Differential Relationships Between Intergroup Contact and Affective and Cognitive Dimensions of Prejudice

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Research on affective dimensions of intergroup relationships suggests that positive effects of intergroup contact can generalize through establishing affective ties with outgroup members. However, research on cognitive dimensions emphasizes that it is often difficult to generalize positive contact outcomes. In this research, the authors examine whether affective and cognitive dimensions of prejudice bear different relationships to intergroup contact. Using data from a larger meta-analysis of contact effects, Study 1 demonstrates that affective indicators of prejudice typically yield stronger, inverse contact-prejudice relationships than such cognitive indicators as stereotypes. Study 2 replicates these trends in a survey study using multiple indicators of affective and cognitive dimensions of prejudice. Study 2 also shows significant, inverse relationships between contact and affective prejudice when contact is assessed either as number of outgroup friends or intergroup closeness. Together, these results suggest that affective dimensions of intergroup relationships are especially critical for understanding the nature of contact-prejudice effects.

Keywords: *intergroup contact; prejudice; affective and cognitive dimensions; affective ties*

Extensive research has examined the role of intergroup contact in reducing prejudice (Allport, 1954; Hewstone & Brown, 1986; Pettigrew & Tropp, in press), yet little consensus has emerged regarding its likely effects. Some reviews of this literature propose that intergroup contact can lead to meaningful reductions in prejudice (e.g., Jackson, 1993; Pettigrew, 1971; Riordan, 1978). By contrast, other reviews suggest that intergroup contact should have relatively little or no effect on reducing intergroup prejudice (e.g., Amir, 1976; Ford, 1986; Rothbart & John, 1985).[1]

Although these perspectives may seem irreconcilable, we believe their divergence can be explained by an overemphasis on the general question of whether intergroup contact reduces prejudice. Instead, we wish to consider whether different dimensions of prejudice bear different patterns of relationships to intergroup contact (see Brigham, 1993, for a related argument). We suggest that different branches of the contact literature have focused on different dimensions of intergroup relationships, and we propose that affective dimensions of intergroup relationships are especially critical for understanding the links between intergroup contact and prejudice.

Affective Ties to Outgroup Members and Reductions in Prejudice

Recent research demonstrates the importance of affect in intergroup relationships, both in terms of the

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bonds we establish with outgroup members through contact and the intergroup outcomes that can result from such contact (see Pettigrew, 1998). In particular, this work has explored those dimensions that denote affective ties with outgroup members, such as feelings of intergroup comfort and liking that develop through close, cross-group relationships (Herek & Capitanio, 1996; Levin, van Laar, & Sidanius, 2003; McLaughlin-Volpe, Aron, Wright, & Reis, 2000; Paolini, Hewstone, Cairns, & Voci, 2004; Pettigrew, 1997a).

Pettigrew (1997a) suggests that the affective ties generated by cross-group friendships can promote more positive attitudes toward the entire outgroup. With survey responses from seven European samples, Pettigrew (1997a) found that intergroup contact in the form of cross-group friendships was consistently and negatively associated with prejudice. Pettigrew (1997a) also noted that both causal paths between cross-group friendships and prejudice operate, yet the path from cross-group friendships to reduced prejudice tends to be stronger. Moreover, the effects of cross-group friendships were particularly strong for prejudice measures based on affective responses, such as feelings of sympathy and admiration for the outgroup. By contrast, less intimate contact with outgroup members, such as coworkers or neighbors, yielded far smaller effects (see also Hamberger & Hewstone, 1997).

Similarly, Wright, Aron, and colleagues (McLaughlin-Volpe et al., 2000; Wright, Aron & Tropp, 2002; Wright & Van der Zande, 1999) propose that greater feelings of closeness to individual outgroup members correspond with less prejudice toward the outgroup as a whole. McLaughlin-Volpe et al. (2000) assessed the number of interactions participants had with outgroup members and how close they felt to the outgroup member with whom they had the closest relationship, along with their feelings toward outgroup members in general. Across questionnaire and diary studies, greater numbers of cross-group interactions were associated with more positive feelings toward outgroup members only among those who reported having close cross-group relationships. Thus, findings from varied research programs suggest that close relationships with outgroup members serve to establish affective ties with the outgroup that can encourage the generalization of positive feelings toward the whole outgroup.

Cognitive Dimensions and the Potential for Reducing Prejudice

In contrast to this focus on affective dimensions of intergroup relationships, research focusing on cognitive dimensions tends to be less optimistic regarding the potential for generalizing positive contact outcomes. Due to the rigid processes associated with stereotyping and categorization (Hamilton, 1981), researchers often question whether positive contact experiences with individual outgroup members would generalize to more positive views of the entire outgroup (Rothbart & John, 1985; Wilder, 1986). This concern stems from the view that, as they interact and learn more individuating information about each other, members of different groups may become less likely to see each other as good representatives of their groups. Thus, although intergroup contact may lead group members to view each other in a positive light, such personalized contact experiences also may limit the potential for generalization (Rothbart, 1996; Rothbart & John, 1985; Wilder, 1984).

In line with this view, Wolsko, Park, Judd, and Bachelor (2003) show that contact may promote positive changes on some aspects of prejudice but not on others. In their study, participants interacted with an outgroup member and indicated both their evaluations of outgroup members in general and the extent to which they believed stereotypical characteristics applied to the outgroup as a whole. These authors found that, by itself, contact with a single outgroup member significantly enhanced participants' evaluations of outgroup members yet did relatively little to affect the extent to which they applied stereotypes to the outgroup as a whole.

In part, and consistent with prior research (Hewstone & Brown, 1986; Wilder, 1984), these results suggest that intergroup contact can produce some positive effects, yet achieving generalized stereotype change may still prove difficult. More broadly, however, we believe these findings also hint at the possibility that affective and cognitive dimensions of prejudice would generally reveal different patterns of relationships with intergroup contact. Wolsko et al. (2003) examined contact outcomes in a single study that included only two indicators of prejudice. But given the varied ways in which prejudice can be assessed (see Esses, Haddock, & Zanna, 1993; Smith, 1993; Stangor, Sullivan, & Ford, 1991), more research is needed to determine whether consistent differences in contact-prejudice effects would emerge when a wider range of measures are used to represent affective and cognitive dimensions of prejudice.

Toward a Differentiated View of Contact Outcomes: Affective and Cognitive Dimensions

These brief reviews of the literature suggest that two broad traditions have emerged regarding the potential for generalizing positive outcomes from intergroup contact. One tradition focuses on affective dimensions and proposes that affective ties to individual outgroup members can promote positive feelings toward the outgroup as a whole. The other tradition centers on cognitive dimensions and suggests that the inertial nature of stereotyping and categorization renders the generalization

of positive contact outcomes difficult. Viewing these traditions together (Mackie & Smith, 1998), we believe a reconciliation and integration of these traditions seems possible, depending on the types of generalization we wish to consider. Rather than asking the general question of whether positive outcomes of contact will or will not generalize, we believe it is useful to ask about the kinds of contact outcomes that may be more or less likely to generalize. Based on the research reviewed previously, we propose that affective outcomes of intergroup contact are more likely to generalize than cognitive outcomes.

This differentiated view of contact outcomes complements other research on attitudes and the components of intergroup prejudice. At a general level, attitudes are defined as evaluative responses to objects or classes of objects (Eagly & Chaiken, 1993; Ostrom, 1969; Zanna & Rempel, 1988). Yet, rather than being understood as a single concept, cognitive and affective dimensions are conceptualized as somewhat distinct components of both attitudes in general (Breckler & Wiggins, 1989; Eagly & Chaiken, 1993; Ostrom, 1969; Zanna & Rempel, 1988) and prejudiced attitudes in particular (Esses et al., 1993; Mann, 1959; Pettigrew, 1997b; Stangor et al., 1991). Cognitive dimensions of prejudice are commonly represented as one's perceptions, judgments, and beliefs about a group (Ashmore & Del Boca, 1981; Katz & Hass, 1988; Ostrom, Skowronski, & Nowak, 1994). In contrast, affective dimensions of prejudice are generally based on one's feelings and emotional responses to a group (Esses et al., 1993; Smith, 1993; Stangor et al., 1991).

