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How Intergroup Friendship Works:
A Longitudinal Study of Friendship Effects on Outgroup attitudes

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Abstract

Cross-sectional research has shown that frequency of self-disclosure to outgroup members mediates the positive relationship between intergroup friendship and outgroup attitudes. The current research investigated the relationship between self-disclosure and attitudes in more depth. New undergraduate students were asked to nominate an ingroup or outgroup friend and then report the intimacy of their disclosures to them, their anxiety and attitudes toward a series of social groups, in the first week of the semester and six weeks later. Intimacy of disclosure predicted more positive attitudes towards outgroups over time, but this association was only found among participants who nominated an outgroup friend. In the ingroup friend condition, a negative association was found. These associations were mediated by general intergroup anxiety. These relationships highlight the importance of integrating theories of interpersonal and intergroup relations when investigating intergroup contact.

KEYWORDS: SELF-DISCLOSURE, INTERGROUP FRIENDSHIP, OUTGROUP
ATTITUDES, INTERGROUP ANXIETY

How Intergroup Friendship Works:

A Longitudinal Study on Friendship Effects on Outgroup attitudes

One of the most exciting recent developments in intergroup contact theory (Allport, 1954) is the idea that certain unique types of contact might be particularly effective at reducing prejudice. Pettigrew (1998), for example, proposed that intergroup contact based on long-term close relationships, rather than initial acquaintanceship, would be most successful at reducing prejudice. Higher quality contact, contact that is comfortable and pleasant, is associated with more positive outgroup attitudes (Islam & Hewstone, 1993; Voci & Hewstone, 2003). As intergroup friendship implies contact of a high quality, it makes intuitive sense that friendship would be particularly effective at reducing prejudice. Supporting this supposition, Pettigrew (1997) found that majority group participants from across Europe who had friends in minority groups reported significantly less prejudice. Longitudinal studies have provided additional evidence. Feddes, Noack, and Rutland (2009) showed that majority group school children who had intergroup friendships at the beginning of the school year held more positive outgroup evaluations at the end (see also Levin, van Laar, & Sidanius, 2003).

Having identified intergroup friendship as a powerful predictor of positive outgroup attitudes, recent investigations have focused on the processes that underlie this relationship, such as *outgroup self-disclosure*, the reciprocal discussion of personal information with outgroup members. Cross-sectional research has revealed that people with outgroup friends are more likely to self-disclose to outgroup members and in turn, hold a more positive attitude towards the outgroup in general (Turner, Hewstone, & Voci, 2007). Given that all measures were taken at one time point, however, it is not possible to infer causal direction

among these variables.

In the current research, we examined reciprocal disclosures with an ingroup or outgroup friend over a six week period. The research extends what we know about self-disclosure in several ways. First, we examined the relationship between intimacy, rather than frequency, of disclosure, and outgroup attitude, considering whether intergroup anxiety is a mediator. Second, we investigated whether the group membership of participants' friend moderated these processes. Third, we measured anxiety and attitude towards a series of outgroups to see whether the relationship between intergroup friendships and outgroup attitude generalize to other groups. Finally, we investigated these relationships longitudinally, enabling us to investigate the associations between intimacy of disclosure, intergroup anxiety and attitudes over time. A number of studies have longitudinally investigated the relationship between contact and outgroup attitudes (e.g., Binder et al., 2008; Feddes et al., 2009; Levin et al., 2003), but to date no-one has considered the relationship between self-disclosure and outgroup attitudes over time, and the factors that mediate and moderate this relationship. Below we summarize what is known to date on self-disclosure, intergroup anxiety, and comparisons of intra- and intergroup friendships.

Self-Disclosure during Intergroup Friendship

Self-disclosure is the voluntary presentation of information of an intimate or personal nature to another person (Miller, 2002). It is an important aspect of interpersonal relationships and features prominently in theories of friendship development, which argue that close relationships develop as a result of an escalation of the intimacy of the information that two individuals disclose to one another (Altman & Taylor, 1973; Reis & Shaver, 1988). Disclosure is typically perceived as a reciprocal process whereby the response of disclosure

from one person is a similar level of disclosure in return. Supporting this idea, Turner et al., 2007 (Study 3) included measures of ingroup-to-outgroup and outgroup-to-ingroup, and found these constructs to be highly correlated with one another ($r = .59, p < .001$), with both types of disclosure items loading on the same construct.

Research has shown that when people disclose to us, we not only feel greater attraction towards them, but we also disclose more in return, leading to mutual interpersonal attraction (Berg & Wright-Buckley, 1988; Worthy, Gary, & Kahn, 1969). Disclosure is an excellent measure of the intimacy of a friendship, because it is more implicit than *directly* asking participants how much they like or get on with their outgroup friend. There is evidence that self-disclosure operates in a similar way during intergroup friendships as during intragroup friendships. Berg and Wright-Buckley found that Black interviewees liked a White interviewer who disclosed personal information more than one who did not, while Shelton, Trail, West, and Bergsieker (2010) found that perceived partner responsiveness mediated the relationship between self-disclosure and intimacy in both intragroup and intergroup friendships.

