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## Direct and Extended Friendship Effects on Minority and Majority Children's Interethnic Attitudes: A Longitudinal Study

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Longitudinal direct and extended cross-ethnic friendship effects on out-group evaluations among German (majority status,  $N = 76$ ) and Turkish (minority status,  $N = 73$ ) children (age 7–11 years) in ethnically heterogeneous elementary schools were examined at the beginning and end of the school year (time lag: 7 months). The results showed that among majority status children, but not minority status children, direct cross-ethnic friendship predicted over time positive out-group evaluations. This association was partly mediated by perceived social norms about cross-ethnic friendship relations. No longitudinal effects of extended cross-ethnic friendship were found. These results suggest that in ethnically heterogeneous contexts, direct friendship is more effective in changing intergroup attitudes than extended friendship and that social status moderates direct friendship effects.

Understanding consequences associated with ethnic diversity in the school-context is of great importance for increasingly ethnically diverse Western societies. Compared to other settings, the elementary school is the place where there is most contact between children of different ethnical backgrounds (Schofield, 1995), which, under the right circumstances, can result in more positive intergroup attitudes. Cross-group *friendship* has been proposed to be especially important with respect to formation of positive intergroup attitudes (Pettigrew, 1998). The developmental literature suggests cross-group friendships are related to children's intergroup attitudes (Aboud, Mendelson, & Purdy, 2003; McGlothlin & Killen, 2006; McGlothlin, Killen, & Edmonds, 2005) though to our knowledge no

study has conducted a causal investigation using a longitudinal design into the friendship–attitude association.

The present study aims to contribute to what is known about cross-ethnic friendships and intergroup attitudes in middle childhood by simultaneously examining them over time, allowing for a causal investigation. Furthermore, besides *direct* cross-ethnic friendships we also examine *extended* cross-ethnic friendships, that is, mere knowledge that close direct friends have out-group friends. Like direct friendship, extended friendship has been proposed to lead to more positive intergroup attitudes (Wright, Aron, McLaughlin-Volpe, & Ropp, 1997). However, previous developmental research has not compared in one study the relative importance of direct and extended friendship effects. Finally, we examine the role of perceived social norms about cross-ethnic friendships as a possible mediator.

The focus is on direct and extended cross-ethnic friendship relations between German and Turkish children. The Turkish population is the largest ethnic minority group in Germany (Statistisches Bundesamt Deutschland, 2006a, 2006b) facing high levels of discrimination and rejection (Dagevos,

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This research was supported by a Ph.D. fellowship of the Deutsche Forschungsgemeinschaft (GRK 622; International Research Training Group "Conflict and Cooperation Between Social Groups") and a Post-Doc Fellowship (PTDC/PSI/71271/2006) from the Fundação para a Ciência e a Tecnologia held by the first author. Thanks are extended to the children, teachers, and principals of the Sperberschule, the Grundschule St. Leonhard, and the Ludwig-Uhland-Schule for participating. We thank Christopher Cohrs and Fátima Salgueiro for methodological advice and Natascha de Hoog, Philipp Jugert, and two anonymous reviewers for helpful comments on earlier drafts of this paper.

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Euwals, Gijbets, & Roodenburg, 2007; Wagner, van Dick, Pettigrew, & Christ, 2003). About 7% of the 6- to 10-year-old children in Germany have a Turkish migration background (Konsortium Bildungsberichterstattung, 2006). Already in elementary school, children with a Turkish migration background have been shown to perform worse than their German peers (Krohne, Meier, & Tillmann, 2004). It can, therefore, be assumed that Turkish children hold a lower social status position compared to German children. This distinction is important, as previous studies have found differences in associations between intergroup contact and prejudice among minority and majority status group members (Tropp & Pettigrew, 2005).

#### *Direct and Extended Cross-Ethnic Friendship Effects*

Research by Verkuyten (2001, 2002; Verkuyten & Thijs, 2002) among Dutch and Turkish children in the Netherlands has shown that, among both ethnic groups, peers play an important role in shaping intergroup attitudes. Cross-ethnic *friendship* relations are considered to be especially powerful regarding attitude change, as it is contact of high quality and meets several of the optimal conditions under which contact is supposed to lead to more positive intergroup attitudes: equal status, authority support, cooperation, and acquaintance potential (Allport, 1954; Pettigrew, 1998). Indeed, Aboud et al. (2003) reported less bias among children who had more cross-ethnic companions and a high quality cross-ethnic friendship. Moreover, having cross-ethnic friendships in childhood has been associated with positive intergroup attitudes in adolescence and adulthood (Ellison & Powers, 1994; Jackman & Crane, 1986).

