

## ORIGINAL RESEARCH REPORT

# Friendships with Blacks Relate to Lessened Implicit Preferences for Whites Over Blacks

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The present study examines the relationship between self-reported friendships with Blacks and implicit preferences for Whites relative to Blacks. There is considerable evidence that friendships relate to more favorable attitudes toward outgroups, however, the bulk of this evidence comes from explicit self-report measures. Using a sample of 123,445 participants that completed a Black-White IAT on the Project Implicit website, results indicate that participants reporting either childhood or post-childhood friendships with Blacks demonstrated weaker implicit preferences for Whites over Blacks. The size of this relationship was substantially smaller than found for explicit evaluations of Blacks.

**Keywords:** intergroup contact; prejudice; implicit preferences; IAT; large datasets

Intergroup contact theory states that, under certain conditions, contact with outgroup members relates to more favorable attitudes toward the outgroup. This contention is supported by a large-scale meta analysis that found considerable support for the relationship between positive outgroup contact experiences and more favorable outgroup evaluations (Pettigrew & Tropp, 2006). Another meta analysis found similar effects for contact defined in terms of outgroup friendships (Davies, Tropp, Aron, Pettigrew, & Wright, 2011). The effects of friendship appear broad and applicable across many types of outgroups. For example, friendships relate to more favorable outgroup attitudes towards Muslims in the U.K. (Abrams, Van D Vyver, Houston, & Vasijevic, 2017), White Australians' attitudes toward Aboriginal Australians (Barlow, Louis, & Hewstone, 2009), heterosexuals' attitudes toward gay men and lesbians (Herek & Capitano, 1996), and minority South African group members' attitudes toward White South Africans (Swart, Hewstone, Christ, & Voci, 2011).<sup>1</sup>

Regarding the size of friendship-attitude relationships, meta analytic evidence summarizing results of 135 unique studies, found effects of roughly  $d = 0.50$ , 95% CI: [0.47, 0.54]; equivalent to  $r = .24$  for friendships (Davies et al., 2011). The size of these effects are consistent with a more general meta analyses of contact-prejudice relationships ( $r = .225$ ; Pettigrew & Tropp, 2006).

Although relationships between outgroup friendships and explicit outgroup evaluations are well established, less is known about the relationship between contact, friendships, and implicit preferences. Some evidence suggests that more favorable contact relates to less implicit

ingroup favoritism. For example, White students' favorable contact experiences with African Americans (Aberson & Gaffney, 2009, 2008; Aberson & Haag, 2007), non-disabled persons' contact experiences with disabled people (Pruett & Chan, 2006), and heterosexual's contact with gay men and lesbians (MacInnis, Page-Gould, & Hodson, 2017) all related to weaker implicit preferences favoring the ingroup relative to the outgroup. Specifically focused on friendships, close friendships with African Americans and Hispanics (Aberson, Shoemaker, & Tomolillo, 2004), friendships with Southeast Asian immigrants (Turner, Hewstone, & Voci, 2007, Study 1), and African Americans' friendships with Whites in the U.S., and Muslims' friendships with Christians in Lebanon (Henry & Hardin, 2006), related to weaker implicit preferences ingroups over outgroups. Additionally, a set of 12 studies included in a meta-analysis found an effect of  $r = .267$ , 95% CI: [.18, .35], ( $d = 0.55$ ) for friendship-implicit preference relationships (Davies et al., 2011).

Although the studies previously cited found that contact/friendships related to weaker implicit ingroup favoritism, others found different patterns of results. For example, studies examining White participants' contact with Asians (Prestwich, Kenworthy, Wilson, & Kwan-Tat, 2008), health care professionals' contact with the obese (Teachman & Brownell, 2001), and contact with individuals with intellectual disabilities (Wilson & Scior, 2015) all found contact did not relate to implicit preferences. Surprisingly, others found friendships related to greater implicit preferences for the ingroup over the outgroup (Vezzali, Giovannini, & Capozza, 2012). Still others found the friendships related to implicit favoritism for outgroups relative to the ingroup. For example, a longitudinal study that examined African students in China found that friendships related to implicit preferences for Chinese over African faces (Qian, Heyman, Quinn, Fu, & Lee, 2017).