Recent research has investigated whether, as well as predicting more positive attitudes towards an outgroup friend, reciprocal disclosure during intergroup friendships may also be associated with a more positive attitude towards the outgroup to which the friend belongs. Cross-sectional studies with elementary, high school, and university students investigated friendships between South Asians and Whites in the UK (Turner et al., 2007). It emerged that the more time participants spent with outgroup friends, the more positive was their attitude towards the outgroup in general. Moreover, this relationship was mediated by self-disclosure; participants who had more outgroup friends tended to engage in more frequent mutual self-

disclosure with outgroup members. This, in turn, was associated with more positive outgroup attitudes.

These findings highlight the importance of integrating theory and research from the interpersonal and intergroup relations literature in order to understand how self-disclosure during intergroup friendships benefits intergroup relations. But an important prediction made in the interpersonal relations literature has not yet been tested in an intergroup context. Specifically, according to social penetration theory (Altman & Taylor, 1973), interpersonal attraction in close relationships develops as a result of an escalation of the *intimacy* of disclosures. Pettigrew (1997) found that frequency of intergroup friendships had a stronger negative effect on prejudice than contact with neighbours or co-workers, suggesting that intimacy is a particularly effective component of intergroup contact. Moreover, other studies show that quality, rather than quantity, of contact is related to positive outgroup attitudes (e.g., Islam & Hewstone, 1993; Voci & Hewstone, 2003). Intimacy of disclosures with an outgroup friend should therefore be strongly related to more positive outgroup attitudes.

Intergroup Anxiety as Mediator of the Self-Disclosure – Outgroup Attitude Relationship

In addition to investigating the relationship between intimacy of disclosures and outgroup attitude, it is also important to understand *why* such a relationship might exist. Turner et al. (2007) conducted an initial investigation of this issue through cross-sectional research, finding that reciprocal disclosure was associated with greater empathy, a greater perception that contact is of personal importance to the participant, and greater intergroup trust. In turn, each mediator was associated with a more positive outgroup attitude. In the current research, we considered a new potential mediator of the disclosure – attitude relationship: intergroup anxiety.

Intergroup anxiety (Stephan & Stephan, 1985) is the negative arousal that can arise when anticipating an interaction with an outgroup member. It is thought to stem from negative expectations of rejection or prejudice during interactions, or due to fears that the interaction partner, or oneself, may act in an inappropriate or offensive manner. It can lead to contact avoidance, as well as to a narrowing of attention, which in turn can result in simplified, expectancy-confirming processing (see also Plant & Devine, 2003). Such a process may culminate in a reliance on stereotypes when evaluating outgroup members (e.g., Wilder, 1993). Stephan and Stephan (1985) argued that intergroup anxiety would be most likely to arise where there has been little previous contact with the outgroup and when there are large differences in status. Friendship-based interactions are, however, likely to be associated with intimate sustained contact and, at least within the contact situation, are likely to be characterized by equal status. Accordingly, several studies have shown that intergroup anxiety mediates the positive relationship between intergroup friendship and outgroup attitude (e.g., Paolini, Hewstone, Cairns, & Voci, 2004; Pettigrew & Tropp, 2006; Turner et al., 2007; Turner, Hewstone, Voci, Paolini, & Christ, 2007; Vonofakou, Hewstone, & Voci, 2007; see Brown & Hewstone, 2005, for a review).

Although it has not been previously examined, there is reason to believe that intimate disclosure between two individuals might be associated with lower levels of intergroup anxiety. People often feel anxious around outgroup members because, as a result of limited experience, it is not clear either how they should behave or how the outgroup member might behave towards them (Stephan & Stephan, 1985). A perceiver may, for example, worry about behaving inappropriately or fear rejection by the outgroup member. The more we learn about someone through their disclosures, however, the more certain we are that we can predict their

future behaviour in critical, integrity-testing situations. Indeed, self-disclosure has been shown to predict interpersonal and intergroup trust (Kerr, Stattin, & Trost, 1999; Turner et al., 2007). It would therefore follow that sharing, and receiving in return, intimate information about an outgroup member through disclosure might also be associated with lower levels of anxiety at the prospect of future interactions with outgroup members.

Comparing Intragroup and Intergroup Relationships

A further aim of the current research is to directly compare intragroup and intergroup friendships. While there is some evidence that friendships operate via similar processes regardless of group membership (e.g., Shelton, Trail, West, & Bergsieker, 2010), several questions remain unanswered. For example, does intimacy of disclosure differ in intragroup and intergroup friendships? Moreover, does the relationship between disclosure on the one hand, and intergroup anxiety and outgroup attitudes on the other, depend on the type of friendship? A series of studies which compare the experience of having an ingroup or outgroup roommate at college may shed some light on these questions. Shook and Fazio (2008a) found that participants with outgroup roommates reported less satisfaction and less involvement with their roommates than did participants with ingroup roommates. Similarly, Trail, Shelton, and West (2009) found that participants reported less positive emotions and intimacy towards outgroup roommates than ingroup roommates, and Shook and Fazio (2008b) found that college students were not only less likely to seek out an outgroup roommate in the first place, but also more likely to prematurely dissolve the living arrangement than those with ingroup roommates.

