participate with another same-or cross-race individual or couple. All couples participated with another couple, and all individuals participated with another same-sex individual. No participants reported knowing the participants they were paired with.

Materials and procedure

Online pretest. Two 7-point Likert items assessed how much participants enjoyed interacting with the other target race (“Generally, I enjoy interacting with Caucasians/African Americans” and “Most of the interactions I have had with Caucasians/African Americans have been positive,” 1 = *strongly disagree*, 7 = *strongly agree*) and another 7-point scale measured participants’ closeness to the out-group (How often do you feel close to Caucasians/African Americans as a group? 1 = *Never*, 7 = *Very Often*). These items (loosely generated based on items used by Pettigrew & Meertens, 1995) were selected as pretest measures because the methodology of our study was focused on creating intergroup closeness through cross-group interactions. The two items pertaining to enjoying interactions with Caucasians (Cronbach’s $\alpha = .88$) and African Americans ($\alpha = .92$) were averaged into one index, and the extent to which individuals enjoyed interactions with and felt close to the out-group were used as covariates.

Closeness induction. Participants were greeted by an experimenter and introduced to each other. Groups (18 cross-race dyads, 19 same-race dyads; 14 cross-race couple pairs and 17 same-race couple pairs) first completed the Fast Friends procedure designed by Aron et al. (1997). Similar to other research on cross-group friendships (Page-Gould et al., 2008; Wright, Aron, & Tropp, 2002), groups then worked together to compete against other groups in a contest to earn a cash prize of 35 dollars per person. Winning this task was determined based on a combined score achieved by playing the game JengaTM and drawing a map of the United States by memory. The primary purpose of this task was to

create mutual goals and cooperation between participants, both of which are important for reducing prejudice (Allport, 1954; Sherif et al., 1961).

Self-disclosure. Participants reported their self-disclosure during the session with three 5-point Likert-type items asking how much participants disclosed *facts* about themselves, their *thoughts*, and their *feelings* to the other participants (1 = *very little*, 5 = *a great deal*, $\alpha = .87$; Laurenceau, Barrett, & Pietromonaco, 1998).

Racial attitude measures. Participants were then informed they were going to participate in a second, unrelated study examining attitudes of individuals who lived in the Detroit area. We included six different indices of post-manipulation intergroup attitudes, each selected to capture a different element of how individuals feel toward racial out-groups: anxiety from interacting with out-group members; perceived closeness to out-group members; explicit evaluations of out-groups; desire for contact with out-group members; feelings of warmth toward out-groups; and implicit attitudes toward out-groups. Other measures of attitudes toward other groups than Caucasians and African Americans (e.g. Asians, sexual minorities, and political groups) were included to reduce demand characteristics.

To measure intergroup anxiety, participants completed intergroup anxiety measures adapted from Stephan and Stephan (2000), indicating the extent they would feel *comfortable*, *uncertain*, *confident*, *awkward*, *anxious*, and *at ease* when interacting with an out-group member they did not know using a Likert-type scale (1 = *Not at all*, 7 = *Extremely*, $\alpha = .88$).

To measure perceived closeness with out-group members, participants also completed a version of the Inclusion of Other in Self (IOS) scales (Aron, Aron, & Smollan, 1992) designed to assess perceptions of their connection with several social groups (Tropp & Wright, 2001). This scale required individuals to select one of seven pairs of increasingly overlapping circles, where one circle represents the self and the other represents the group. Across several items, the “other” circle represented participants’ respective racial out-group (IOS-race) and in-group in the study (Caucasians and African Americans), along with several other filler groups: Conservatives, Liberals, Hispanics, Asians, lesbians, gay men, and homeless people.

Participants then completed Brigham’s (1993) 25-item 5-point (1 = *Strongly disagree*, 5 = *Strongly agree*) attitudes toward Blacks/Whites scale as a measure of explicit race attitudes. The scale includes two forms: one for Blacks’ attitudes toward Whites ($\alpha = .93$), and another for Whites’ attitudes toward Blacks ($\alpha = .77$). Sample items included “Black and White people are inherently equal” (Whites’ attitudes toward Blacks) and “Most Whites fear that Blacks will bring violence to neighborhoods when they move in” (Blacks’ attitudes toward Whites, reverse scored). Caucasian participants completed the Whites’ attitudes toward Blacks scale, whereas African American participants completed the Blacks’ attitudes toward Whites scale. The responses were combined into one index of explicit out-group attitudes. This measure was scaled such that high values on this scale represent more favorable attitudes toward the out-group, while low scores indicate more prejudiced attitudes toward the out-group.