Notably, sample sizes in these studies were relatively small, ranging from 30 to 326, with all but one study including fewer than 106 participants.

### Are Friendship-Implicit Preference Relationships Similar Across Racial/Ethnic Groups?

Implicit preferences for Whites over Blacks exist across numerous racial and ethnic groups. For example, large-scale investigations demonstrated that White ( $d = 0.91$ ), Hispanic ( $d = 0.71$ ), and Asian ( $d = 0.80$ ) participants all implicitly favored Whites over Blacks (Nosek et al., 2007). Relevant to the question of the strength of the friendship-implicit preference relationship, it seems reasonable that since all participants evaluated Whites compared to Blacks, that there would not be differences between ethnic groups in how strongly friendships relate to implicit preferences. However, it also seems reasonable that White participants' status as an ingroup in the comparison promotes resistance to changes in preference, suggesting that friendships effects would be weaker for Whites. Given these competing possibilities, the present work explores these relationships but does not offer a formal hypothesis.

### Do Friendships Differentially Influence Implicit and Explicit Preferences?

Implicit preferences are often more weakly predicted by contact than are explicit attitudes (e.g., Aberson & Haag, 2007; Tam, Hewstone, Voci, & Kenworthy, 2006; Turner et al., 2007; Vonofakou, Hewstone, & Voci, 2007). More generally, both meta analytic and correlational evidence suggest that that affective measures of prejudice such as emotions and favorability appear more strongly related to contact than cognitive dimensions of prejudice such as beliefs or stereotypes (Tropp & Pettigrew, 2005, Study 1). It seems reasonable to believe that implicit preferences behave more like cognitive than affective measures.

Meta analytic work, however, found no difference between friendship-prejudice effects between implicit and explicit attitude measures (Davies et al., 2011). Notably, that work only included data from 12 studies that employed implicit measures. Among those studies that could be identified as including an implicit measure, sample sizes appear to be relatively small ( $n$  from 46 to 320). The small samples found in previous work suggests evidence for differently sized effects for implicit and explicit measures is limited. Given these issues, this study explores differences in the size of implicit/explicit relationships with friendship but does not put forward a prediction regarding differences in strength of effects.

### Hypotheses and Research Questions

**Hypothesis 1.** Participants with Black friends (either in childhood or post childhood) exhibit weaker implicit preferences for Whites over Blacks. This prediction is made for all subgroups.

**Exploratory Research Question 1.** Do effect sizes differ between ethnic/racial groups?

**Exploratory Research Question 2.** Do effect sizes differ between implicit and explicit measures?

### Caveat

The present work examines the relationship between reported friendships with Blacks and implicit preferences for Whites in relation to Blacks. Even if results are consistent with predictions, this does not suggest that friendships cause changes in implicit preferences. Such a finding might occur if individuals who less strongly implicitly favor Whites over Blacks were likely to explore friendships with Blacks. Similarly, it is possible that factors such as feelings of threat from Blacks or anxiety when interacting with Blacks promote both contact avoidance (i.e., fewer friendships) and greater implicit preferences for Whites over Blacks.

### Method

These data come from the Project Implicit Demo Website open dataset for the Race IAT (Xu, Nosek, & Greenwald, 2014; <https://osf.io/52qxl/>). I preregistered the analysis plan prior to downloading data (<https://osf.io/yqbpj/registrations/>). I note all deviations from the preregistration plan. The analysis code is available at <https://osf.io/yqbpj/>. The study includes data collected between 2/2/2015 and 9/26/2016 as this was the only period that included friendship measures.

The initial dataset included 2,079,623 cases, however this number was substantially reduced after exploring the data. After removing cases that could not explicitly be categorized as White non-Hispanic, Asian/Pacific Islander, or Hispanic, 580,017 cases remained. The preregistration indicated use of Maximum Likelihood estimation to account for missing data. However, 78.7% of the remaining cases were missing data on either the implicit measure or on one or both of the friendship measures. Absence of the implicit measure indicates that participants did not complete the task whereas missing friendship values reflect an unexpected question rotation pattern that did not ask every participant to indicate friendships. As this is too much data to impute, analyses of implicit preferences utilized only complete cases for the implicit and friendship measures ( $N = 123,445$ ; this deviates from the preregistration). Among the remaining cases, missingness for the explicit preference measure was limited (1.8%). Analyses of explicit bias did follow the plan to use ML. There were no outliers or other cases removed.