Although cross-ethnic friendship seems to be a promising tool for improving children's interethnic attitudes, it has important shortcomings. Research conducted in the United States (Bellmore, Nishina, Witkow, Graham, & Juvonen, 2007; Graham & Cohen, 1997; Hallinan & Teixeira, 1987; Howes & Wu, 1990; Jackson, Barth, Powell, & Lochman, 2006), Canada (Aboud et al., 2003), and the Netherlands (Verkuyten, 2001) has shown that, compared to same-ethnic friendship relations, cross-ethnic friendships are relatively uncommon. In addition, cross-ethnic friendships among children have been shown to be less stable and to decline with age (Aboud et al., 2003; DuBois & Hirsch, 1990; Smith & Schneider, 2000). These findings suggest that cross-ethnic friendships are difficult and infrequent in our society where, unfortunately, racially

segregated communities are not uncommon (Ellis, Wright, & Parks, 2004).

A complementary approach to changing intergroup attitudes, less reliant on physical proximity, was proposed by Wright et al. (1997). They contend that attitude change does not necessarily require a direct friend in another group; mere knowledge of in-group members (or, even better, in-group friends) having close relationships with out-group members can result in more positive intergroup attitudes, the so-called extended contact hypothesis. This is a promising notion, as it implies friendship effects are able to work on a large scale where actual direct contact is not possible. Studies among adolescents and adults have now shown extended friendship to be associated with more positive intergroup attitudes (e.g., Liebkind & McAlister, 1999; Paolini, Hewstone, & Cairns, 2007; Paolini, Hewstone, Cairns, & Voci, 2004; Turner, Hewstone, & Voci, 2007; Turner, Hewstone, Voci, Paolini, & Christ, 2007; Turner, Hewstone, Voci, & Vonofakou, 2008; Wright et al., 1997). Furthermore, Cameron, Rutland, Brown, and Douch (2006) showed the powerful implications of extended friendship by using it in an intervention among White British children aimed at improving intergroup attitudes toward refugees. In their study, the intervention involved stories that were read to British children (ages 5–11 years) in ethnically homogeneous schools about other British children interacting positively with a refugee child. The results showed that attitudes toward refugee children became significantly more positive among children who received the intervention compared to those who did not in a control group.

In the present research, we broaden the definition of extended friendship as we examine extended friendship via close direct friends independent of the ethnicity of these friends (in-group, out-group, or other ethnicity). This differs from definitions used in the previously cited studies investigating extended contact typically in ethnically nonmixed settings. However, it is likely that in contexts where there exists a high opportunity for cross-ethnic friendships (as is the case in the present research) individuals will have extended friends via friends who are not necessarily in-group members. This may have consequences for the strength of the extended friendship effects. For example, it is expected that direct out-group friends will have more friends in the out-group (resulting in a higher number of extended out-group friends) compared to direct in-group friends. Previous research on extended contact effects has shown that

higher numbers of extended friends are associated with more positive intergroup attitudes (e.g., Wright et al., 1997). It is necessary, therefore, to consider the number of direct out-group friends when analyzing extended friendship effects. In general, however, we expect that, independent of the ethnicity of direct friends, knowledge that close friends have out-group friendships will lead to more positive attitudes toward this out-group.

The previous developmental work on direct and extended friendship effects is limited in several aspects. First of all, only a small number of studies have focused on the questions of whether and how *extended* friendship affects children's intergroup attitudes (Cameron & Rutland, 2006; Cameron, Rutland, & Brown, 2007; Cameron, Rutland, & Hossain, 2007; Cameron et al., 2006). Furthermore, these studies were typically conducted in ethnically homogeneous elementary schools and did not investigate actual existing direct and extended cross-ethnic friendships. This has made it difficult to evaluate the relative value of direct or extended cross-ethnic friendships in reducing children's intergroup bias in integrated settings. As pointed out by Turner, Hewstone, Voci, Paolini, et al. (2007), there is reason to believe that direct friendship is more effective in changing attitudes than extended friendship. Research on attitude formation has shown that information based on direct experiences is perceived to be more accurate and trustworthy, thereby leading to stronger attitudes than information based on indirect experiences (see Fazio & Zanna, 1981, for a review). Thus, we expect direct cross-ethnic friendships to be more influential than extended cross-ethnic friendships in altering children's ethnic intergroup attitudes.