Following this, participants completed the desire for intergroup interaction scale (Stephan, 1999). This 11-item scale asked participants to rate the extent to which they agreed with statements about interacting with out-group members including “I would have Black/White families living in my neighborhood” and “I would establish a long-term relationship (including marriage) with a Black/White person” using a 7-point Likert-type scale (1 = *Strongly disagree*, 7 = *Strongly agree*, $\alpha = .94$).

To assess feelings of warmth toward the out-group, participants completed a thermometer of perceived warmth toward their respective out-group similar to the thermometer attitude scale used by Esses, Haddock, and Zanna (1993). Participants rated how warm or cold they felt toward the racial/ethnic out-group, selecting increments of 10° (0° = *Very cold*, 100° = *Very warm*), along with the filler groups used for the IOS scales.

Finally, participants completed the implicit association task (IAT) assessing their implicit attitudes toward Caucasians and African Americans (Greenwald, McGhee, & Schwartz, 1998). In each scored block of trials, participants had to press either the “E” or “I” keys on a computer keyboard to indicate whether the stimuli presented on the screen represented positive words or negative words and Caucasian or African American faces. Response times to stimuli were collected only when participants sorted word categories and races simultaneously. The D-algorithm (Greenwald, Nosek, & Banaji, 2003) was used to score response times separately for Caucasian and African American participants, where positive values indicated preferences for the out-group (e.g., faster responses to pairings of out-group faces and positive words, slower responses to pairings of in-group faces and negative words) and negative values represented preferences for the in-group (e.g., faster responses to pairings of in-group faces and positive words, slower responses to pairings of out-group faces and negative words). Participants were then debriefed.

Statistical analyses

Multilevel modeling (MLM) was used for analyses using SPSS mixed, following the recommendations of Kenny, Kashy, and Cook (2006). MLM was selected for the analyses because research on couples and groups violates the assumption of independence that is required for many parametric tests. Group member number and group number were used as repeated and subject variables, respectively, with a compound symmetry covariance structure. Group racial composition and group type were effect coded (−1 = *same-race*, 1 = *cross-race* and −1 = *dyads of individuals*—hereby referred to as “individual dyads”—1 = *couple pair*, respectively). Interactions were probed using tools developed by Preacher, Curran, and Bauer (2006), which interprets interaction effects using the procedures recommended by Aiken and West (1991), with high and low conditional values of continuous variables at ± 1 SDs. All outliers on continuous variables were winsorized to 3 SDs (Wilcox, 2001). Due to a clerical error, computer problems, and two participants who refused to complete the measure, IAT data for 19.1% of our participants was not available for analysis of IAT scores. These participants were still used in the presented analysis of explicit, self-reported attitudes. Unless noted, excluding participants who had missing data or controlling for pretest variables did not change the significance of any reported findings. One participant was

Table 1. Zero-order correlations for all participants.

Variable	1	2	3	4	5	6	7	8	9	10
1. Group type	—									
2. Racial composition	-.03	—								
3. Actor self-disclosure	-.06	-.08	—							
4. Brigham's race attitude	-.02	.17*	-.10	—						
5. Intergroup warmth	-.10	.20**	.05	.51***	—					
6. Race anxiety	.10	-.16*	-.11	-.35***	-.53***	—				
7. Desire for intergroup contact	.02	.19**	.09	.64***	.61***	-.46***	—			
8. IAT	.04	.05	.22**	.13	.23**	-.21**	.21**	—		
9. IOS—other race	-.14*	.09	-.01	.45***	.54***	-.39***	.50***	.18*	—	
10. IOS—same race	-.24	.03	.06	-.04	.07	-.03	.04	-.07	.23***	—

Note. Group type and racial composition are effects coded ($-1 = couples$, $+1 = individuals$ and $-1 = same-race$, $+1 = cross-race$, respectively). IAT = implicit associations task-race. IOS = Inclusion of Other in Self. * $p < .05$; ** $p < .01$; *** $p < .001$.

identified as repetitively responding on the IAT (41.3% correct responses). This participant (and consequently, the dyad partner) was removed from all analyses, which did not affect the significance of any reported results.