### Sample

Participants were 83.7% White, non-Hispanic, 10.2% Asian/Pacific Islander, and 6.1% Hispanic. Of these participants, 60.4% identified as women, 39.2% as men, and 0.4% as transgender. The median age was 22.8. The majority of the sample (80.8%) reported the United States as their country of residence.

Given the large expected sample size and the secondary analyses, there was no a priori power analysis. The present sample size provides power of 99% to detect effects as small as  $d = 0.03$  for the overall analysis at  $\alpha = .01$ . The White sample provides power of 99% to detect effects as small as  $d = 0.031$ . The Asian sample has power of 99% to detect effects as small as  $d = 0.087$ . For the Hispanic sample, power was 99% to detect effects as small as  $d = 0.120$ .

**Analyses**

Implicit preference analyses derived effect sizes (Cohen's *d*) from an independent samples comparisons of participants that reported Black friends compared to those that did not. The lsr package (Navarro, 2015) extracted effect sizes and the MBESS package (Kelley, 2018) provided 99% confidence limits around the effect sizes. For analyses of explicit attitudes, I used the lavaan package (Rosseel, 2012) to calculate a standardized coefficient predicting the explicit measure from each friendship measure in separate analyses. These tests employed Maximum Likelihood for missing data handling. The standardized coefficient in this analysis is equivalent to a correlation. I converted the correlation to *d* for subsequent analyses. I computed Bayes Factors using the BayesFactor package (Morey & Rouder, 2018).

**Measures**

**Friendships.** Two items addressed friendships. The first read "I had a strong childhood friendship with a person who is ..." and the second "I have had (or now have) a strong post-childhood friendship with a person who is ..." Participants chose from a list including Asian, Black, Hispanic, Native American, Pacific Islander, and White. I classified all participants indicating a Black friend as having a friendship. Coding addressed childhood and post-childhood as separate variables. Additional exploratory analyses coded childhood and post-childhood friendships with Hispanics and Asian/Pacific Islanders.

**Preferences.** The implicit preference measure is the Race IAT using White and Black faces. The explicit preference measure is single-item feeling thermometer ranging from 0 (*coldest feelings*) to 10 (*warmest feelings*) toward Blacks. An exploratory analysis takes the difference between feeling thermometer measure ratings of Whites compared to feelings toward Blacks.

**Results**

Hypothesis 1 predicted that participants with Black friends (either in childhood or after childhood) would show less implicit preference for Whites over Blacks compared to those who did not experience friendships. As shown in **Tables 1** and **2**, the data support this prediction with overall effect sizes of *d* = 0.132, 99% CI: [0.117, 0.148] and 0.160, 99% CI: [0.145, 0.175], for childhood and post-childhood friendships respectively. Implicit preferences were weaker for both those with childhood and post-childhood friends than those without. Bayes factors suggest considerable support for predictions with the smallest Bayes Factor (using default priors) for both tests exceeding a google.

Research Question 1 asked whether effect sizes differ between ethnic/racial groups. Results show stronger effects for Asian/Pacific Islanders than for Whites and Hispanics (see **Table 2**). For all groups, implicit preferences are consistently weaker for participants reporting friendships with African Americans than for those with no friendships.