A major limitation of previous research investigating associations between direct and extended friendship and intergroup attitudes is its reliance on cross-sectional or correlational data, which does not allow for a convincing test of directional hypotheses (Brown & Hewstone, 2005; Pettigrew, 1998). That is, it is possible that positive attitudes determine the amount of cross-ethnic friends. Alternatively, having cross-ethnic friends may lead to more positive attitudes toward other ethnic groups. Longitudinal designs are able to overcome this disadvantage of cross-sectional designs (Bijleveld & van der Kamp, 1998; Finkel, 1995).

Studies using longitudinal designs to investigate associations between peer relations and attitudes in childhood are rare. However, there exists a relatively rich literature dealing with school desegregation, which is an interesting phenomenon as it

implies an increase in interethnic contact. However, longitudinal research in this field overall shows inconclusive results. For example, in a study on the long-term effects of desegregation, Wood and Sonleitner (1996) found that White American adults who attended desegregated schools in their childhood held more positive attitudes toward African Americans compared to White American adults who attended segregated schools. In contrast, other longitudinal studies within desegregated schools showed that White American children who attended desegregated schools did not necessarily hold more positive interethnic attitudes (Schofield, 1989) or have more cross-ethnic friends (Hallinan & Teixeira, 1987). These early longitudinal desegregation studies did not directly examine how cross-ethnic friendship may influence children's intergroup attitudes over time. This, therefore, is the original focus of the present research.

An additional limitation of previous developmental studies on direct and extended contact effects is their focus almost exclusively on ethnic majority children (e.g., Cameron et al., 2006; McGlothlin & Killen, 2006). This is a limitation, as previous research suggests associations between contact and intergroup attitudes depend on the societal status of groups. For example, Aboud et al. (2003) report a positive cross-sectional association between cross-ethnic friendship and intergroup attitudes among majority group children but no such association was found among minority group children. Furthermore, in a recent meta-analysis including more than 500 studies investigating contact effects among children, adolescents, and adults, Tropp and colleagues (Pettigrew & Tropp, 2006; Tropp & Pettigrew, 2005; Tropp & Prenovost, 2008) report significantly weaker contact-attitudes relationships for members of minority status groups than for members of majority status groups.

There have been several explanations offered for these differences. Tropp and Pettigrew (2005) argued that majority and minority group members respond differently to intergroup contact because members of majority groups are less likely to think of themselves in terms of their group membership. Minority group members tend to be well aware of their group's lower status (Jones et al., 1984) and therefore are continuously aware of being a possible victim of prejudice (Crocker, Major, & Steele, 1998). In addition, Tropp and Pettigrew (2005; see also Tropp & Prenovost, 2008) noted that optimal contact conditions might be interpreted and defined differently across groups. Minority group members may be less convinced as to the extent to which

these conditions are met compared to majority group members. Optimal contact conditions might therefore be more effective in promoting positive intergroup attitudes among majority group members compared to minority group members. This can be illustrated by Verkuyten and Thijs (2002), who found multicultural education to reduce racist victimization in the Netherlands, but only among the majority status Dutch children and not the minority status Turkish children.

The schools in the present study provided contexts closely resembling optimal conditions for positive contact effects. Each school reported around 17 different nationalities, and the German and Turkish children who participated in the study had already spent at least 2 years together. School boards and teachers were committed to promoting multiculturalism (i.e., teaching tolerance to children) and equal treatment of children independent of ethnical background. Importantly, Turkish children were offered Turkish language courses. As argued by Tropp and Prenovost (2008), clear affirmation of the value of the relevant minority language can help reduce status differences between minority and majority language students. Based on previous research findings, however, we expect any effects of direct or extended cross-ethnic friendship to be more evident among the majority status German children compared to the minority status Turkish children.

#### *Social Norms Mediating Friendship Effects*

It has been proposed that in-group and out-group norms play an important role in the association between contact and intergroup attitudes (Pettigrew, 1998; Wright et al., 1997). Previous developmental research has shown that children in middle childhood are sensitive to group norms about social exclusion between and within groups (Abrams, Rutland, & Cameron, 2003; Abrams, Rutland, Cameron, & Ferrell, 2007; Abrams, Rutland, Cameron, & Marques, 2003; Rutland, Cameron, Milne, & McGeorge, 2005) and actively reason about exclusion based on ethnicity (Killen, Henning, Kelly, Crystal, & Ruck, 2007; Killen, Lee-Kim, McGlothlin, & Stangor, 2002). In addition, experimental studies have shown that social norms can directly affect children's intergroup attitudes (Nesdale, Maass, Durkin, & Griffiths, 2005), their expression of attitudes (Rutland et al., 2005), and evaluations of deviant in-group members (Abrams, Rutland, et al., 2003; Abrams, Rutland, Cameron, et al., 2003).