Results

The correlations between the study variables are presented in Tables 1 (for participants as a whole) and 2 (split by condition), and descriptive statistics are presented in Table 3. The self-report measures of intergroup anxiety, Brigham's Black-White out-group attitudes, IOS-race, desire for intergroup interactions, and out-group thermometer scores were significantly correlated with each other (r s from .38 to .58). IAT scores, however, were not as well correlated with these self-report measures (absolute r s from .14 to .22), consistent with previous literature (Hofmann, Gawronski, Gschwendner, Le, & Schmitt, 2005). Altogether, participants reported high levels of self-disclosure ($M = 4.02$, $SD = .88$). Group type and group racial composition did not have main effects or interact to affect self-disclosure (all p s $\geq .33$). Due to the positive correlations between all six intergroup measures, we standardized the scores of these measures (reverse-scoring our intergroup anxiety measure) and averaged them into one composite variable of positive out-group attitudes. An exploratory factor analysis indicated that all six out-group attitude variables (using average scores from each scale) loaded on only one factor that explained 51.02% of the variance (all loadings $\geq .35$). Thus, this decision to combine all six variables into a composite factor was justified.

Table 2. Zero-order correlations for all participants, split by condition.

Variables	1	2	3	4	5	6	7	8
Individual pairs								
1. Actor self-disclosure	—	-.15	-.08	.12	.10	.16	-.07	-.08
2. Brigham's race attitude	-.15	—	.62***	-.64***	.76***	.19	.45**	-.31†
3. Outgroup warmth	-.21	.57***	—	-.69***	.74***	.00	.59***	-.15
4. Race anxiety	.03	-.36*	-.36*	—	-.71***	.06	-.44**	.12
5. Desire for intergroup contact	.05	.42*	.58***	-.31†	—	.24	.57***	-.26
6. IAT	.14	-.18	.04	-.40*	.29	—	.12	-.38*
7. IOS—other race	-.08	.40*	.29	-.17	.44**	.26	—	-.08
8. IOS—same-race	.20	-.26	-.38*	.42*	-.17	.17	.29†	—
Couple pairs								
1. Actor self-disclosure	—	-.01	.22†	-.20	.28*	.13	-.07	-.08
2. Brigham race attitudes	-.10	—	.55***	-.21	.62***	.28*	.45**	-.31†
3. Out-group warmth	.12	.27*	—	-.46	.67***	.29*	.59***	-.15
4. Race anxiety	-.28*	-.24†	-.48***	—	-.39**	-.08	-.44**	.12
5. Desire for intergroup contact	-.13	.68	.25†	-.28	—	.29*	.57***	-.26
6. IAT	.47**	-.00	.36*	-.53***	-.06	—	.12	-.37*
7. IOS—other race	.2	.35**	.45***	-.24†	.43**	.11	—	-.08
8. IOS—same race	.00	.03	.18	-.04	.18	.19	.19	—

Note. Upper right diagonals represent same-race groups, lower left halves represent cross-group paths. IAT = implicit associations task-race. IOS = Inclusion of Other in Self.
 † $p < .08$; * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 3. Means and SDs for study variables.

	Individual dyads		Couples		Overall
	Cross-race 18 Dyads 36 participants	Same-race 19 Dyads 38 participants	Cross-race 14 Couple pairs 56 participants	Same-race 17 Couple pairs 68 participants	198 Participants
Actor self-disclosure	4.11 (.89)	4.07 (.82)	3.85 (.95)	4.10 (.84)	4.02 (.88)
Brigham race attitudes	5.33 (.83)	5.21 (.97)	5.47 (1.01)	5.03 (.98)	5.25 (.97)
Out-group warmth	74.17 (17.13)	69.47 (22.29)	73.33 (18.83)	62.79 (22.98)	69.08 (21.20)
Race anxiety	2.67 (1.03)	2.98 (1.49)	2.82 (1.20)	3.31 (1.37)	2.99 (1.30)
Desire for intergroup contact	6.41 (.79)	6.18 (1.29)	6.64 (.74)	6.10 (1.30)	6.32 (1.10)
IAT	-.38 (.44)	-.24 (.58)	-.16 (.63)	-.35 (.57)	-.29 (.57)
IOS—other race	4.44 (1.58)	4.89 (1.61)	4.57 (1.63)	3.85 (1.73)	4.36 (1.69)
IOS—same race	6.00 (1.17)	3.24 (1.13)	5.52 (1.67)	5.28 (1.57)	5.67 (1.49)