By emphasizing this distinction, we do not intend to imply that cognition and affect are entirely independent (see Eagly & Chaiken, 1993). We recognize that cognitive and affective processes may interact with each other, as has been emphasized in recent research (see Mackie & Hamilton, 1993). Rather, we raise the distinction because we believe it highlights different ways in which we can conceive of intergroup relationships and respond to outgroup members as the targets of our attitudes. In focusing on cognitive dimensions, such as making judgments and stating beliefs, we may assume the role of relatively detached observers as we evaluate outgroup targets. In contrast, by focusing on affective dimensions, we may shift the bases of our attitudes such that they become more relational in nature, reflecting our feelings toward outgroup members in the context of our relationships and experiences with them (see Esses & Dovidio, 2002; Zajonc, 1980; Zanna & Rempel, 1988, for related arguments). Thus, given that affective ties with outgroup members are established through intergroup contact—and particularly if it involves close, cross-group relationships—it is likely that such contact would be associated with greater attitudinal shifts on affective dimensions of prejudice relative to the effects observed for cognitive dimensions.

We investigate these issues across two studies using distinct types of data and multiple indicators of affective and cognitive dimensions of prejudice. First, we analyze data originally gathered as part of a larger meta-analytic review of contact research (Pettigrew & Tropp, in press). With these data, we compare the magnitudes of contact-prejudice effects across several distinct categories of prejudice indicators and at different levels of generalization. We then examine relationships between intergroup contact and prejudice in a survey study, in which participants completed a broad range of prejudice measures and questions concerning the quantity and quality of their intergroup relationships.

STUDY 1

Method

Growing from a larger meta-analytic study of intergroup contact effects (Pettigrew & Tropp, 2000, in press), Study 1 examines variability in contact-prejudice effects across affective and cognitive indicators of prejudice and at different levels of generalization.

LOCATING RELEVANT STUDIES

We retrieved studies through intensive searches of multiple research literatures using a variety of procedures. We conducted searches of the psychological (PsychLIT, PsycINFO), sociological (SocAbs, SocioFile), political science (GOV), education (ERIC), dissertation (*UMI Dissertation Abstracts*), and general research periodical (*Current Contents*) abstracts through December 2000. These searches utilized 54 different search terms that range from single words (e.g., *contact*) to combined terms (e.g., *disabled* + *contact*). Within each database, we conducted three types of searches with these terms—by "title words," "keywords," and "subject"—to enhance our likelihood of accessing all relevant studies. Using the *Social Sciences Citation Index*, we checked on later citations of especially seminal contact studies, following the "descendancy approach" described by Johnson and Eagly (2000). We also requested published and unpublished papers via e-mail networks of social psychologists, and we wrote personal letters to researchers who have published work in this area. Finally, we combed reference lists from located studies and previous reviews of the contact literature.

INCLUSION CRITERIA FOR GATHERED STUDIES

As we located these papers, we evaluated their appropriateness for inclusion in the meta-analysis on the basis of four primary criteria.

First, because our meta-analysis focused on the relationship between intergroup contact and prejudice, we considered only those empirical studies in which intergroup contact can act as an independent variable for predicting intergroup prejudice. This requirement excluded research that treats contact as a dependent variable in explaining how and why contact occurs. Eligible studies included both experimental studies testing for the effects of contact on prejudice and correlational studies where contact is used as a correlate or predictor of intergroup prejudice.

Second, we included only studies that involve and assess outcomes of contact between members of clearly defined groups. Thus, studies that involved some degree of interaction between members of different groups, but did not examine contact outcomes in relation to group membership, were not included. This rule ensured that we examined intergroup—rather than interpersonal—outcomes.

Third, for inclusion, the research had to involve some degree of actual interaction between members of the different groups. This cross-group interaction could be either observed or reported, or it could occur in such focused, long-term intergroup contexts where direct contact would be unavoidable. As such, this rule omitted studies that attempt to gauge contact with indirect measures, such as information about an outgroup, or cases where participants are categorized into different groups without opportunities to interact, as if often the case in minimal group studies (e.g., Tajfel, Billig, Bundy, & Flament, 1971). This rule also excluded research that used estimates of intergroup proximity or relative group proportions to infer cross-group interaction.

Fourth, to be included, the outcome measures had to be collected on individuals rather than assessed on an aggregate level, and some type of comparative data had to be available to evaluate any variability in prejudice in relation to the contact.

FINAL SAMPLE AND CODED VARIABLES

We uncovered 516 studies from the early 1940s through the year 2000 that met these criteria. The studies included 715 independent samples and 1,377 nonindependent tests examining relationships between intergroup contact and prejudice. Combined, the studies represent responses from 250,555 participants from 38 countries, and they involve a wide variety of target groups, contact settings, study designs, and research procedures (see Pettigrew & Tropp, 2000, in press).

Type of prejudice indicator. For the present research, we coded each test to determine whether the prejudice measure represented one of four broad types of prejudice indicators, based on converging descriptions of measures used in prior research (see Crites, Fabrigar, & Petty, 1994; Dovidio, Brigham, Johnson, & Gaertner, 1996; Dovidio, Esses, Beach, & Gaertner, 2002; Esses et al., 1993; Talaska, Fiske, & Chaiken, 2004). Two types of indicators focus on affective dimensions of prejudice (emotions, favorability) and two types of indicators focus on cognitive dimensions of prejudice (stereotypes, beliefs). Those coded as indicators of emotions (5.0%) included measures of felt or anticipated emotions in intergroup contexts (e.g., comfort, sympathy). Indicators of favorability (12.5%) included general ratings of positivity toward outgroup members, along with ratings of intergroup liking. Indicators coded as beliefs (38.3%) ask participants to report the degree to which they endorse certain beliefs about the values of a specified outgroup and their judgments about the lives and experiences of that group in society. Indicators coded as stereotypes (15.2%) included items that assess the degree to which participants see characteristics as being associated with an outgroup, including those that ask participants to rate outgroup traits in a semantic-differential format (Osgood, Suci, & Tannenbaum, 1957). Prejudice indicators that were not covered by any of these categories (29.0%) were classified as other.

Codings were conducted at the test level of analysis (i.e., representing each test of the contact-prejudice relationship) because the studies and samples often included multiple prejudice indicators. Two independent judges rated the tests for type of prejudice indicator. These judges achieved a kappa of .87 for the indicator ratings and discrepancies between the judges were later resolved through further discussion. Both the original ratings and discussions of discrepancies were conducted without knowledge of the effect sizes corresponding to each test.

Results

Our meta-analytic results are presented in three stages. First, we briefly summarize findings from the larger meta-analysis (Pettigrew & Tropp, in press) to provide some background regarding overall relationships between intergroup contact and prejudice. We then compare mean effects across different prejudice indicators to test for variability in contact-prejudice effects depending on how prejudice is assessed. Finally, we use regression analysis to test whether differences between prejudice indicators can uniquely predict contact-prejudice relationships beyond what can be accounted for by variables assessing the quality of the contact and prejudice measures.

We employ Pearson's r as our primary effect size indicator. When r values were not reported in the research studies, we derived r from other statistics using conversion formulas provided by Johnson (1993). Negative values of r indicate that greater contact is associated with less prejudice.

We also applied two corrections to the data on which these analyses are based. First, we capped sample sizes for tests from seven extremely large samples to avoid overweighting their results in the analysis. In addition, tests from 17 samples that reported nonsignificant results without detailed analytic information were omitted because the inclusion of such cases may lead to the underestimation of effects (Johnson & Eagly, 2000). Together, these corrections produce only slight shifts in our estimates of the contact-prejudice effect sizes (see Pettigrew & Tropp, in press).[2]

We analyze these data using a random effects approach because it is preferable when cases are heterogeneous, when treatments are ill-specified, and/or when effects are likely to be multidetermined (Cook et al., 1992). An added benefit of the random effects approach is that it allows findings to generalize beyond the cases included in our analysis (see Hedges & Vevea, 1998). Random effects models assume that part of the differences in effects across samples is essentially random and they pertain to sources we cannot identify (Lipsey & Wilson, 2001). Correspondingly, random effects models provide relatively conservative tests because they typically produce wider ranges for confidence limits and reduce the probability of achieving statistical significance (Hedges & Vevea, 1998).