**Table 1:** Means and Standard Deviations.

	Childhood Friends	No Childhood Friends	Post Childhood Friends	No Post Childhood
	<i>M(SD)</i>	<i>M(SD)</i>	<i>M(SD)</i>	<i>M(SD)</i>
Overall				
Implicit Preference	0.296 (0.430)	0.352 (0.424)	0.298 (0.432)	0.366 (0.419)
Explicit Evaluation	7.856 (1.994)	7.241 (1.928)	7.886 (1.978)	7.046 (1.879)
TDiff	0.045 (1.387)	0.405 (1.616)	0.046 (1.373)	0.502 (1.670)
Whites				
Implicit	0.304 (0.429)	0.358 (0.424)	0.305 (0.431)	0.373 (0.419)
Explicit	7.873 (1.996)	7.280 (1.938)	7.900 (1.981)	7.073 (1.889)
TDiff	0.091 (1.350)	0.455 (1.601)	0.089 (1.333)	0.567 (1.668)
Asian				
Implicit	0.217 (0.441)	0.319 (0.423)	0.305 (0.431)	0.373 (0.419)
Explicit	7.672 (1.932)	6.962 (1.798)	7.721 (1.921)	6.838 (1.751)
TDiff	-0.317 (1.609)	0.132 (1.644)	-0.319 (1.654)	0.195 (1.614)
Hispanic				
Implicit	0.285 (0.419)	0.342 (0.422)	0.283 (0.425)	0.353 (0.416)
Explicit	7.853 (2.02)	7.250 (1.982)	7.875 (1.998)	7.131 (1.968)
TDiff	-0.147 (1.692)	0.246 (1.507)	-0.148 (1.494)	0.318 (1.721)

Note: Means and standard deviations for explicit based on complete cases. Lower scores on implicit relate to less preference. Higher scores on explicit relate to more warmth. TDiff = difference between White feeling thermometer and Black feeling thermometer.

**Table 2:** Effects Sizes, 99% Confidence Limits, and Bayes Factors for Total Sample and Subgroup Analyses.

	<i>d</i>	Lower Limit	Upper Limit	<i>BF</i> <sub>10</sub>
<b>Total Sample</b>				
Implicit – Child	0.132	0.117	0.148	1.450 × 10 <sup>105</sup>
Implicit – Post	0.160	0.145	0.175	4.123 × 10 <sup>168</sup>
Explicit – Child	0.305	0.290	0.321	1.528 × 10 <sup>592</sup>
Explicit – Post	0.445	0.429	0.462	1.857 × 10 <sup>1216</sup>
TDiff – Child	0.226	0.211	0.241	2.511 × 10 <sup>326</sup>
TDiff – Post	0.301	0.286	0.317	5.915 × 10 <sup>575</sup>
<b>White</b>				
Implicit – Child	0.127	0.110	0.143	3.478 × 10 <sup>81</sup>
Implicit – Post	0.159	0.143	0.175	1.251 × 10 <sup>139</sup>
Explicit – Child	0.295	0.278	0.311	1.692 × 10 <sup>462</sup>
Explicit – Post	0.437	0.419	0.454	3.751 × 10 <sup>980</sup>
TDiff – Child	0.233	0.217	0.249	1.232 × 10 <sup>291</sup>
TDiff – Post	0.321	0.304	0.338	1.800 × 10 <sup>545</sup>
<b>Asian</b>				
Implicit – Child	0.240	0.187	0.292	3.538 × 10 <sup>28</sup>
Implicit – Post	0.252	0.204	0.301	3.848 × 10 <sup>37</sup>
Explicit – Child	0.346	0.298	0.395	1.053 × 10 <sup>75</sup>
Explicit – Post	0.478	0.427	0.529	1.393 × 10 <sup>139</sup>
TDiff – Child	0.244	0.197	0.291	1.425 × 10 <sup>37</sup>
TDiff – Post	0.305	0.258	0.354	2.897 × 10 <sup>58</sup>
<b>Hispanic</b>				
Implicit – Child	0.135	0.074	0.197	2.554 × 10 <sup>5</sup>
Implicit – Post	0.167	0.108	0.227	4.859 × 10 <sup>9</sup>
Explicit – Child	0.296	0.234	0.359	2.614 × 10 <sup>32</sup>
Explicit – Post	0.381	0.318	0.445	3.756 × 10 <sup>53</sup>
TDiff – Child	0.236	0.175	0.238	1.674 × 10 <sup>20</sup>
TDiff – Post	0.286	0.225	0.348	1.468 × 10 <sup>30</sup>

Note: Child = childhood friendship. Post = post-childhood friendship. TDiff = Feeling thermometer difference score. Lower and Upper Limits correspond to 99% Confidence Intervals around Cohen’s *d*. Positive values reflect less implicit preference for Whites and warmer feeling thermometer ratings.