Note. SDs are in parentheses. IAT = implicit associations task-race. IOS = inclusion of other in self.

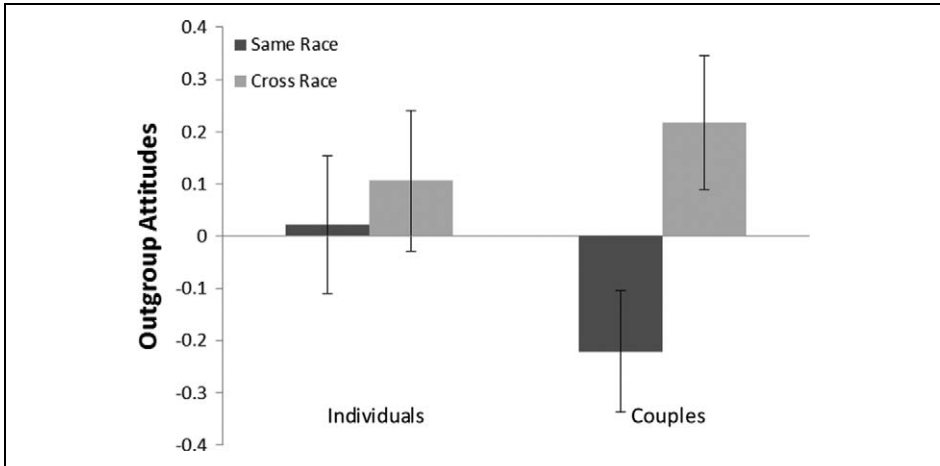


Figure 1. Out-group attitude as a function of group type and group racial composition. Note. Error bars represent standard errors of the mean.

Intergroup contact effects

The effects of cross-race contact were modeled within individuals and couples using a 2 (group composition: same-race vs. cross-race) \times 2 (group type: individuals vs. couples) multilevel model (H1). Because we were also interested in how couples and individuals differed on these outcomes, planned comparisons were interpreted for the conditional effects of intergroup contact within individuals and couples (H2). The results of these analyses are presented in Figure 1.

A 2 (same-race vs. cross-race) \times 2 (individuals vs. couples) factorial multilevel model on composite out-group attitude scores revealed a significant main effect of intergroup contact, $F(1, 62.16) = 4.18, p = .045$. Participants in the cross-race contact condition had more positive out-group attitudes ($M = .16, SE = .09$) than those in the same-race condition ($M = -.10, SE = .09$). The main effect of group type was nonsignificant, $F(1, 62.16) = .27, p = .61$, indicating that participants in the individuals condition ($M = .06, SE = .09$) and the couples condition ($M = .00, SE = .09$) did not significantly differ in out-group attitudes. Although the Intergroup Contact \times Group Type interaction was nonsignificant, $F(1, 62.16) = 1.93, p = .17$, the planned comparisons were as hypothesized: Couples in the cross-race contact condition had significantly more positive attitudes ($M = .22, SE = .13$) than couples in the same-race contact condition ($M = -.22, SE = .12; b = .22, SE = .09; t(62.16) = 2.54; p = .014$). On the other hand, in the individual dyad conditions, out-group attitudes did not differ between those interacting with cross-race members ($M = .11, SE = .14$) and participants interacting with same-race members ($M = .02, SE = .13, b = .04, SE = .09, t(62.16) = .44, p = .66$). Controlling for the two measures of pretest attitudes did not change the significance of the main effects of intergroup contact ($p = .012$) and group type ($p = .55$), the Intergroup Contact \times Group Type interaction ($p = .40$), or the planned comparisons of intergroup contact within individual dyads ($p = .26$) and pairs of couples ($p = .010$). When