OVERALL RELATIONSHIPS BETWEEN CONTACT AND PREJUDICE

As reported in Pettigrew and Tropp (in press), greater intergroup contact is generally associated with lower intergroup prejudice. Mean estimates of contact-prejudice effect sizes were quite consistent across the three units of analysis, with similar findings for studies ($M_r = -.210$, $p < .001$), samples ($M_r = -.216$, $p < .001$), and tests ($M_r = -.218$, $p < .001$). Moreover, tests of relationships between contact and prejudice toward individual outgroup members in the contact situation do not significantly differ from those involving prejudice toward the outgroup as a whole, suggesting that the effects of contact tend to generalize. Further analyses also demonstrate that the contact-prejudice effects are unlikely to be due to participant selection or publication biases, and the more rigorous research studies reveal stronger contact-prejudice effects (Pettigrew & Tropp, 2004).

CONTACT-PREJUDICE EFFECTS ACROSS DIFFERENT PREJUDICE INDICATORS

As a first step in our present analysis, we compared the mean contact-prejudice effects across the different types of prejudice indicators. These analyses were conducted using all tests included in the larger meta-analysis, and only those tests involving generalization (see Table 1). Results reveal significant differences in mean contact-prejudice effects depending on the type of prejudice indicator used, $Q_B(4) = 21.78$, $p < .001$.[3] Indicators of emotion ($M_r = -.275$) and favorability ($M_r = -.249$) yield especially strong effects, and their mean effects do not significantly differ from each other, $Q_B(1) = .91$, $p = .34$. At the same time, effects obtained with emotion indicators were significantly stronger than those obtained for indicators of stereotypes ($M_r = -.173$), $Q_B(1) = 13.01$, $p < .001$, and beliefs ($M_r = -.224$), $Q_B(1) = 4.06$, $p < .05$. The effects for favorability also were significantly stronger than those obtained for stereotypes, $Q_B(1) = 11.30$, $p < .001$. Furthermore, we observe virtually identical patterns of effects when all tests are included in these comparisons and when only those tests involving generalization are used.

TYPES OF PREJUDICE INDICATORS AS PREDICTORS FOR CONTACT-PREJUDICE EFFECTS

We then conducted a regression analysis to examine these distinct types of prejudice indicators as predictors for the contact-prejudice effect sizes. A weighted, random-effects regression analysis was conducted using SPSS macros developed by David Wilson (Wilson, 2002), which provide the appropriate parameters and probability values for meta-analytic data (see Lipsey & Wilson, 2001).

For this analysis, we created four dummy-coded variables based on our ratings of the prejudice indicators. This procedure allowed us to predict contact-prejudice effects based on whether the tests included measures of emotion, favorability, stereotypes, and beliefs. Specifically, a score of "1" signified that the test included the specified type of prejudice indicator, and a score of "0" signified that the test did not include that type of prejudice indicator.

In addition, as part of our larger analysis (Pettigrew & Tropp, in press), we had coded each test for the quality of the contact and prejudice measures (1 = *low reliability*, 2 = *high reliability*) to provide indices of research rigor. We used these ratings, along with ratings of generalization (1 = prejudice assessed toward outgroup as a whole, 2 = prejudice not assessed toward outgroup as a whole), as methodological controls to be used in conjunction with the four dummy-coded predictors. Thus, altogether, four dummy-coded variables (emotions, favorability, stereotypes, and beliefs) and three methodological variables (quality of contact measure, quality of prejudice measure, and generalization) were entered simultaneously as predictors for the contact-prejudice effect sizes.

Results from the regression analysis are presented in Table 2. This analysis reveals that the quality of the contact and prejudice measures contributes significantly to predicting contact-prejudice effects, with stronger effects observed when more reliable indicators of con-

TABLE 1: Estimates of Effect Sizes for Contact-Prejudice Relationship Across Different Types of Prejudice Indicators (Study 1)

Type of Prejudice Indicator		r	*95% CL*	z	p	k	N
Emotions	All tests	–.275	–.32/–.23	–11.63	<.000	68	19,303
	Generalization only	–.272	–.32/–.23	–11.08	<.000	63	18,547
Favorability	All tests	–.249	–.28/–.22	–15.74	<.000	170	46,273
	Generalization only	–.235	–.27/–.20	–13.05	<.000	134	39,804
Stereotypes	All tests	–.173	–.20/–.15	–11.89	<.000	207	47,310
	Generalization only	–.161	–.19/–.13	–10.45	<.000	181	44,831
Beliefs	All tests	–.224	–.24/–.21	–25.50	<.000	521	161,658
	Generalization only	–.219	–.24/–.20	–23.60	<.000	472	138,489
Other	All tests	–.208	–.23/–.19	–20.15	<.000	395	108,180
	Generalization only	–.214	–.24/–.19	–18.78	<.000	310	91,431

NOTE: r = correlation coefficient representing the mean effect size; 95% CL = the 95% confidence limits of r; z = z test for the mean effect sizes; p = probability of z test; k = number of samples associated with the mean effect size; N = number of participants associated with mean effect size. These analyses were conducted using Fisher's z-transformed r values. Mean effects and confidence limits listed in this table have been transformed back to the r-metric from the z-transformed estimates obtained in these analyses. Random effects variance components (based on Fisher's z-transformed r values) ranged between .031 and .032.

TABLE 2: Summary of Inverse Variance Weighted Regression Model Predicting Contact-Prejudice Effects

Predictor Variable	B	SE	β	z
Quality of contact measure	–.068	.013	–.143	–5.25***
Quality of prejudice measure	–.043	.012	–.101	–3.68***
Generalization	.022	.016	.036	1.35
Emotions	–.075	.026	–.081	–2.88**
Favorability	–.050	.018	–.078	–2.63**
Stereotypes	.029	.018	.049	1.63
Beliefs	–.019	.014	–.044	–1.38
R^2		.06***		
Q_{Model}		78.94***		
k		1,361		

NOTE: B = raw regression coefficient; SE = standard error for the regression coefficient; β = standardized regression coefficient; z = z test for the regression coefficient; p = probability of z test; R^2 = proportion of variance accounted for; Q_{Model} = test of whether the regression model explains a significant portion of variability across effect sizes (see D. B. Wilson, 2002); k = number of tests included in the analysis. These analyses were conducted using Fisher's z-transformed r values. The random effects variance component for this analysis (based on Fisher's z-transformed r values) was .030.
**p < .01. ***p < .001.

tact and prejudice are used. Moreover, we find that indicators of emotion and favorability uniquely and significantly predict stronger contact-prejudice effects, beyond what can be predicted by the methodological variables.

Discussion

In sum, results from Study 1 indicate that whereas intergroup contact is typically associated with lower levels of prejudice (Pettigrew & Tropp, in press), contact-prejudice effects importantly vary depending on the ways in which prejudice is assessed. Specifically, we find that affective indicators of prejudice tend to show stronger relationships with intergroup contact than such cognitive indicators as stereotypes. We also find that these patterns of effects remain consistent when only those tests involving generalization are included in the analysis and when measurement quality is controlled.

We also should note that, although more modest in magnitude, significant mean contact-prejudice effects were still observed when only stereotype indicators were used. Although past research might lead us to expect that such effects would be unlikely (see Rothbart & John, 1985), it appears that the nonsignificant trends often observed in individual studies of stereotypes reach significance when pooled together using meta-analytic procedures.

Overall, these patterns of findings support our prediction that affective outcomes of intergroup contact are more likely to generalize than cognitive outcomes. Still, although these meta-analytic results are informative, there are some limitations on the conclusions we can draw from meta-analytic comparisons. Indeed, skeptics often criticize meta-analytic techniques for conducting comparisons across studies where variables, samples, and testing procedures are not uniform (see Rosenthal, 1991). Meta-analysis also confines us to those variables measured in the original research and those that meta-analysts can later rate reliably.

To address these limitations, we conducted an additional survey study to complement our meta-analytic investigation. In this study, a single sample of participants completed a range of measures concerning intergroup contact and varying dimensions of prejudice. Specifically, each participant responded to multiple indicators of affective dimensions of prejudice (i.e., emotions, favorability, and liking) and cognitive dimensions of prejudice (i.e., stereotypes, beliefs, and judgments). Although this approach does not enable a test of causal relationships between contact and prejudice, this study importantly extends our meta-analytic research by allowing us to examine contact-prejudice effects for mul-

tiple prejudice indicators using the same measures and procedures across all participants.