But while those with an outgroup roommate may be less satisfied than those sharing with an ingroup member, some positive implications for intergroup relations emerged. West,

Pearson, Dovidio, Shelton, and Trail (2009) found that feelings of friendship towards one's roommate declined over time regardless of whether the roommate was an ingroup member or outgroup member, but this decline was eliminated among participants with outgroup roommates who perceived there to be high level of commonalities between members of different ethnic groups. Moreover, Shook and Fazio (2008a) found that those with outgroup roommates, but not those with ingroup roommates, reported less anxiety and had more positive implicit outgroup attitudes over time.

Caution must be taken in drawing conclusions about intragroup and intergroup friendships based on these findings. Participants were randomly assigned to an ingroup or outgroup roommate, so roommates were acquaintances rather than friends. Moreover, there is no evidence that these relationships develop into friendships: West et al. (2009) found that positivity towards roommates tended to deteriorate over time regardless of group membership. In addition, while the roommate studies have compared intra- and intergroup acquaintanceships in terms of their relationship with interpersonal processes (Shook & Fazio, 2008a, b; Trail et al., 2009; West et al., 2009) and intergroup processes (Shook & Fazio, 2008a) separately, to date we know little about how the *interpersonal* processes involved in the development of each type of friendship relate to *intergroup relations*. Nonetheless, drawing on these previous findings and our own research on cross-group friendships (e.g., Turner et al., 2007), we expect disclosure during intergroup, but not intragroup, friendships to be associated with less intergroup anxiety and more positive outgroup attitudes.

The Relationship between Friendship and Generalized Outgroup Attitudes

Another important question concerns whether friendship processes relate in a generalized manner towards a *range* of outgroups. That is, does contact with members of one

group associated with positive outgroup attitudes towards *other* groups not directly involved in the contact? This is an important question, because if intergroup friendship is associated with more positive generalized outgroup attitudes, it would demonstrate its power as a means of improving intergroup relations. Pettigrew (1997) found that having outgroup friends was associated with less prejudice towards nine different minority groups, while Pettigrew & Tropp (2006) also found meta-analytic evidence for generalization of contact from one outgroup member to the outgroup in general, from one outgroup to another outgroup, and from one situation to other situations. However, there has been no consideration of whether it is the intimacy of disclosure during friendships, and subsequently reduced intergroup anxiety, that drives this relationship.

Much of the research to date on generalized outgroup attitudes has focused on the role of personality. Altemeyer (1998), for example, found that right-wing authoritarianism and social dominance orientation (Pratto et al., 1994) were the strongest predictors of a generalized measure of prejudice which incorporated negative attitudes towards Blacks, women, homosexuals, and foreigners. However, there has been little consideration of whether *situational* factors, such as experience of cross-group friendship and self-disclosure, may also have a role to play in explaining generalized prejudice.

The Current Research

First-year undergraduate students were contacted during the first week of the new academic year and invited to take part in a two-phase study investigating the development of new friendships. While in previous research participants were asked to estimate how much they disclosed to outgroup members *in general*, here participants were asked to focus specifically on disclosure occurring during *one* friendship. This approach is advantageous as

it enables us to be confident in the accuracy of participants' responses. There were two conditions; in the ingroup friend condition participants were asked to nominate a new friend at university who belonged either to the same social group as them. In the outgroup friend condition the nominated friend was required to belong to a different social group. Group membership was based on the basis of ethnicity, nationality, religion, or sexuality.

Immediately and six weeks later, participants reported the level of intimacy of their disclosure with the nominated friend, in addition to measures of anxiety and attitude towards a range of outgroups.

We expect to find that intimacy of self-disclosure will be associated with more positive attitudes toward outgroups in general over time, and that this relationship would be stronger than any reverse path from attitude to intimacy of disclosure (Hypothesis 1). Moreover, this relationship should be mediated by reduced anxiety towards outgroups in general (Hypothesis 2). Finally, we predict that this relationship will be moderated by the selected friend: intimate disclosure with an outgroup friend, but not an ingroup friend, will predict reduced intergroup anxiety and more positive outgroup attitudes (Hypothesis 3).

Method

Participants

Two-hundred-and-eighteen first-year undergraduate students were recruited in their first two weeks at university to take part in the study. The ethnic make up of the city where students were studying was as follows: 91.9% White, 4.5% South Asian, 1.4% Black, 1.4% Mixed Ethnicity and 0.8% Chinese (Census, 2001). For the current analyses, we only focused on White participants. One-hundred-and-fifty-six participants (27 male and 129 female, aged between 18 and 25 years, with a mean age of 18.46) took part at both time points and were

included in the analyses (drop-out: 28.4%). There were 89 participants (57.1%) in the ingroup friend condition and 67 (42.9%) participants in the outgroup friend condition. Regarding sexuality, 87 participants were heterosexual and 2 were bisexual in the ingroup condition, whereas 59 were heterosexual, 4 were bisexual and 4 were homosexual in the outgroup condition. Regarding religion, in the ingroup condition, 36 were not religious, 42 were Christian, 7 were agnostic, 1 was Muslim, and 1 was Jewish, whereas in the outgroup condition 29 were not religious, 28 were Christian, 5 were agnostic, 2 were Muslim, 1 was Jewish, and 2 were Buddhist. Finally, regarding nationality, all participants in the ingroup condition were British, whereas in the outgroup condition, 59 were British and 8 were of a different nationality but reported to be of ethnic White background.