this analysis was performed on participants who did not have missing IAT data, the hypothesized Intergroup Contact \times Group Type interaction on out-group attitudes was significant, $F(1, 68.92) = 5.20, p = .026$. We also explored what specific variables showed effects of intergroup contact within pairs of couples. In particular, intergroup contact between pairs of couples significantly improved desire for intergroup contact ($p = .018$) and intergroup warmth ($p = .036$), and scores on Brigham's (1993) race attitudes scale ($p = .022$) had marginally significant effects on race anxiety ($p = .056$) and out-group IOS scores ($p = .054$) but no significant effects on IAT scores ($p = .17$).

Moderating role of self-disclosure

We then tested the moderating role of self-reported self-disclosure in intergroup interactions on out-group attitudes (H3) using a multilevel model with self-reported self-disclosure and intergroup contact, along with their cross-product, as predictors of our composite index of out-group attitudes. The main effects of intergroup contact and self-disclosure were nonsignificant, $b = .19, SE = .24, t(189.95) = .78, p = .44$ and $b = .06, SE = .06, t(186.03) = 1.09, p = .28$. Self-reported self-disclosure and intergroup contact did not significantly interact to affect the composite index of out-group attitudes ($b = -.01, SE = .06, t(186.03) = -.18, p = .86$). Group type (couple pair vs. individual pair) did not moderate the effects of self-disclosure ($p = .11$) nor was there a significant Intergroup Contact \times Group Type \times Self-disclosure interaction ($p = .75$). Controlling for the pretest attitudes did not change the significance of these effects (all $ps \geq .13$).

Discussion

Positive, high self-disclosure intergroup contact led to more positive out-group attitudes, primarily for pairs of couples. Although the Group Type \times Racial Composition interactions were not significant, intergroup contact within couple pairs showed stronger positive effects of intergroup contact compared with individual dyad members on all dependent intergroup measures. While the general effects of intergroup contact we found are consistent with a large body of literature (Pettigrew & Tropp, 2006), they suggest that high self-disclosure intergroup contact between couples can also result in equivalently, if not stronger, effects of intergroup contact on out-group attitudes toward out-group members.

One possibility for why engaging in intergroup contact with one's romantic partner present may result in improved intergroup contact is that the presence of one's partner may reduce feelings of anxiety and stress (e.g. Bodenmann et al., 2011; Ditzen et al., 2008; Kane et al., 2012; Slatcher et al., 2010). Our findings, in showing that intergroup anxiety is the lowest when in the presence of one's partner, are consistent with this work. Contradicting the notion that romantic partners reduce stress, Allen et al. (2002) found that the presence of romantic partners can increase physiological stress reactivity to stressful tasks. Allen and colleagues suggested that whether the presence of others is supportive or evaluative will moderate reactivity to stressors. It is possible that, for individuals motivated to appear unprejudiced, the presence of one's romantic partner may actually increase stress and anxiety during intergroup interactions, as they may be concerned with appearing unbiased during the intergroup action, resulting in increased

anxiety. Our study, however, only measured intergroup anxiety after interacting and cannot address this possibility. Future research is needed to investigate whether the relationship between motivations to appear unprejudiced and the presence of one's partner differentially affect anxiety during intergroup interactions and intergroup anxiety following intergroup contact.