Moreover, this survey study allows us to assess participants' contact experiences in a number of ways as we examine variability in contact-prejudice effects. Prior research has distinguished between the quantity and quality of intergroup contact, showing that high-quality contact experiences such as cross-group friendships are especially critical for promoting reductions in prejudice (e.g., McLaughlin-Volpe et al., 2000; Paolini et al., 2004; Pettigrew, 1997a). However, close examination of this work reveals that researchers have focused on differing aspects of cross-group friendships in their studies of contact effects. Some researchers have assessed cross-group friendships in terms of numbers of outgroup friends (e.g., Herek & Capitanio, 1996; Levin et al., 2003; Paolini et al., 2004; Pettigrew, 1997a), whereas others have emphasized the closeness of one's intergroup relationships (e.g., Aron & McLaughlin-Volpe, 2001; McLaughlin-Volpe et al., 2000; Wright, Aron, McLaughlin-Volpe, & Ropp, 1997; see also Baumeister & Leary, 1995). Thus, in addition to assessing contact in terms of quantity, the present study assesses contact quality using indicators of both the number and closeness of participants' intergroup relationships.

In addition, the present study examines contact-prejudice relationships both with and without controlling for participants' motivations to respond without prejudice. Recent research has shown that people vary in the degree to which they are motivated to respond without prejudice and that they may do so for both external reasons (e.g., social norms) and internal reasons (e.g., personal beliefs; Dunton & Fazio, 1997; Plant & Devine, 1998). These motivations also may bear significant relationships with the extent to which people willingly endorse negative stereotypes and attitudes toward outgroup members on self-report measures (Plant & Devine, 1998; Plant, Devine, & Brazy, 2003). Therefore, to account for the possibility that people may resist admitting prejudices toward other groups, we assess both internal and external motivations to respond without prejudice, and we use these motivations as controls in data analysis.

STUDY 2

Method

SAMPLE AND PROCEDURES

One hundred and twenty six White undergraduates (46 men, 80 women) participated in this study in exchange for credit toward their research participation requirement. Participants' ages ranged from 18 to 22 years ($M = 19.39$, $SD = 1.03$). Initially, participants were informed that the study generally concerned their experiences with different social groups; only during informed consent, immediately prior to their participation, did participants learn that the study concerned experiences with and impressions of Black Americans. Following the informed consent process, participants completed questionnaires individually in a private, laboratory setting.

CONTACT MEASURES

To provide general measures of both the quantity and quality of participants' intergroup relationships (McLaughlin-Volpe et al., 2000; Wright et al., 2002), participants first completed two single-item measures of intergroup contact. Specifically, participants reported the number of Black people they know, at least as acquaintances ($M = 7.97$, $SD = 2.60$), and the number of Black people they would consider to be friends ($M = 4.25$, $SD = 2.82$).

Participants then completed two additional items concerning the closeness of their intergroup relationships. Specifically, participants indicated how close they feel to the Black people they know ($M = 4.60$, $SD = 1.73$) and how close they feel to the one Black person with whom they have had the closest relationship ($M = 4.62$, $SD = 1.68$) on scales ranging from 1 (*not close at all*) to 7 (*very close*). Responses to these items were highly correlated, $r = .71$, $p < .001$, and hence, they were averaged to create an overall measure of intergroup closeness ($\alpha = .82$).

PREJUDICE MEASURES

Varied measures of prejudice were included in the questionnaires distributed to participants to reflect the main categories of prejudice indicators identified in the meta-analysis and in prior research (Dovidio et al., 2002; Esses et al., 1993; Talaska et al., 2004). As such, some of the measures represent affective dimensions of prejudice (emotions, favorability, and liking) and some represent cognitive dimensions of prejudice (stereotypes, beliefs, and judgments).

Emotions. We measured emotions using items developed by Stephan and Stephan (1985). Participants reported the extent to which they would expect to feel ten different emotional states when interacting with a Black person. Item responses ranged from 1 (*not at all*) to 7 (*very much*). A principal components analysis (varimax rotation) revealed that these items loaded onto two five-item factors, which accounted for 61% of the variance in participants' responses. Items loading on the first factor represented positive emotions (confident, accepted, secure, comfortable, relaxed), with factor loadings ranging from .71 to .82 ($\alpha = .91$). Items loading on the second factor represented negative emotions (suspicious, awkward, threatened, nervous,

apprehensive), with factor loadings ranging from .50 to .78 ($\alpha = .84$).

Favorability and liking. Two measures were used to assess participants' favorability and liking toward outgroup members. As a measure of favorability, participants indicated how they feel toward Black people on two 7-point scales, ranging from 1 (*negative/cold*) to 7 (*positive/warm*; see McLaughlin-Volpe et al., 2000, for similar procedures). Responses to these two items were highly correlated, $r(110) = .73$, $p < .001$, and thus, scores on these items were averaged to create a single indicator of favorability toward outgroup members ($\alpha = .84$). In addition, participants completed a four-item measure of anticipated liking in interactions with Black people (e.g., I think I would enjoy interacting with most Black people; $\alpha = .85$; see Tropp, 2003). Responses to these items ranged from 1 (*strongly disagree*) to 7 (*strongly agree*), with higher scores indicating greater anticipated liking in interactions with Black people.

Stereotypes. Stereotypes were measured through a semantic-differential format (Osgood et al., 1957), where participants indicated how they view Black people in response to seven word pairs (e.g., *wise-foolish*, *smart-dumb*, *violent-gentle*, *educated-ignorant*). These items were scored on 7-point scales, with higher scores corresponding to a stronger endorsement of negative stereotypes ($\alpha = .89$).

Beliefs and judgments. Participants' beliefs and judgments about Black people were measured in two ways. First, beliefs were assessed using 10 items from Brigham's (1993) Attitudes Toward Blacks Scale, the Modern Racism Scale (McConahay, Hardee, & Batts, 1981), and Kinder and Sanders's (1996) Racial Resentment Scale (e.g., Over the past few years, Blacks have gotten more economically than they deserve; $\alpha = .87$). Participants also completed the 10-item Pro-Black and Anti-Black Racial Attitudes Scales developed by Katz and Hass (1988) to assess their judgments about Black people's lives and experiences. Pro-Black items express support for Black Americans and recognition of their hardships (e.g., It's surprising that Black people do as well as they do, considering all the obstacles they face; $\alpha = .84$). Instead, anti-Black items express disapproval regarding the presumed choices and practices of Black Americans (e.g., On the whole, Black people don't stress education and training; $\alpha = .76$). Item responses for these measures ranged from 1 (*strongly disagree*) to 7 (*strongly agree*), with higher scores indicating more prejudiced beliefs.

Motivation to control prejudice. In addition, participants completed two six-item measures of internal and external motivation to control prejudice using items from Dunton and Fazio (1997) and Plant and Devine (1998). Item responses ranged from 1 (*strongly disagree*) to 7 (*strongly agree*), with higher scores representing greater motivations to control prejudice ($\alpha = .79$ and .74, respectively).

Results

RELATIONSHIPS AMONG THE CONTACT INDICATORS

First, correlations were conducted among the three contact measures. Reported numbers of outgroup acquaintances were positively associated with numbers of outgroup friends, $r(126) = .56$, $p < .001$. Intergroup closeness also related significantly to both numbers of outgroup acquaintances, $r(126) = .31$, $p < .001$, and numbers of outgroup friends, $r(126) = .46$, $p < .001$.

RELATIONSHIPS AMONG THE PREJUDICE INDICATORS

Correlations were then conducted among the prejudice indicators to examine their relationships with each other (see Table 3). Nearly all of the prejudice indicators are significantly intercorrelated at least at the .05 level of significance. Still, even for those relationships that are significant, there is considerable variability in the magnitudes of the correlations, with absolute values of r ranging from .18 to .67. In addition, three relationships between the prejudice indicators are not statistically significant: positive emotions do not relate significantly with intergroup beliefs and pro-Black and anti-Black racial attitudes.

We then entered the prejudice indicators into a principal-axis factor analysis with oblique rotation to examine how the measures would cluster together prior to specifying a number of factors. Two clear factors accounted for 54% of the variance in participants' scores, with each prejudice indicator loading more than .40 on only one of the two factors. A first factor includes primarily affective indicators of prejudice, with strong loadings for positive emotions, negative emotions, favorability, and anticipated liking (rotated factor loadings from .50 to .87). A second factor includes mostly cognitive indicators of prejudice, with strong loadings for stereotypes, beliefs, and pro-Black and anti-Black racial attitudes (rotated factor loadings from .45 to .96). Additional analyses reveal that these factors are moderately correlated, $r = .40$, $p < .001$, and orthogonal rotation yields virtually identical results.