In the present study, we focus on what Cialdini, Reno, and Kallgren (1990) characterize as so-called

injunctive norms. Injunctive norms can be defined as those norms that specify what ought to be done; that is, rather than simply informing one's attitudes and behavior, these norms promise social sanctions by other group members when acting against them. That injunctive norms regarding friendship choice are relevant among young children is suggested by recent findings by Castelli, De Amicis, and Sherman (2007). Castelli et al. demonstrate that engaging in cross-ethnic friendship can be seen as deviant behavior among in-group peers. Consequently, this may result in relative devaluation and rejection by peers. Castelli et al. report that, across four experimental studies, White Italian majority children evaluate other White Italian children more negatively when they have a Black friend. This so-called loyal member effect, the preference for in-group members who themselves favor the in-group rather than the out-group, suggests that social norms may mediate direct and extended friendship effects on children's intergroup attitudes. Regarding direct friendship, the experience of having a direct cross-group friendship going unsanctioned by peers over time is likely to reinforce the behavior, which, in turn, is expected to generalize to more positive explicit attitudes toward the out-group. In addition, learning that close direct friends have cross-ethnic friendships (i.e., extended friendships) that go unsanctioned by peers over time would indicate that it is acceptable to have cross-ethnic friendships. This also is likely to lead to more positive intergroup attitudes.

To summarize, this research examines longitudinally the relationship between direct and extended cross-ethnic friendships and intergroup attitudes among ethnic minority and majority children. We expect direct and extended cross-ethnic friendships to lead to more positive out-group evaluations with stronger effects for direct friendship. In addition, we predict direct as well as extended friendship effects to be generally stronger for ethnic majority status children compared to ethnic minority status children. Finally, the association between cross-ethnic friendship and intergroup attitudes is expected to be mediated through perceived social norms regarding cross-ethnic friendships.

## **Method**

### *Participants*

In total, 202 children (104 German, 98 Turkish) in the third and fourth grades of three elementary schools in Nuremberg, Germany, participated at

either one or both time points. One hundred forty-nine children (76 German, 73 Turkish; 78 boys and 71 girls) participated at both time points and were included in the analyses (dropout: 26%). The mean age of these children was 9.67 years ( $SD = 0.68$ ). Socioeconomic status (SES) for the three schools is generally known to be middle-class, but SES of individual children was unknown. Ethnic composition was comparable across schools: 20% Turkish children (thereby the largest minority group), 40% German children (thereby the majority group), and 40% of different ethnic minority groups (e.g., Aussiedler; ethnic Germans who lived for generations in the Soviet Union, Poland, and Romania and immigrated to Germany after World War II). The participating schools were also comparable with respect to the curriculum, which encouraged and emphasized multiculturalism and tolerance. In addition, each school offered Turkish classes for Turkish children and Turkish mothers were encouraged by the schools to follow German classes, which were offered for free (i.e., "Mama lernt Deutsch" [Mom learns German]).

#### Procedure

Data were collected in the beginning (November 2005) and the end (June 2006) of the school year (time lag: 7 months). The Turkish and German children completed the questionnaire in mixed groups (10–15 children). There were four versions of the questionnaire based on gender and counterbalancing of items. The children received identical questionnaires with items stated both with respect to their in-group and the out-group. Pilot tests showed no differences across groups with respect to reading abilities and understanding the content of the questions. All items were in multiple-choice format, except for a question that asked children to write down the names of their three best friends. Children took about 30 min to complete the questionnaire.

#### Measures

*Predictor variables.* Direct cross-ethnic friendship was measured by asking the children to write down the first names of their three best friends. Children were then asked to indicate whether each friend was German, Turkish, or Other. Next, the number of direct out-group friends was calculated by adding the reported out-group friends, resulting in a score ranging from 0 to 3. All children mentioned three friends and *extended friendship* was

measured by asking how many friends of these three best friends were German and how many friends were Turkish. The scales ranged from 1 (*none*) to 4 (*all*). An index of extended friendship was calculated by averaging the scores on the three extended friendship scales. For example, for a German child the three scales measuring the number of Turkish friends of his or her three direct friends were averaged. The indices of extended friendship were found to be reliable for both German (Cronbach's  $\alpha = .74$ ) and Turkish ( $\alpha = .75$ ) children.