Materials and procedure

Participants who agreed to take part were emailed a web-link taking them to an online survey. Those who completed the questionnaire were sent a follow-up email 6 weeks later, with a second web-link, directing them to the follow up survey. The two questionnaires were matched up by getting participants to give a code that they had made up, based on their date of birth and surname, at each time point. In the initial questionnaire, participants were first asked to indicate what national, religious, and ethnic group they belonged to, and what their sexual orientation was, along with other demographic information. This information was used for calculating outgroup attitudes and intergroup anxiety.

Participants were then told: “The study you will be taking part in is looking at how friendships develop over time when undergraduate students start at university. You have probably made a number of new friends over the last couple of weeks, for example with people on your course, and people who you share a house or flat with. I would like you to

pick *one new friend* who you have met for the first time in Leeds, and who you expect to continue to spend time with over the coming weeks. I am interested in how initial similarity affects how friendships develop. In particular, I am interested in whether you are similar or different to your new friend in terms of ethnicity, sexuality, religion, or nationality". The online survey was set up so that half of participants were directed to a version of the survey that instructed them to "pick your closest friend who you consider to *belong to a similar social group to you*" (ingroup condition) and half were instructed to "pick your closest friend who you consider to *belong to a different social group to you*" (outgroup condition).

Participants were then asked to write down the first name of their nominated friend, and to indicate what ethnicity, sexuality, religion and nationality the friend was. Among those in the outgroup condition, 30 participants (45%) picked a friend of different ethnicity (11 Black, 19 Asian), 17 participants (25%) picked a friend of different sexuality (12 homosexual, 5 heterosexual), 14 participants (21%) picked a friend of different nationality, and 6 participants (9%) picked a friend of a different religion (3 Christian, 1 Jewish, and 2 Muslim).

Participants were next asked to "Think back to the last week and the conversations you have had with your nominated friend in this period", before answering questions about the intimacy of disclosures to and from their nominated friend, and anxiety and attitudes towards a series of groups: Whites, Blacks, Asians, Chinese, Heterosexuals, Homosexuals, Christians, Hindus, Jews, Muslims, Sikh, Foreigners, International Students, and British.

Intimacy of disclosure was measured by asking the following three questions: "In general, how intimate do you think interactions with your nominated friend were?" (1 = *Not at all intimate*, 7 = *Very intimate*), "How personal do you think interactions were?" (1 = *Not*

at all personal, 7 = *Very personal*), and “In general, how important were the issues you talked about with your nominated friend?” (1 = *Not at all important*, 7 = *Very important*). These items formed a reliable scale at Time 1 (ingroup friend, $\alpha = .75$, outgroup friend, $\alpha = .72$) and Time 2 (ingroup friend, $\alpha = .92$, outgroup friend, $\alpha = .91$), with higher scores indicating greater intimacy of disclosure.

Importantly, given that participants may have nominated an outgroup friend on the basis of nationality, ethnicity, religion or sexuality, to measure *general outgroup attitudes* and *general intergroup anxiety* participants were asked about their attitudes towards a range of groups based on these categories (Whites, Blacks, Asians, Chinese, Heterosexuals, Homosexuals, Christians, Hindus, Jews, Muslims, Sikhs, Foreigners in general, International students, and British people).

General outgroup attitude was measured by asking participants two questions about each group. The first was “Overall, what is your attitude towards each of the following groups, from 0 to 100 degrees” (using the feeling thermometer; Haddock, Zanna, & Esses, 1993). Responses across the different outgroups on this item were reliable at Time 1 (ingroup friend, $\alpha = .93$, outgroup friend, $\alpha = .91$) and Time 2 (ingroup friend, $\alpha = .96$, outgroup friend, $\alpha = .97$). The second was “When you think about this group, to what extent do you feel positive or negative towards them (1 = *Negative*, 7 = *Positive*, adapted item from Wright et al., 1997). Responses across the different groups on this item were reliable at Time 1 (ingroup friend, $\alpha = .91$, outgroup friend, $\alpha = .90$) and Time 2 (ingroup friend, $\alpha = .95$, outgroup friend, $\alpha = .96$). For both questions a composite score across outgroups was calculated. As stated before, participants were asked to indicate to which groups they themselves belonged. When calculating the mean across outgroups for each item, these target

groups were excluded.

The composite measure across outgroups for these two items were significantly correlated with one another at Time 1 (ingroup friend, $r = .76, p < .001$, outgroup friend, $r = .79, p < .001$) and Time 2 (ingroup friend, $r = .91, p < .01$, outgroup friend, $r = .73, p < .001$), with a higher score reflecting a more positive outgroup attitude. Therefore, a general outgroup attitude score was calculated by standardizing both items and calculating the mean.

General intergroup anxiety was assessed by asking participants to what extent they would feel (a) relaxed (reverse coded) and (b) anxious, if they had to interact with members of each of the target groups listed above (Stephan & Stephan, 1985; $1 = not at all, 7 = very$). Again, the groups which participants indicated to be a member of were excluded from the analyses. Responses across the different groups for ‘relaxed’ were reliable at Time 1 (ingroup friend, $\alpha = .91$, outgroup friend, $\alpha = .94$) and Time 2 (ingroup friend, $\alpha = .95$, outgroup friend, $\alpha = .97$), as were responses for ‘anxious’: Time 1 (ingroup friend, $\alpha = .95$, outgroup friend, $\alpha = .95$), Time 2 (ingroup friend, $\alpha = .94$, outgroup friend, $\alpha = .96$). The composite measure across groups for these two items were also significantly correlated with one another at Time 1 (ingroup friend, $r = .50, p < .001$, outgroup friend, $r = .59, p < .001$) and Time 2 (ingroup friend, $r = .76, p < .001$, outgroup friend, $r = .73, p < .001$), with a higher score reflecting a more positive intergroup anxiety.