In line with the theme of this special issue of *Journal of Social and Personal Relationships*, the results of this study also have implications for compassionate love (Fehr & Sprecher, 2009; Sprecher & Fehr, 2005, 2006; Underwood, 2009) applied toward other groups. Compassionate love consists of "feelings, cognitions, and behaviors that are focused on caring, concern, tenderness, and an orientation toward supporting, helping, and understanding" others (Sprecher & Fehr, 2005, p. 630). Compassionate love has been previously conceptualized primarily in terms of having compassionate love toward close others, strangers, and humanity as a whole (Sprecher & Fehr, 2005). Individuals with high levels of compassionate love for strangers and humanity behave more pro-socially, being higher in helpfulness, more likely to volunteer, and higher in empathy (Sprecher & Fehr, 2005, Study 2). In the context of intergroup relations, compassionate love is an important construct for intergroup relations. Not only will individuals high in compassionate love for out-groups be likely to have more positive attitudes for out-group members but because of their motivation to support and help out-group members, individuals high in compassionate love toward out-groups should be more likely to behave empathetically and engage in perspective taking toward out-group members. Perspective taking, or putting oneself in another's shoes, may not only lead to reduced prejudice (e.g., Batson et al., 1997; Galinsky, 2002; Galinsky & Moskowitz, 2000) but may influence individuals to take collective action on behalf of out-group members (Mallett, Huntsinger, Sinclair, & Swim, 2008). Additionally, previous work has implicated empathy as an important factor in increased out-group attitudes and reduced intergroup conflict (Dovidio et al., 2010; Eisenberg, Eggum, & Giunta, 2010; Stephan & Finlay, 1999), particularly when trust is established between out-group members (Nadler & Liviatan, 2006).

Although we did not measure motivation to support, help, and understand out-group members, individuals high in compassionate love toward out-groups should have positive explicit and implicit attitudes, desire for intergroup contact, feelings of warmth toward the out-group, identify personally with out-groups (i.e., include their identity in the self), and have low anxiety regarding interacting with out-group members. Thus, several emergent properties of compassionate love toward out-groups were assessed by our measures, and, when paired with our results, these findings suggest that self-disclosure with out-group members, especially in the company of one's romantic partner, can increase compassionate love toward out-groups. However, these implications would be more strongly supported with the inclusion of measures of support and desire to understand group members in future studies on creating cross-group friendships. Thus, compassionate love is more than just the presence of a positive evaluation of out-group members but feelings of concern and tenderness for out-groups that are coupled with a motivation to help and support out-group members.

Future research is thus needed to develop and validate a measure of compassionate love toward out-groups. Although Sprecher and Fehr (2005) developed measures of compassionate love for specific individuals and strangers and humanity, these measures

could be adapted to measure compassionate love toward specific out-groups. Then, researchers could investigate how compassionate love toward out-group members is linked to constructs oriented around intergroup attitudes, such as intergroup anxiety, implicit attitudes, and explicit attitudes.

Once compassionate love toward other groups is more directly measured, two important questions will be most relevant to researchers of intergroup relations and compassionate love: How can compassionate love be improved, and how effective is compassionate love toward out-group members at leading individuals to make an effort to reduce prejudice, discrimination, and inequality? Because the current study found that cross-race contact between pairs of couples was more effective at reducing prejudice than same-race contact, while intergroup contact between pairs of individuals was not, cross-race contact between groups of close others may be the most effective way to create compassionate love toward out-groups. Additionally, these increases in compassionate love may mediate the effects of intergroup contact on increased motivation and behaviors that serve to lead to increased social equality between groups. Altogether, changes in compassionate love toward other groups, not just changes in intergroup attitudes, may alleviate prejudice and discrimination, along with motivating individuals to take action on creating and maintaining social equality. Thus, compassionate love, too, may be an excellent candidate for reducing prejudice and discrimination.

A limitation of the present research is that despite stronger effects of intergroup contact within couples compared with individuals, the cross-race contact and group type did not significantly interact to affect out-group attitudes. Larger sample sizes are often required to detect moderation effects as significant (Aiken & West, 1991), which can be a difficult goal to meet in research involving groups, given the greater difficulty to recruit and conduct research with couples and groups of individuals participating simultaneously. Despite this nonsignificant interaction term, the larger effects of intergroup contact on attitudes that were observed within the couples' condition of our study are important for informing future research on intergroup relations. These results indicate that individual interactions between out-group members may not be effective as interactions between couples. Future research is thus needed with larger sample sizes to investigate the role couples and other groups of close individuals (e.g., existing friends) to assess how cross-race interactions beyond the interactions between individuals differ in affecting race attitudes and compassionate love toward other groups.