A confirmatory analysis was then conducted for this factor structure with maximum likelihood estimation using AMOS statistical software. Although the χ^2 goodness-of-fit test is sometimes used as a measure of model fit, this test often rejects models too frequently at smaller sample sizes (Hu & Bentler, 1995). Thus, fit indices also were employed to evaluate model fit, and a cutoff value of .95 was used. Specifically, the type-3 comparative fit index (CFI) and the type-2 incremental fit index (IFI) have been included because they tend to be less

TABLE 3: Correlations Among the Prejudice Indicators (Study 2)

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1. Positive emotions	—	–.61***	.48***	.43***	–.35***	–.11	.06	–.15
2. Negative emotions		—	–.45***	–.41***	.35***	.23**	–.18*	.21*
3. Favorability			—	.39***	–.61***	–.32***	.24**	–.36***
4. Anticipated liking				—	–.45***	–.41***	.27**	–.40***
5. Stereotypes					—	.47***	–.31***	.55***
6. Beliefs						—	–.67***	.65***
7. Pro-Black attitudes							—	–.41***
8. Anti-Black attitudes								—

*$p < .05$. **$p < .01$. ***$p < .001$.

sensitive to sample size than other fit indices (Hu & Bentler, 1998).

The proposed confirmatory model including latent factors for affective prejudice and cognitive prejudice is presented in Figure 1.[4] Although the χ^2 test suggests that the model might be improved, $\chi^2(17, N = 126) = 63.75$, $p < .001$, the fit indices consistently indicate a good model fit, CFI = .985, IFI = .985. Moreover, indices of model fit suggest that this two-factor model fits the data better than a one-factor model in which all of the prejudice indicators contribute to a single latent factor, $\chi^2(18, N = 126) = 92.03$, $p < .001$, CFI = .976, IFI = .976.

RELATIONSHIPS BETWEEN THE CONTACT MEASURES AND PREJUDICE INDICATORS

Further correlations examined relationships between scores on the prejudice indicators and participants' reports of intergroup contact, both with and without controlling for motivations to control prejudice (see Table 4). Generally, measures loading highly on the affective factor bear more consistent relationships with the contact measures than those loading highly on the cognitive factor, and especially for contact involving close, cross-group relationships. Specifically, positive emotions and negative emotions correlate significantly with all of the contact measures, such that greater intergroup contact is associated with higher scores on positive emotions and lower scores on negative emotions. Both favorability and anticipated liking show significant relationships with numbers of outgroup friends and intergroup closeness, yet they do not relate strongly with numbers of outgroup acquaintances. At the same time, stereotypes only achieve a significant relationship with number of outgroup friends, and beliefs and pro-Black and anti-Black racial attitudes are not significantly associated with any of the contact measures, irrespective of motivations to control prejudice.

We find similar patterns when a structural model is used to represent the relationships (see Figure 2). In this , number of outgroup acquaintances (ACQUAINT), number of outgroup friends (FRIENDS), and intergroup closeness (CLOSE) are entered simultaneously as

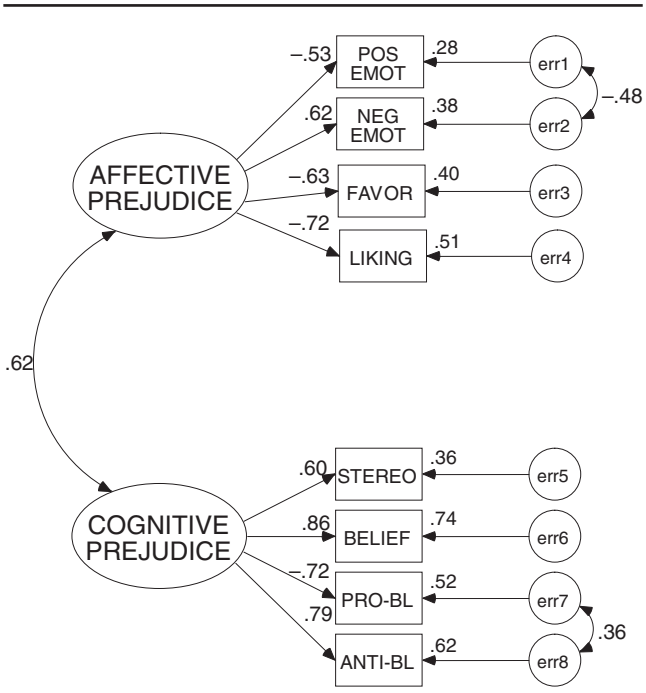

Figure 1 Confirmatory model with latent factors for affective and cognitive dimensions of prejudice (Study 2).
NOTE: POS EMOT = positive emotions, NEG EMOT = negative emotions, FAVOR = favorability, LIKING = anticipated liking, STEREO = stereotypes, BELIEF = beliefs, PRO-BL = pro-Black attitudes, ANTI-BL = anti-Black attitudes.

predictors for the latent factors of affective prejudice and cognitive prejudice while also being represented as correlated with each other. Overall, the model indicates a good fit for the data, $\chi^2(36, N = 126) = 104.30$, $p < .001$, CFI = .982, IFI = .982. This model suggests that number of outgroup acquaintances contributes little to predicting either affective prejudice or cognitive prejudice independent of its relationship to number of outgroup friends ($z = .28$ and .56, respectively, $p > .50$). At the same time, number of outgroup friends significantly predicts the latent factor of affective prejudice ($z = –2.40$, $p < .02$), although it does not significantly predict the latent factor of cognitive prejudice ($z = –.05$, $p > .90$). Similarly,

TABLE 4: Correlations Between Prejudice Indicators and Measures of Intergroup Contact (Study 2)

	Outgroup Acquaintances		*Outgroup Friends*		*Intergroup Closeness*	
Prejudice Indicator	r	*Partial* r	r	*Partial* r	r	*Partial* r
Affective factor						
Positive emotions	.22*	.22**	.31***	.32***	.21*	.21*
Negative emotions	–.19*	–.22**	–.31***	–.36***	–.29***	–.29***
Favorability	.08	.13	.26**	.31***	.27**	.28**
Anticipated liking	.12	.18*	.23*	.28**	.29***	.29***
Cognitive factor						
Stereotypes	–.04	–.09	–.19*	–.23**	–.17	–.17
Beliefs	.03	–.02	–.01	–.05	–.14	–.14
Pro-Black attitudes	.02	.09	.04	.09	.01	.01
Anti-Black attitudes	.01	–.03	–.03	–.06	–.17	–.17

NOTE: Partial *r*s control for internal and external motivation to control prejudice.
*$p < .05$. **$p < .01$. ***$p < .001$.

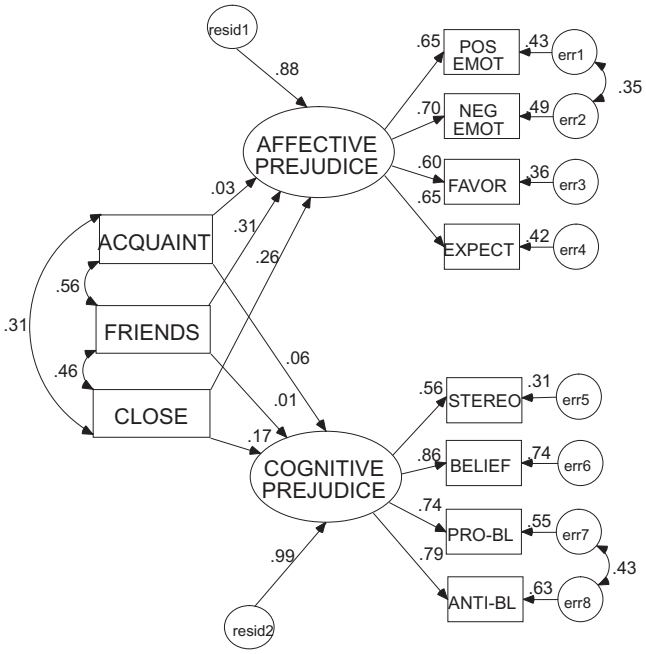

Figure 2 Standardized coefficients for model predicting latent factors of affective and cognitive prejudice, with number of outgroup acquaintances, number of outgroup friends, and intergroup closeness as predictors (Study 2).
NOTE: POS EMOT = positive emotions, NEG EMOT = negative emotions, FAVOR = favorability, LIKING = anticipated liking, STEREO = stereotypes, BELIEF = beliefs, PRO-BL = pro-Black attitudes, ANTI-BL = anti-Black attitudes, ACQUAINT = number of outgroup acquaintances, FRIENDS = number of outgroup friends, CLOSE = intergroup closeness.

intergroup closeness significantly and independently predicts the latent factor of affective prejudice ($z = –2.32$, $p = .02$), although it does not significantly predict the latent factor of cognitive prejudice ($z = –1.56$, $p = .12$).