Research Question 2 explores differences in effect sizes for implicit and explicit measures (see Table 2). Feeling thermometer analysis produced a similar pattern of results with friendships related to more favorable outgroup evaluations. The explicit feeling thermometer measure demonstrated considerably larger effect sizes than the implicit measure. An exploratory analysis using the differences between feeling thermometer ratings of Whites minus the same measure for Blacks. These effects were weaker than for the Black thermometer on its own

but remained substantially stronger than for the implicit measure.

**Additional Exploratory Analyses**

Reviewer comments on a preprint of the manuscript suggested two additional questions for exploration. This section addresses analyses limited to U.S. residents and generalization of contact effects. I did not include either of these analyses in the preregistration.

The first analysis addressed predictions regarding implicit preferences for U. S. residents (*n* = 99,783) only. Implicit preferences remained weaker for both those with childhood (*d* = 0.136, 99% CI: [ 0.119, 0.153], *BF* = 5.552 × 10<sup>98</sup>) and post-childhood friends (*d* = 0.168, 99% CI: [0.152, 0.184], *BF* = 1.021 × 10<sup>150</sup>) than those without. Although effect sizes were slightly larger than for the full sample, the magnitude of the differences is negligible (ranging from .004 to .008).

To address whether contact with one outgroup generalizes to implicit preferences toward African Americans, I examined White’s friendships with Hispanics and Asian/Pacific Islanders, Asian/Pacific Islander’s Contact with Hispanics, and Hispanic’s contact with Asians/Pacific Islanders. These analyses, shown in Table 3, demonstrate smaller effects than direct contact. As participants who had friendships with Hispanics or Asian/Pacific Islanders may also experience friendships with Blacks, an additional analysis focused on comparisons of participants that had friendships with Hispanics or Asian/Pacific Islanders but did not report any Black friends. These analyses demonstrate a small effect for Whites who had friendships with Hispanics but no Black friends in childhood only. Given the magnitude of this effect and the others shown in Table 3, results largely suggest that friendships with members of other non-Black ethnic or racial groups (absent friendships with Blacks) are not associated with more favorable implicit evaluations of Blacks relative to Whites.

**Discussion**

The primary goal of the present study was to examine the relationship between friendships with African Americans and implicit preferences for Whites over Blacks. Results indicate that participants who reported having Black friends demonstrated less implicit favoritism for Whites over Blacks. This finding adds to a body of literature suggesting friendships and, more generally, contact relates to more favorable outgroup evaluations over a broad range of measures.

Although these data provide substantial support for predictions, it is worth noting that the size of effects for the implicit measures are difficult to detect with sample sizes common to social psychological research. A sample of 1860 is necessary to detect population effects of *d* = 0.13 with 80% power. For 95% power, sample size requirements jump to over 3000. Comparatively, the observed explicit attitude effects were substantially larger and far easier to detect (e.g., a sample of *n* = 352 for power of 80% with *d* = 0.30). Future work studying

**Table 3:** Effects Sizes, 99% Confidence Limits, and Bayes Factors for Contact Generalization Analyses.

	<i>d</i>	Lower Limit	Upper Limit	<i>BF</i> <sub>10</sub>
White's Friendship with Hispanics Overall				
Implicit – Child	0.109	0.091	0.127	$3.568 \times 10^{49}$
Implicit – Post	0.127	0.110	0.143	$1.182 \times 10^{84}$
White's Friendship with Hispanics Overall (No Black Friends)				
Implicit – Child	0.039	0.012	0.066	11.45
Implicit – Post	0.013	-0.012	0.038	0.026
White's Friendship with Asians Overall				
Implicit – Child	0.095	0.074	0.115	$5.650 \times 10^{28}$
Implicit – Post	0.107	0.089	0.125	$3.931 \times 10^{49}$
White's Friendship with Asians Overall (No Black Friends)				
Implicit – Child	0.026	-0.004	0.056	0.152
Implicit – Post	0.018	-0.011	0.046	0.045
Asian Friendship with Hispanic Overall				
Implicit – Child	0.173	0.118	0.228	$4.895 \times 10^{12}$
Implicit – Post	0.176	0.125	0.226	$6.465 \times 10^{15}$
Asian Friendship with Hispanic Overall (No Black Friends)				
Implicit – Child	0.035	-0.043	0.114	0.067
Implicit – Post	0.002	-0.073	0.077	0.033
Hispanic's Friendship with Asians Overall				
Implicit – Child	0.080	0.001	0.158	1.028
Implicit – Post	0.131	0.061	0.202	3030.538
Hispanic's Friendship with Asians Overall (No Black Friends)				
Implicit – Child	0.019	-0.099	0.137	0.056
Implicit – Post	0.006	-0.107	0.119	0.050