The hypothesis that self-disclosure would moderate the effects of intergroup contact on attitudes (H3) was not supported. Although meta-analytic evidence suggests that self-disclosure is a mechanism of the effects of cross-race contact on race attitudes (Davies et al., 2011), our nonsignificant findings may be due to range restriction. Although assigning participants to engage in high degrees of self-disclosure should be important for creating closeness between individuals, this task may create a range restriction when analyzing only higher levels of self-disclosure as a predictor of intergroup and interpersonal outcomes, which can reduce the likelihood of detecting relationships (Ghiselli, 1964; Hunter & Schmidt, 1990). Thus, one limitation of the current research is that we did not experimentally manipulate levels of self-disclosure, only whether self-disclosure occurred with in-group or out-group members. Experimentally manipulating levels of self-disclosure (e.g. Aron et al., 1997; Slatcher, 2010) between in-group and

out-group members would not only create greater variance within self-reported self-disclosure but also provide stronger causal evidence that self-disclosure affects intergroup attitudes and closeness.

Future research will also benefit from examining experimental cross-group friendship contexts beyond racial/ethnic friendships and apply this experimental paradigm to other social categories. Additionally, many relationships are marginalized, such as interracial, same-sex, and inter-age relationships (Lehmiller & Agnew, 2006, 2007). Perceived marginalization in these relationships reduces physical health and self-esteem (Lehmiller, 2012), increases the likelihood of relationship dissolution, and decreases commitment (Lehmiller & Agnew, 2007). Given that the present research showed that intergroup couple friendships are just as, if not more, effective for reducing bias than individual intergroup friendships, creating closeness between couple pairs that include a marginalized couple may also be important for reducing prejudice and stigmatization. For instance, if two marginalized couples are paired together in this research paradigm, this may create social support from other marginalized out-group members, both of which are important for improving relationship well-being (Agnew, Loving, & Drigotas, 2001; Sprecher & Felmler, 1992) and physiological and psychological well-being (e.g., Ross, Lutz, & Lakey, 1999; Uchino, Cacioppo, & Kiecolt-Glaser, 1996). On the other hand, if a marginalized couple and a nonstigmatized couple are paired together for a positive, high self-disclosure interaction, this may lead members of marginalized relationships to feel less marginalized, as well as lead non-marginalized relationship members to have more positive attitudes toward the type of marginalized relationship they interact with.

Research also suggests that extended intergroup contact, or the knowledge of others having positive intergroup friendships (Wright et al., 1997), can also lead to reductions in prejudice and feelings of closeness with out-groups (Turner, Hewstone, Voci, & Vonofakou, 2008; Wright et al., 1997). Because cross-group couple friendships create relationships between multiple members and couples are often more saliently embedded in larger social networks than individuals, couples may also be more likely to transmit information about positive intergroup contact, leading to a greater reduction of prejudice in social network. Future research is needed to investigate whether couples play a greater role than individuals in potentiating extended intergroup contact effects within social networks.

Previous research has found that cross-group friendships do not last as long as same-group friendships (e.g. Aboud, Mendelson, & Purdy, 2003). However, creating cross-group couple friendships may help cross-group friendships flourish by creating a more integrated, overlapping social network between the cross-group friends (e.g. Cairns, Leung, Buchanan, & Cairns, 1995; Milardo, 1982). Friendly intergroup interactions with high social network integration between multiple individuals, be it between couples, family members, or groups of close friends, friendly, may result in longer lasting cross-group friendships than those created by dyadic interactions.

Conclusions

Broadly, this study integrates both the interpersonal and intergroup implications of prejudice, revealing that high levels of self-disclosure can create warmth and closeness in intergroup relationships, just as with interpersonal relationships. Future research

should extend these findings to other intergroup and interpersonal domains, and further longitudinal and experimental intergroup closeness research can accurately unveil further causal mechanisms in creating positive attitudes toward members of other groups. These cross-group interactions should not only alleviate prejudice but also create new, supportive personal relationships, reduced feelings of stigmatization, and increased compassionate love for out-group members.

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Notes

1. The honorarium amount was increased to aid with recruitment.
2. Sample size was chosen a priori based on power calculations in our grant from the Fetzer Institute (30 couple pairs, 30 dyads proposed). The current article uses the same sample of couples as another article currently under review (Welker, Baker, Padilla, Aron, & Slatcher, 2014), but the findings presented here do not overlap with those presented in the other article.

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