Correspondingly, a simplified model in which only number of outgroup friends and intergroup closeness are entered as predictors for the latent factor of affective prejudice indicates an exceptionally good fit for the data, $\chi^2(7, N = 126) = 2.51$, $p = .93$, CFI = 1.0, IFI = 1.0.

Discussion

Consistent with findings from prior research (Esses et al., 1993; Stangor et al., 1991), results from Study 2 suggest that operationalizations of prejudice tend to emphasize either affective dimensions, such as feelings and emotional responses toward the outgroup, or cognitive dimensions, such as perceptions and beliefs about the outgroup. Moreover, this affective-cognitive distinction corresponds with different patterns of relationships to intergroup contact. Those prejudice indicators based on affective dimensions show significant and more consistent relationships with intergroup contact, relative to the effects obtained with cognitively based indicators. These findings nicely complement the meta-analytic findings from Study 1, with the added strength that they were obtained in a single study where the measures and research procedures were consistent across all participants. The findings also broaden the scope of this work by revealing that close, cross-group relationships—measured either in terms of number or intensity—bear significant relationships with affective prejudice, although their relationships with cognitive prejudice are less clear. Thus, these results add to a growing body of research indicating that affective ties with outgroup members contribute to more positive feelings that can generalize to the outgroup as a whole (see McLaughlin-Volpe et al., 2000; Paolini et al., 2004; Pettigrew, 1997a; Wright et al., 2002).

GENERAL DISCUSSION

The present research extends prior work on intergroup contact by examining whether contact-prejudice relationships generally vary in relation to how prejudice

is assessed. Paralleling earlier contact research (see Pettigrew & Tropp, in press), findings from these studies suggest that contact with outgroup members can promote meaningful reductions in prejudice toward the outgroup as a whole. However, these studies also show that contact-prejudice effects can vary substantially depending on the ways in which prejudice is measured. In line with our predictions, prejudice indicators based on affective dimensions demonstrate significant and more consistent relationships with intergroup contact, whereas prejudice indicators based on cognitive dimensions are less likely to reveal such relationships. Thus, rather than concluding that intergroup contact either does or does not relate to intergroup prejudice, we instead find different effects across different prejudice indicators, with affective indicators being especially critical for illuminating the relationships between intergroup contact and prejudice.

In light of these findings, we can revisit contributions from varying traditions of contact research that have often come to conflicting conclusions regarding contact's effects. On one hand, cognitively oriented theorists may be correct in highlighting cognitive barriers that may limit contact effects; yet, in neglecting affective factors, they may overlook the many positive, generalizable outcomes that can be achieved through intergroup contact. At the same time, affectively oriented theorists may be correct in claiming that contact can render meaningful changes in how people feel toward other groups, but at the same time, they risk being too enthusiastic regarding the potential for contact to reduce prejudice in all its forms. Thus, from these studies, we learn that indicators assessing different dimensions of prejudice should not be used interchangeably and that affective indicators play a special role in defining contact-prejudice relationships.

More broadly, these patterns of findings also suggest that we may adopt different orientations in responding to outgroup members, depending on whether we are focused on affective or cognitive dimensions of the intergroup relationship. When we focus on cognitive dimensions, we may act as relatively detached observers and regard outgroup members as targets of our perceptions, beliefs, and judgments. Instead, when we focus on affective dimensions, we may be more inclined to respond to outgroup members in terms of the emotions and feelings that are relevant to our relationships and experiences with them (see Esses & Dovidio, 2002; Zanna & Rempel, 1988). Consistent with this view, strategies that emphasize affective dimensions, such as asking people to imagine how outgroup members feel, have been particularly effective in reducing intergroup prejudice (Batson et al., 1997; Finlay & Stephan, 2000) and in predicting intergroup behavior (Dovidio et al., 2002; Esses & Dovidio, 2002; Talaska et al., 2004). Thus, highlighting distinctions between affective and cognitive dimensions of intergroup relationships might help us to recognize the different orientations we use in relations with outgroup members, along with clarifying why affective dimensions would be especially likely to promote positive outcomes from intergroup contact.

As we reflect on these trends, we might initially be tempted to conclude that intergroup contact should generally do little to promote positive changes on cognitive dimensions of prejudice. Still, it is conceivable that more pronounced contact-prejudice relationships might be observed for cognitive dimensions depending on the kinds of contact experiences involved. For example, interacting with multiple and varied outgroup members may afford the kinds of contact experiences that would relate to shifts on cognitive dimensions of prejudice, such as decreased endorsement of outgroup stereotypes (see Wilder, 1986). At the same time, research suggests that people also must have sufficient motivation to attend to information about outgroup targets to reduce their reliance on stereotypes (Moreno & Bodenhausen, 1999; Operario & Fiske, 2001). Thus, contact may be especially likely to reduce stereotyping to the extent that it involves both substantial numbers of and meaningful relationships with outgroup members (see van Dick et al., 2004, for a related perspective). It may be for this reason that we observe a significant, inverse relationship between contact and stereotype endorsement only when contact is measured in terms of numerous, meaningful intergroup relationships (i.e., number of outgroup friends). Additional research is therefore needed to examine how contact experiences that are both numerous and meaningful may be especially likely to reduce the endorsement of outgroup stereotypes.

It is also important to note that the present research only examined contact-prejudice relationships using explicit measures, where participants are asked to reflect on their feelings and thoughts about an outgroup. But in addition to explicit attitudes, people simultaneously hold more automatic, implicit attitudes toward outgroups (see T. D. Wilson, Lindsey, & Schooler, 2000, for a review). Implicit attitudes can be assessed on either affective dimensions (e.g., evaluations) or cognitive dimensions (e.g., stereotypes; see Greenwald & Banaji, 1995; T. D. Wilson et al., 2000). Moreover, scores on an implicit measure of stereotyping have been shown to correlate significantly with cognitively oriented measures of explicit prejudice (i.e., beliefs), whereas scores on an implicit measure of evaluation correlate significantly with an affectively oriented measure of explicit prejudice (i.e., feeling thermometer; see Wittenbrink, Judd, & Park, 2001). Taken together, this work suggests

that there are meaningful distinctions between affective and cognitive dimensions of implicit prejudice that may show some degree of correspondence to distinctions between affective and cognitive dimensions of explicit prejudice.

In turn, it is plausible to consider that the differential relationships we have observed between intergroup contact and affective and cognitive prejudice would exist not only on an explicit level, but on an implicit level as well. Indeed, other work suggests that implicit attitudes can vary depending on the orientation we have as we encounter outgroup targets (e.g., Mitchell, Nosek, & Banaji, 2003), and this may be true depending on whether the implicit measure leads us to focus on affective or cognitive dimensions of the intergroup relationship. To date, research has only begun to reveal significant relationships between intergroup contact and implicit prejudice (e.g., Aberson, Shoemaker, & Tomolillo, 2004; Turner, Hewstone, & Voci, 2004), with those relationships being tested using only affectively based implicit measures. Future research is therefore needed to determine whether intergroup contact would typically yield stronger relationships with scores on affectively based measures of implicit prejudice, as compared to the relationships observed using cognitively based measures of implicit prejudice.

In addition, as we compare patterns of effects across the studies, we should note that significant contact-prejudice effects were obtained for belief measures in the meta-analytic data, yet the effects for beliefs were not significant in the survey study. Our survey results are consistent with those of Brigham (1993), who similarly found contact to be associated with affective indicators of prejudice, but not with measures of modern and symbolic racism. Given that tests in the meta-analytic data involve varied measures and span several decades, it could be that past effects observed with certain kinds of belief measures might not be observed today, because these measures must continually be updated to correspond with ever-changing social norms (see Henry & Sears, 2002; McConahay et al., 1981).