Participants completed the same set of measures at Time 2, after being reminded to focus on the same friend whom they nominated at Time 1. After completing the second questionnaire, participants were sent debriefing information by email, and were invited to contact the researcher if they had any further questions.

Results

We first conducted some preliminary analyses. Next we tested the model that intimacy of self-disclosure is associated with positive outgroup attitudes over time. Then we examined whether the selection of ingroup versus outgroup friend moderates these associations. Finally, we examined intergroup anxiety as a possible mediator.

Preliminary analyses

Checking for selective attrition. To check for selective attrition we compared scores on the variables intimacy of self disclosure, general intergroup anxiety, and general outgroup attitudes at Time 1 of participants who participated at both time points with participants who only participated at Time 1. A MANOVA using a 2 (Time point: One vs. Both) x 2 (Condition: Ingroup friend vs. Outgroup friend) between-participants design was performed. No significant effects were found for the participation factor (all F s < .81, *n.s.*) or for the interaction (all F s < 1.85, *n.s.*). We therefore concluded that selective attrition played no significant role in subsequent findings.

Mean scores and correlations

Correlations between associations between intimacy of self-disclosure at Time 1 and anxiety and attitudes at Time 2 for each target group separately are presented in Table 1. To examine changes over time, we performed a 2 (Condition: Ingroup Friend vs. Outgroup Friend) x 2 (Time point: Time 1 vs. Time 2) ANOVA with repeated measurements on the second factor for all variables. The means and standard deviations for both conditions at both measurement points are depicted in Table 2.

Intimacy of self-disclosures to either an ingroup or outgroup friend was found to increase significantly over time ($F(1, 154) = 14.46, p < .001, \eta^2_p = .09$). A main effect of

condition was found with in general higher levels of intimacy of self-disclosures in the ingroup friend condition compared to the outgroup friend condition ($F(1, 154) = 9.97, p < .01, \eta^2_p = .06$). The interaction between time and condition was not significant ($F(1, 154) = 2.32, n.s.$) meaning that there were no differences across conditions regarding change of intimacy of self-disclosure over time.

A moderately significant reduction in intergroup anxiety was found ($F(1, 154) = 3.41, p = .07, \eta^2_p = .02$), whereas outgroup attitudes did not change significantly over time ($F(1, 154) = .18, n.s.$). No differences regarding anxiety or attitudes were found across condition (respectively $F(1, 154) = 1.38, n.s.$, and $F(1, 154) = 2.67, n.s.$). Interactions between time and condition were not significant regarding anxiety ($F(1, 154) = 2.32, n.s.$) nor attitudes ($F(1, 154) = .09, n.s.$).

Cross-lagged effects

To test our longitudinal model we performed cross-lagged panel analyses using multiple regression analysis. By simultaneously entering the predictor variables intimacy of self-disclosure and the outcome variable general outgroup attitudes, we controlled for the correlations between the T1 variables (Bijleveld & van der Kamp, 1998; Cohen, Cohen, West, & Aiken, 2003; Finkel, 1995). Specifically, three sets of multiple regressions were performed separately for the ingroup friend and the outgroup friend condition. First, T2 intimacy of self-disclosure was regressed on T1 intimacy and outgroup attitudes. Next, T2 attitudes were regressed on T1 intimacy and attitudes.

In line with our predictions, T1 intimacy of self-disclosure was associated with T2 general outgroup attitudes in the outgroup friend condition ($\beta = .22, p < .05$). In contrast, in the ingroup friend condition intimacy of self-disclosure was marginally associated with less

positive T2 general outgroup attitudes ($\beta = -.15, p < .1$). T1 general outgroup attitudes were not associated with T2 intimacy of self-disclosure in the ingroup friend ($\beta = .01, n.s.$) nor the outgroup friend condition ($\beta = -.14, n.s.$). These results support the hypothesis that self-disclosure is associated with positive general outgroup attitudes over time in case of an outgroup friend.

Multiple-sample path analyses

It was hypothesized that in general the relationship between intimacy of self-disclosure and general outgroup attitudes would be more positive for an outgroup friend than an ingroup friend. To compare the results across conditions, we used structural equation modeling, specifically multiple-sample path analysis (see Kline, 2005) using the program AMOS 6.0.0 (Arbuckle, 2005). We hypothesized that, overall, the relationship between intimacy of self-disclosure and general outgroup attitudes over time would be stronger for an outgroup friend than an ingroup friend.

A model with autoregressive paths was tested including the variables intimacy of self-disclosure and general outgroup attitudes at both time points. Manifest variables were used and the T1 predictor variables were correlated, as were the T2 variable residuals. We performed a hierarchical set of multiple-sample analyses. First, we examined the unconstrained model comparing the participants with an ingroup friend to participants with an outgroup friend. We then constrained path weights to be equal across groups. In Figure 1 the unconstrained model of the multiple-sample analyses is depicted with values for both the ingroup friend and the outgroup friend (in *Italics*) condition. The model fitted the data well (see figure for fit indices).