Note: Child = childhood friendship. Post = post-childhood friendship. TDiff = Feeling thermometer difference score. Lower and Upper Limits correspond to 99% Confidence Intervals around Cohen's *d*. Positive values reflect less implicit preference for Whites and warmer feeling thermometer ratings. White ( $n = 103,384$ ), Asian/Pacific Islander ( $n = 12,562$ ), and Hispanic ( $n = 7,499$ ).

friendship-implicit preference relationships requires substantially larger sample sizes than typically used in contact-prejudice research.

Exploratory analyses examined whether participant ethnicity moderated friendship relationships with implicit preferences. Interestingly, Asian/Pacific Islander participants demonstrated the strongest friendship effects. Speculatively, this may reflect differences in exposure to Blacks. The 2010 U.S. Census reports that nearly 2/3rds of Asian/Pacific Islanders are foreign born compared to 53% of Hispanics (U.S. Census Bureau, 2011, 2012). This suggests that exposure to Blacks is more novel for Asian/Pacific Islanders. Supporting this, within the sample, only 26%

of the Asian/Pacific Islander sample reported childhood friendships with Blacks whereas 38% of the Hispanic sample reported friendships. One area for further investigation is whether a lack of exposure enhances friendship effects.

Another exploratory question examined generalization of friendship effects. Specifically, whether friendships with members of other ethnic groups related to implicit preferences for Whites relative to Blacks. Initial analyses found some evidence suggesting friendships with Hispanics related to lessened implicit preferences for Whites relative to Blacks. However, when examining those participants who had friendships with Hispanics but not Blacks, generalization effects largely disappeared.

Although the present work cannot make causal claims that friendships reduce implicit preferences for the ingroup, some work does suggest a causal link. One study found more favorable attitudes toward gay men and lesbians after completing a friendship induction procedure (fast friends procedure; Lytle & Levy, 2015). However, another study that included an induced cross-racial friendships in the presence of a romantic partner related to more favorable explicit attitudes but did not find reductions in implicit preferences (Welker, Slatcher, Baker, & Aron, 2014). Although this work found no relationships between friendship and implicit preferences, the study included only 198 participants, suggesting the work was underpowered to detect differences on the implicit measure. As such, more work addressing friendship manipulation approaches is necessary to test a causal link.

Finally, as noted in the introduction, it is again important to stress that the present findings establish only a relationship between friendships with Blacks and reduced implicit preferences for Whites relative to Blacks. Although this is entirely consistent with a large body of evidence on the link between favorable contact experiences and reduced prejudice (e.g., Pettigrew & Tropp, 2006), the current findings should not be interpreted as causal. It remains possible that individuals who less strongly favor Whites over Blacks are more likely to engage in friendships with Blacks. It is also possible that other factors cause both friendships and reductions in implicit favoritism for Whites over Blacks.

## Conclusion

The present work provides a large sample estimate of relationships between self-reported cross-racial friendships with Black and implicit preferences for Whites over Blacks. The data show relatively small ( $ds = 0.13$  to  $0.16$ ) but stable differences in implicit preferences for those with friendship experiences compared to those without. Those participants with Black friends showed less implicit preference for Whites relative to Blacks. This relationship is substantially smaller than differences on an explicit assessment of feelings toward Blacks. Importantly, as the sample included over 100,000 participants, the effect size estimates show considerable precision that informs sample size planning for future investigations of friendship-implicit preference relationships.

### Data Accessibility Statement

These data come from the Project Implicit Demo Website open dataset for the Race IAT (Xu, Nosek, & Greenwald, 2014; <https://osf.io/52qxl/>. DOI: <https://doi.org/10.5334/jopd.ac>).

### Note

<sup>1</sup> Throughout this manuscript, I used the term African American when discussing work completed in the United States, but the term Black to discuss international work and results from samples that were not exclusively U.S.-based.

### Competing Interests

The author has no competing interests to declare.

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**Peer review comments**

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