We also recognize that there are, of course, some limitations associated with this research. Although some contact research has emphasized the role of typicality for promoting stereotype change (Hewstone & Brown, 1986; Wilder, 1984; Wolsko et al., 2003), the present studies do not include assessments of typicality. Such information is rarely reported in studies from the meta-analysis, and the specific outgroup members with whom participants from the survey study reported having contact are varied and unknown. Furthermore, the relationships we have examined are correlational in nature. Although many studies in the meta-analysis employed experimental designs, and those studies tended to show stronger effects than those observed in correlational studies (see Pettigrew & Tropp, in press), the results reported in this article do not conclusively test that intergroup contact has differential effects on affective and cognitive dimensions of prejudice. Thus, additional research using experimental manipulations of contact, such as those producing close, cross-group friendships (e.g., Wright et al., 1997; Wright & Van der Zande, 1999) is critical to determine whether contact causes reductions on affective dimensions of prejudice but not on cognitive dimensions of prejudice. Still, we believe the studies reported in this article are informative in that they underscore the significance of distinguishing between affective and cognitive dimensions of prejudice in contact research, along with highlighting the special role that affective dimensions play in defining relationships between contact and prejudice.

NOTES

1. Some reviews also suggest that contact might enhance intergroup prejudice under certain circumstances (e.g., Amir, 1976), although this is highly unlikely when contact is used as a strategy to improve intergroup relations (see Pettigrew & Tropp, in press).

2. Applying these corrections produced only minimal changes in our mean estimates of the contact-prejudice effect sizes. For tests, mean r shifted from –.216 to –.219.

3. A large proportion of the tests classified as "other" (66.6%) employed measures of social distance (see Bogardus, 1928). Because social distance measures do not fit in the specified types of prejudice indicators, results involving these measures will not be discussed in the main body of this article. However, for the interested reader, the mean contact-prejudice effect for social distance measures (M_r = –.203) was weaker than the mean effects for emotions and favorability, $Q_B(1)$ = 10.93 and 6.96, respectively, $p < .001$, and did not differ significantly from the mean effects for stereotypes and beliefs, $Q_B(1)$ = 3.29 and 1.94, respectively, $p > .05$.

4. Errors are correlated for positive and negative emotions, and pro-Black and anti-Black attitudes, because these sets of items employed identical scoring scales.

REFERENCES

Aberson, C. L., Shoemaker, C., & Tomolillo, C. (2004). Implicit bias and contact: The role of interethnic friendships. *Journal of Social Psychology, 144*, 335-347.

Allport, G. W. (1954). *The nature of prejudice*. Reading, MA: Addison-Wesley.

Amir, Y. (1976). The role of intergroup contact in change of prejudice and ethnic relations. In P. A. Katz (Ed.), *Toward the elimination of racism* (pp. 245-308). Elmsford, NY: Pergamon.

Aron, A., & McLaughlin-Volpe, T. (2001). Including others in the self: Extensions to own and partner's group memberships. In C. Sedikides & M. B. Brewer (Eds.), *Individual self, relational self, collective self* (pp. 89-108). Philadelphia: Psychology Press.

Ashmore, R. D., & Del Boca, F. K. (1981). Conceptual approaches to stereotypes and stereotyping. In D. L. Hamilton (Ed.), *Cognitive processes in stereotyping and intergroup behavior* (pp. 1-35). Hillsdale, NJ: Lawrence Erlbaum.

Batson, C. D., Polycarpou, M. P., Harmon-Jones, E., Imhoff, H. J., Mitchener, E. C., Bednar, L. L., et al. (1997). Empathy and attitudes: Can feeling for a member of a stigmatized group improve feelings toward the group? *Journal of Personality and Social Psychology, 72*, 105-118.

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117*, 497-529.

Bogardus, E. S. (1928). *Immigration and race attitudes*. Boston: Heath.

Breckler, S. J., & Wiggins, E. C. (1989). Affect versus evaluation in the structure of attitudes. *Journal of Experimental Social Psychology, 25*, 253-271.

Brigham, J. C. (1993). College students' racial attitudes. *Journal of Applied Social Psychology, 23*, 1933-1967.

Cook, T. D., Cooper, H., Cordray, D. S., Hartman, H., Hedges, L. V., Light, R. J., et al. (Eds.). (1992). Some generic issues and problems for meta-analysis. In T. D. Cook, H. Cooper, D. S. Cordray, H. Hartman, L. V. Hedges, R. J. Light, et al. (Eds.), *Meta-analysis for explanation: A casebook* (pp. 283-320). New York: Russell Sage Foundation.

Crites, S. L., Fabrigar, L. R., & Petty, R. E. (1994). Measuring the affective and cognitive properties of attitudes: Conceptual and methodological issues. *Personality and Social Psychology Bulletin, 20*, 619-634.

Dovidio, J. F., Brigham, J. C., Johnson, B. T., & Gaertner, S. L. (1996). Stereotyping, prejudice, and discrimination: Another look. In C. N. Macrae, C. Stangor, & M. Hewstone (Eds.), *Stereotypes and stereotyping* (pp. 276-319). New York: Guilford.

Dovidio, J. F., Esses, V. M., Beach, K. R., & Gaertner, S. L. (2002). The role of affect in determining intergroup behavior: The case of willingness to engage in intergroup contact. In D. M. Mackie & E. R. Smith (Eds.), *From prejudice to intergroup emotions: Differentiated reactions to social groups* (pp. 153-171). New York: Psychology Press.

Dunton, B. C., & Fazio, R. H. (1997). Categorization by race: The impact of automatic and controlled components of racial prejudice. *Journal of Experimental Social Psychology, 33*, 451-470.

Eagly, A. H., & Chaiken, S. (1993). *The psychology of attitudes*. Fort Worth: Harcourt Brace Jovanovich.

Esses, V. M., & Dovidio, J. F. (2002). The role of emotions in determining willingness to engage in intergroup contact. *Personality and Social Psychology Bulletin, 28*, 1202-1214.

Esses, V. M., Haddock, G., & Zanna, M. P. (1993). Values, stereotypes, and emotions as determinants of intergroup attitudes. In D. Mackie & D. Hamilton (Eds.), *Affect, cognition, and stereotyping: Interactive processes in group perception* (pp. 137-166). San Diego, CA: Academic Press.

Finlay, K., & Stephan, W. G. (2000). Reducing prejudice: The effects of empathy on intergroup attitudes. *Journal of Applied Social Psychology, 30*, 1720-1737.

Ford, W. S. (1986). Favorable intergroup contact may not reduce prejudice: Inconclusive journal evidence, 1960-1984. *Sociology and Social Research, 70*, 256-258.

Greenwald, A. G., & Banaji, M. R. (1995). Implicit social cognition: Attitudes, self-esteem, and stereotypes. *Psychological Review, 102*, 4-27.

Hamberger, J., & Hewstone, M. (1997). Inter-ethnic contact as a predictor of blatant and subtle prejudice: Tests of a model in four West European nations. *British Journal of Social Psychology, 36*, 173-190.

Hamilton, D. L. (1981). Stereotyping and intergroup behavior: Some thoughts on the cognitive approach. In D. L. Hamilton (Ed.), *Cognitive processes in stereotyping and intergroup behavior* (pp. 333-353). Hillsdale, NJ: Lawrence Erlbaum.

Hedges, L. V., & Vevea, J. L. (1998). Fixed- and random-effects models in meta-analysis. *Psychological Methods, 3*, 486-504.

Henry, P. J., & Sears, D. O. (2002). The Symbolic Racism 2000 Scale. *Political Psychology, 23*, 253-283.

Herek, G. M., & Capitanio, J. P. (1996). "Some of my best friends": Intergroup contact, concealable stigma, and heterosexuals' attitudes toward gay men and lesbians. *Personality and Social Psychology Bulletin, 22*, 412-424.

Hewstone, M., & Brown, R. (1986). Contact is not enough: An intergroup perspective on the "contact hypothesis." In M. Hewstone & R. Brown (Eds.), *Contact and conflict in intergroup encounters* (pp. 1-44). Oxford, UK: Basil Blackwell.

Hu, L. T., & Bentler, P. M. (1995). Evaluating model fit. In R. Hoyle (Ed.), *Structural equation modeling: Concepts, issues, and applications* (pp. 76-99). Thousand Oaks, CA: Sage.

Hu, L. T., & Bentler, P. M. (1998). Fit indices in covariance structure modeling: Sensitivity to underparameterized model misspecification. *Psychological Methods, 3*, 424-453.

Jackson, J. W. (1993). Contact theory of intergroup hostility: A review and evaluation of the theoretical and empirical literature. *International Journal of Group Tensions, 23*, 43-65.