Comparing the unconstrained model with the constrained model revealed a marginally

significant change in the overall fit ($\chi_D^2(3) = 7.978, p < .05$) indicating that there existed differences across groups. In addition, the AIC values also indicated that the unconstrained model ($AIC = 53.397$) fit the data better than the constrained model ($AIC = 55.375$). To examine more closely our prediction, we tested directly whether the path from intimacy of self-disclosure at Time 1 to general outgroup attitudes at Time 2 differed across groups. For this purpose we performed another hierarchical set of multiple-sample analyses. The unconstrained model was compared to a model in which only the path from T1 intimacy to T2 attitudes was constrained to be equal. A significant decrease in model fit ($\chi_D^2(1) = 7.698, p < .01; AIC_{unconstrained} = 53.397 < AIC_{constrained} = 59.094$) confirmed that the path differed across groups. These results support our prediction that intimacy of self-disclosure is associated with more positive general outgroup attitudes over time in case of an *outgroup* friend, but not in case of an *ingroup* friend.

Mediation analyses

In this section the results of tests for the mediation hypotheses are reported. As there was only a significant relationship between intimacy and attitudes over time among participants with an outgroup friend, we focused on this group. We assessed the mediating role of general anxiety toward outgroups. For this purpose, we followed the procedure of regression based models by Baron and Kenny (1986). To examine the longitudinal mediation, we focused on intergroup anxiety at Time 2. As argued elsewhere in previous longitudinal studies on contact (i.e., Binder et al., 2008; Feddes et al., 2009) it can be expected that any relationship between intimacy and the mediator variable at Time 2 should be evident by a change in general outgroup attitudes at Time 2. Therefore, we first regressed T2 attitudes on T1 intimacy and T1 attitudes. Second, we regressed T2 anxiety on T1 intimacy and anxiety.

Third, we regressed T2 attitudes on T1 intimacy, T2 anxiety, and T1 attitudes. In a fourth step the significance of any mediation was tested with a Sobel-test (Sobel, 1982).

As can be seen in Figure 2, when general intergroup anxiety was included in the model the relationship between T1 intimacy and T2 attitudes became non-significant (from $\beta = .20, p < .05$ to $\beta' = .03, n.s.$). In the third step of the analyses a significant relationship between T2 general intergroup anxiety and T2 outgroup attitudes was found ($\beta = -.50, p < .001$). The Sobel-test showed that this reduction was significant ($z = 2.14, p < .05$, two-tailed). Hence, intimacy of self-disclosure toward an outgroup friend was strongly associated with lower levels of general intergroup anxiety and was associated, in turn, with more positive attitudes toward outgroups in general.

Given that an initial examination of the data revealed the unexpected finding that intimacy with an ingroup friend is associated with higher levels of general anxiety and a less positive general outgroup attitude, we performed post-hoc analyses to see whether general intergroup anxiety mediated the relationship between disclosure and attitude.

As can be seen in Figure 3, when general intergroup anxiety was included in the model, the marginal significant negative relationship between T1 intimacy and T2 general outgroup attitudes became non-significant (from $\beta = -.14, p < .1$ to $\beta = -.02, n.s.$). As was the case in the outgroup friend condition, in the third step of the analyses a significant relationship between T2 general intergroup anxiety and T2 outgroup attitudes was found ($\beta = -.50, p < .001$). The Sobel-test showed that this reduction was marginally significant ($z = -2.30, p = .09$, one-tailed). Even though the relationship is not strong, this is an indication that intimacy of self-disclosure to ingroup friends is associated with more general intergroup anxiety over time and, ultimately, with less positive general outgroup attitudes.

Discussion

We conducted a longitudinal investigation of self-disclosure in intragroup and intergroup friendships among first year undergraduate students. Supporting our predictions, we found that intimacy of self-disclosure to an outgroup friend early in the academic year was associated with more positive generalized attitudes towards outgroups six weeks later. This relationship was mediated by a reduction in generalized intergroup anxiety. Not only do these findings highlight the importance of cross-group friendship as a promoter of more harmonious intergroup relations, they also demonstrate that contextual factors, as well as personality factors, might be important in explaining generalized prejudice. In order to better understand the factors associated with generalized outgroup attitudes, upcoming research might conduct a direct comparison of individual and contextual variables.

We found that intimacy of disclosure increased during the first six weeks of a new friendship, regardless of whether the friend was an ingroup or an outgroup member. Nonetheless, some important differences between ingroup and outgroup friendships also emerged. First, in line with past research which shows that people have a general preference for friendships with those who are similar to the self with regard to age, gender, and race (Graham & Cohen, 1997; Hallinan & Williams, 1989), disclosures to ingroup friends tended to be more intimate than those made to outgroup friends. This suggests that participants may have felt less comfortable disclosing to someone who is perceived as being quite different to the self. But the current study only examines friendships in their first six weeks. As members of two different groups get to know one another, through an escalation of intimate disclosure, it is likely that they will learn about other shared group memberships (e.g., same university and course, same nationality) and similar personal interests. It is therefore possible that in

time intragroup and intergroup friendships will be characterized by similar levels of intimacy.