Johnson, B. T. (1993). *DSTAT: Software for the meta-analytic review of research literatures*. Hillsdale, NJ: Lawrence Erlbaum.

Johnson, B. T., & Eagly, A. H. (2000). Quantitative synthesis of social psychological research. In H. T. Reis & C. M. Judd (Eds.), *Handbook of research methods in social psychology*. London: Cambridge University Press.

Katz, I., & Hass, R. G. (1988). Racial ambivalence and American value conflict. *Journal of Personality and Social Psychology, 55*, 893-905.

Kinder, D. R., & Sanders, L. M. (1996). *Divided by color: Racial politics and democratic ideals*. Chicago: University of Chicago Press.

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 and Intergroup Relations, 6*, 76-92.

Lipsey, M. W., & Wilson, D. B. (2001). *Practical meta-analysis*. Thousand Oaks, CA: Sage.

Mackie, D. M., & Hamilton, D. L. (Eds.). (1993). *Affect, cognition, and stereotyping: Interactive processes in group perception*. San Diego, CA: Academic Press.

Mackie, D. M., & Smith, E. R. (1998). Intergroup relations: Insights from a theoretically integrative approach. *Psychological Review, 105*, 499-529.

Mann, J. H. (1959). The relationship between cognitive, affective, and behavioral aspects of racial prejudice. *Journal of Social Psychology, 49*, 223-228.

McConahay, J. B., Hardee, B. B., & Batts, V. (1981). Has racism declined in America? It depends on who is asking and what is asked. *Journal of Conflict Resolution, 25*, 563-579.

McLaughlin-Volpe, T., Aron, A., Wright, S. C., & Reis, H. T. (2000). *Intergroup social interaction and intergroup prejudice: Quantity versus quality*. Manuscript submitted for publication.

Mitchell, J. P., Nosek, B. A., & Banaji, M. R. (2003). Contextual variations in implicit evaluation. *Journal of Experimental Psychology: General, 132*, 455-469.

Moreno, K. N., & Bodenhausen, G. V. (1999). Resisting stereotype change: The role of motivation and attentional capacity in defending social beliefs. *Group Processes and Intergroup Relations, 2*, 5-16.

Operario, D., & Fiske, S. T. (2001). Causes and consequences of stereotypes in organizations. In M. London (Ed.), *How people evaluate others in organizations* (pp. 45-62). Mahwah, NJ: Lawrence Erlbaum.

Osgood, C. E., Suci, G. J., & Tannenbaum, P. H. (1957). *The measurement of meaning*. Urbana: University of Illinois Press.

Ostrom, T. M. (1969). The relationship between the affective, behavioral, and cognitive components of attitude. *Journal of Experimental Social Psychology, 5*, 12-30.

Ostrom, T. M., Skowronski, J. J., & Nowak, A. (1994). The cognitive foundation of attitudes: It's a wonderful construct. In P. G. Devine, D. L. Hamilton, & T. M. Ostrom (Eds.), *Social cognition: Impact on social psychology* (pp. 195-258). New York: Academic Press.

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.

Pettigrew, T. F. (1971). *Racially separate or together?* New York: McGraw-Hill.

Pettigrew, T. F. (1997a). Generalized intergroup contact effects on prejudice. *Personality and Social Psychology Bulletin, 23*, 173-185.

Pettigrew, T. F. (1997b). The affective component of prejudice: Empirical support of the new view. In S. A. Tuch & J. K. Martin

(Eds.), *Racial attitudes in the 1990s: Continuity and change* (pp. 76-90). Westport, CT: Praeger.

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

Pettigrew, T. F., & Tropp, L. R. (2000). Does intergroup contact reduce prejudice? Recent meta-analytic findings. In S. Oskamp (Ed.), *Reducing prejudice and discrimination: The Claremont Symposium on Applied Social Psychology* (pp. 93-114). Mahwah, NJ: Lawrence Erlbaum.

Pettigrew, T. F., & Tropp, L. R. (in press). A meta-analytic test of intergroup contact theory. *Journal of Personality and Social Psychology.*

Plant, E. A., & Devine, P. G. (1998). Internal and external motivation to respond without prejudice. *Journal of Personality and Social Psychology, 75*, 811-832.

Plant, E. A., Devine, P. G., & Brazy, P. C. (2003). The bogus pipeline and motivations to respond without prejudice: Revisiting the fading and faking of racial prejudice. *Group Processes and Intergroup Relations, 6*, 187-200.

Riordan, C. (1978). Equal-status interracial contact: A review and revision of the concept. *International Journal of Intercultural Relations, 2*, 161-185.

Rosenthal, R. (1991). *Meta-analytic procedures for social research.* Newbury Park, CA: Sage.

Rothbart, M. (1996). Category-exemplar dynamics and stereotype change. *International Journal of Intercultural Relations, 20*, 305-321.

Rothbart, M., & John, O. P. (1985). Social categorization and behavioral episodes: A cognitive analysis of the effects of intergroup contact. *Journal of Social Issues, 41*, 81-104.

Smith, E. R. (1993). Social identity and social emotions: Toward new conceptualizations of prejudice. In D. Mackie & D. Hamilton (Eds.), *Affect, cognition, and stereotyping: Interactive processes in group perception* (pp. 137-166). San Diego, CA: Academic Press.

Stangor, C., Sullivan, L. A., & Ford, T. E. (1991). Affective and cognitive determinants of prejudice. *Social Cognition, 9*, 359-380.

Stephan, W. G., & Stephan, C. W. (1985). Intergroup anxiety. *Journal of Social Issues, 41*, 157-175.

Tajfel, H., Billig, M. G., Bundy, R. P., & Flament, C. (1971). Social categorization and intergroup behavior. *European Journal of Social Psychology, 1*, 149-178.

Talaska, C., Fiske, S. T., & Chaiken, S. (2004). *Predicting discrimination: A meta-analysis of the racial attitude-behavior literature.* Manuscript under review.

Tropp, L. R. (2003). The psychological impact of prejudice: Implications for intergroup contact. *Group Processes and Intergroup Relations, 6*, 131-149.

Turner, R. N., Hewstone, M., & Voci, A. (2004). *The impact of cross-group friendship on explicit and implicit prejudice in children.* Manuscript under review.

van Dick, R., Wagner, U., Pettigrew, T. F., Christ, O., Wolf, C., Petzel, T., et al. (2004). The role of perceived importance in intergroup contact. *Journal of Personality and Social Psychology, 87*, 211-227.

Wilder, D. A. (1984). Intergroup contact: The typical member and the exception to the rule. *Journal of Experimental Social Psychology, 20*, 177-194.

Wilder, D. A. (1986). Cognitive factors affecting the success of intergroup contact. In S. W. Worchel & W. G. Austin (Eds.), *Psychology of intergroup relations* (pp. 49-66). Chicago: Nelson-Hall.

Wilson, D. B. (2002). SPSS macros for performing meta-analytic analyses. Retrieved from http://mason.gmu.edu/~dwilsonb/ma.html

Wilson, T. D., Lindsey, S., & Schooler, T. Y. (2000). A model of dual attitudes. *Psychological Review, 107*, 101-126.

Wittenbrink, B., Judd, C. M., & Park, B. (2001). Evaluative versus conceptual judgments in automatic stereotyping and prejudice. *Journal of Experimental Social Psychology, 37*, 244-252.

Wolsko, C., Park, B., Judd, C. M., & Bachelor, J. (2003). Intergroup contact: Effects on group evaluations and perceived variability. *Group Processes and Intergroup Relations, 6*, 93-110.

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.

Wright, S. C., Aron, A., & Tropp, L. R. (2002). Including others (and groups) in the self: Self-expansion and intergroup relations. In J. P. Forgas & K. D. Williams (Eds.), *The social self: Cognitive, interpersonal, and intergroup perspectives* (pp. 343-363). New York: Psychology Press.

Wright, S. C., & Van der Zande, C. C. (1999, October). *Bicultural friends: When cross-group friendships cause improved intergroup attitudes.* Paper presented at the annual meeting of the Society for Experimental Psychology, St. Louis, MO.

Zajonc, R. B. (1980). Feeling and thinking: Preferences need no inferences. *American Psychologist, 35*, 151-175.

Zanna, M. P., & Rempel, J. K. (1988). Attitudes: A new look at an old concept. In D. Bar Tal & A. Kruglanski (Eds.), *The social psychology of knowledge* (pp. 315-334). Cambridge, UK: Cambridge University Press.

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