Finally, while intimacy of disclosure to an outgroup friend was associated with less intergroup anxiety and more positive outgroup attitudes, the reverse was true for ingroup friendships. That is, the more intimate information participants disclosed to an ingroup friend, the *less* positive outgroup attitude they reported six weeks later, a relationship that was marginally mediated by *increased* intergroup anxiety. It is possible that those who engage in close relationships with ingroup members, as indicated by their high level of intimate disclosure, may have missed out on opportunities to make outgroup friends. Their less positive attitudes and higher levels of anxiety may therefore reflect a lack of positive outgroup contact (e.g., Voci & Hewstone, 1993). Moreover, people who engage in intimate disclosure with ingroup friends may also be more likely to discuss anxieties and negative perceptions they might have about outgroup members than those disclosing to an outgroup friend. This may have heightened anxiety and in turn, related to more negative outgroup attitudes.

Limitations and Suggestions for Future Research

One drawback of the current research is the gender distribution of the sample; specifically, there are considerably more female than male participants, an issue that frequently arises when conducting research with psychology undergraduates. This is particularly pertinent for the current research, because in an extensive meta-analysis, Collins and Miller (1994) found that self-disclosure was more likely to predict liking for women than for men. Thus, it is possible that self-disclosure would not have the same explanatory effect on the relationship between outgroup friendship and outgroup attitudes among men as for

women. Future research should endeavour to use a sample that is balanced in terms of gender, and to examine gender differences in an intergroup context in more detail.

The longitudinal nature of the current research increases confidence in the direction of the relationship between intimacy of disclosure and outgroup attitudes. Nonetheless, it is not possible for us to make causal assertions: although Time 2 attitudes were more positive among those who had experience of intimate disclosure, over and above the influence of Time 1 attitudes, it is possible that outside variables may explain this relation. In addition, we only examined a six week period. A longer-term investigation of the relationship between disclosure intimacy and both intergroup anxiety and outgroup attitudes should be conducted to ensure the longevity of the findings.

It is important to consider the possibility of selection bias. Participants in the ingroup and outgroup condition were forced to choose *either* an ingroup or an outgroup friend, depending on the condition that they were randomly assigned to. Given that the population was quite homogeneous, one potential concern is that participants may have found it easier to identify an ingroup friend than an outgroup friend, resulting in a higher drop-out rate in the outgroup friendship condition. However, given that participants were able to select an outgroup friend on the basis of *several* different group dichotomies (e.g., nationality, religion, ethnicity, and sexuality), we believe it to be fairly unlikely that a participant would not have at least *one* friend or acquaintance at university in one of these categories.

Finally, we believe that one strength of the current research is that we consider a variety of *types* of intergroup friendship, rather than focusing specifically on say, cross-ethnicity or cross-religious friendships, and we examine the impact of these friendships on a generalized measure of outgroup attitudes. However, due to the relatively small sample size, we were

unable to examine whether there were any moderating effects of the target outgroup on intergroup outcomes. Future research with larger samples is necessary to examine these issues.

Theoretical and Practical Implications

The current study is the first to directly compare the group memberships of friendship dyads in terms of both interpersonal (intimacy of self-disclosure) and intergroup constructs (intergroup anxiety, outgroup attitude), demonstrating that both factors are important in explaining the relationship between friendships and intergroup relations. The findings therefore highlight the importance of integrating theory from the interpersonal relations *and* intergroup relations literature when investigating or developing means of encouraging intergroup harmony. Given that intimacy of disclosure has diverging implications for intergroup relations depending on whether it involves an ingroup or outgroup friend, future research should investigate what factors moderate the relationship between self-disclosure and outgroup attitudes. For example, given that category salience is necessary for contact effects to generalize from individual outgroup members to the entire outgroup (e.g., Brown & Hewstone, 2005), one might expect intergroup disclosure that is highly intimate while also acknowledging the group memberships of those involved to be especially effective at changing outgroup attitudes.

These findings are the first to demonstrate that the social penetration theory of friendship development (Altman & Taylor, 1973) can be applied to both ingroup and outgroup friendships: although there are differences in the level of intimacy, intimacy of disclosure increases over time at the start of a friendship regardless of whether the friend is an ingroup or an outgroup member. Future research should investigate in more depth how

models of interpersonal relations can be applied to both ingroup and outgroup friendships. The theory argues, for example, that disclosing more quickly or more slowly than one's interaction partner can stall a friendship. This may be more problematic in an intergroup friendship because there may be cultural differences regarding what it is appropriate to talk about at an early stage of a friendship. In addition, intergroup friends may be more anxious about their interaction partner's perceptions of them and so more likely to perceive slow disclosure as rejection (Stephan & Stephan, 1985).

The finding that intimate disclosure has diverging relationships with measures of intergroup relations depending on whether they occur during an intragroup or an intergroup friendship has far-reaching implications for intergroup relations. Universities often bring together people from a whole range of different backgrounds, providing a unique opportunity to form intergroup friendships. When these friendships develop, increasingly intimate disclosures should be associated with lower levels of intergroup anxiety and more positive attitudes towards a range of outgroups, potentially resulting in a positive ethos regarding diversity on university campuses. But unfortunately, people have a general tendency to form friends from the same social groups as themselves (e.g., Graham & Cohen, 1997; Hallinan & Williams, 1989). Moreover, formation of close ingroup friendships may be associated with a deterioration in attitudes towards outgroups over time due to higher levels of intergroup anxiety, which may, in turn, be associated with avoidance of intergroup contact (Plant & Devine, 2003). These individuals will therefore be less likely to take up subsequent opportunities that arise to form intergroup friendships, leading to segregation of different groups on campus, with further negative implications for intergroup relations.

University induction programmes may have a key role to play here. Induction events

should, where possible, try to mix up members of different groups and encourage inclusiveness wherever possible. We acknowledge that this may be difficult in some contexts: for example, psychology student bodies in the UK seem to be predominately White and female. However, mixed social events for new students organized in conjunction with departments with a different composition may help to ensure opportunities arise for friendships to develop. In addition, encouraging new students to join societies to pursue interests such as sport or politics may bring them into contact with people from different backgrounds who they share common interests with, helping to spark new friendships.

In sum, the present research provides longitudinal evidence showing the importance of intimacy of self-disclosure in explaining the relationship between friendship and outgroup attitudes. Where close cross-ethnic friendships arise, lower levels of intergroup anxiety are associated with more positive outgroup attitudes in general. If the development of pervasive prejudice is to be avoided, psychologists, practitioners, and policy-makers need to develop strategies to encourage intergroup friendships

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Table 1.

Intercorrelations between Intimacy of Self-Disclosure at Time 1 and Anxiety and Attitudes toward Groups at Time 2 in the Ingroup and Outgroup Friend Condition

Target group	Ingroup friend condition		Outgroup friend condition	
	<i>r</i> (Disclosure T1 - Anxiety T2)	<i>r</i> (Disclosure T1 - Attitude T2)	<i>r</i> (Disclosure T1 - Anxiety T2)	<i>r</i> (Disclosure T1 - Attitude T2)
White	.17	-.11	-.29*	.33**
Black	.22*	-.19 [†]	-.36**	.35**
Asian	.25*	-.21*	-.44***	.44***
Chinese	.29**	-.19 [†]	-.39**	.40**
Homosexuals	.17	-.15	-.22 [†]	.22 [†]
Heterosexuals	.15	-.10	-.31*	.31**
Christians	.15	-.18 [†]	-.18	.18
Hindus	.31**	-.32**	-.43***	.38**
Jews	.30**	-.25*	-.44***	.35**
Muslims	.18 [†]	-.19 [†]	-.47***	.40**
Sikh	.32**	-.26*	-.47***	.42***
Foreigners	.32**	-.24*	-.42***	.45***
Internationals	.33**	-.26*	-.37**	.35**
British	.16	-.11	-.34**	.34**

Note. *** $p < .001$; ** $p < .01$; * $p < .05$; [†] $p < .10$

Table 2.

Means (and Standard Deviations) for Participants with an Ingroup or an Outgroup Friend on all Variables at Time 1 and Time 2 with Test Statistics F (and Effect Sizes; η_p^2) for ANOVAs over Time

	Time 1		Time 2		Time of measurement	Condition
	Ingroup friend	Outgroup friend	Ingroup friend	Outgroup friend	F -value (η_p^2)	F -value (η_p^2)
Intimacy of self-disclosure	3.44 (.77)	3.05 (.84)	3.77 (.98)	3.40 (1.10)	14.46*** (.09)	9.97** (.06)
General intergroup anxiety	2.98 (.70)	2.74 (.90)	2.79 (.93)	2.72 (.96)	3.41 [†] (.02)	1.38 (.01)
General outgroup attitudes	-.07 (.62)	.11 (.66)	-.08 (.76)	.08 (.81)	.18 (.00)	2.68 (.02)

Notes. All the interaction effects between Time and Condition were non-significant (all F s < 2.32)

*** $p < .001$; ** $p < .01$; ; * $p < .05$; [†] $p < .10$

Figure Captions

Figure 1. Multiple-sample analysis using maximum likelihood estimation of intimacy of self-disclosure on general outgroup attitudes for participants in the ingroup friend and outgroup friend (values given in italics) condition.

Notes. Path values are standardized beta weights. Statistics of model fit: $\chi^2(2, N_{\text{ingfriend}} = 89, N_{\text{outfriend}} = 67) = 1.397, p = .497$, comparative fit index = 1.00, root mean square error of approximation = .000 with the 90% confidence interval .000–.144, standardized root mean square residual = .001.

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

Figure 2. Multiple regression analysis of direct and indirect effects of intimacy of self-disclosure at Time 1 on general outgroup attitudes at Time 2 via general anxiety toward outgroups at Time 2 controlling for attitudes at Time 1 in the outgroup friend condition.

Notes. Path values are standardized beta weights.

*** $p < .001$; * $p < .05$.

Figure 3. Multiple regression analysis of direct and indirect effects of intimacy of self-disclosure at Time 1 on general outgroup attitudes at Time 2 via general anxiety toward outgroups at Time 2 controlling for attitudes at Time 1 in the ingroup friend condition.

Notes. Path values are standardized beta weights.

*** $p < .001$; * $p < .05$; $^{\dagger}p < .10$

Figure 1.

Figure 2.

Figure 3.