*Mediator variable.* Perceived social norms with respect to playing with a member of the other group were measured using drawn pictures of a Turkish and German child (controlling for gender) that were presented to the children. Children were asked to imagine that the German/Turkish child was new in their class and to indicate what they thought (a) other German children and (b) other Turkish children would think about them playing with, respectively, the out-group child. Answers could be given on two 5-point semantic differential items ranging from 1 (*not good at all*, depicted with a feeling face with a downward position) to 5 (*very good*, depicted with a feeling face with a large smile position). The correlations between these items were found to be significant for both German,  $r = .71, p < .001$ , and Turkish,  $r = .71, p < .001$ , participants, which indicates that both German and Turkish participants perceived in-group and out-group norms about playing with out-group children to be quite similar.

*Outcome variable.* Initially, four items were used to measure the extent to which German and Turkish children evaluated the other group positively. Children were asked how many out-group children were friendly, polite, smart, and bad. Answers could be given on scales ranging from 1 (*none*) to 4 (*all*). However, the scale was found to be unreliable for Turkish children when the item "bad" was included ( $\alpha < .60$ ). This finding is in accordance with previous developmental research indicating that children from 7 years onward are more likely to differentiate between groups on positive trait attributes and less willing to show intergroup discrimination on negative trait attributes (Bennett, Lyons, Sani, & Barrett, 1998; Bennett et al., 2004; Bigler, Brown, & Markell, 2001; Bigler, Jones, & Lobliner, 1997; Rutland et al., 2007). These findings suggest older children may well be willing to attribute less positive traits to one group, but will not necessarily also attribute more negative traits to this group. Therefore, we decided to only use the positive items in consequent analyses. The scales

were found to be reliable for both German ( $\alpha = .84$ ) and Turkish ( $\alpha = .67$ ) children.

## Results

Some preliminary analyses are presented first. Next, we examine whether direct and extended cross-ethnic friendship causally predicted positive out-group evaluations over time and whether social norms served as mediator. In addition, we examine whether direct and extended friendship effects worked better for German (ethnic majority) children compared to Turkish (ethnic minority) children.

### Preliminary Analysis

*Checking for selective attrition.* To check for selective attrition, we compared the scores on all model variables at Time 1 (T1) of participants who participated at both time points (both) with participants who only participated at T1 (one). We performed a multivariate analysis of variance (MANOVA) using a 2 (one vs. both)  $\times$  2 (majority vs. minority) between-participants design. No significant effects were found for the participation factor (all  $F_s < .71$ , *ns*) or for the interaction (all  $F_s < 3.00$ , *ns*). We therefore concluded that selective attrition played no significant role for subsequent findings.

*Construct validity.* Factor analysis with principal component analysis extraction and varimax rotation were performed to examine whether the scales used for extended friendship, social norms, and out-group evaluations actually represented different constructs. Three factors emerged with an eigenvalue  $> 1$ . These factors corresponded, respectively, to extended friendship, out-group evalua-

tions, and social norms. Every item showed its highest loading on the factor representing its construct. All items showed a loading higher than .64. These results support the assumption of distinct underlying constructs.

*Mean scores and correlations.* To examine changes over time, we performed 2 (majority vs. minority)  $\times$  2 (T1 vs. Time 2 [T2]) ANOVAs with repeated measurements on the second factor for all variables. The means and standard deviations for both groups at both measurement points are depicted in Table 1. The effects of group membership on all variables were consistent over time; all the interaction effects between time and status were nonsignificant (all  $F_s < .54$ ). As can be seen in Table 1, German and Turkish children reported equal numbers of direct out-group friends (note that the range of direct out-group friends was 0–3). The number of reported direct cross-ethnic friendships was found to decline over the school year among both groups. Turkish children reported a greater number of extended cross-ethnic friends compared to German children in the beginning and end of the year. For both groups the reported number of extended cross-ethnic friendships increased over time. Regarding social norms about playing with out-group members, Turkish children were found to report more positive norms at both time points. Within both groups, perceived norms became less positive over time. Finally, more positive out-group evaluations were found among Turkish children. Out-group evaluations became less positive over time within both groups.

Cross-sectional intercorrelations across groups are presented in Table 2 (T2 is depicted in italics; the Turkish minority group is depicted above the diagonal). As expected, at both time points and within each ethnic group direct and extended

Table 1

*Means (and Standard Deviations) for German (N = 76) and Turkish (N = 73) Children on the Variables at Time 1 and Time 2 and Test Statistics F (and Effect Sizes,  $\eta^2$ ) for Analyses of Variance on All Variables Over Time*

	Time 1		Time 2		Time of measurement	Status
	German children	Turkish children	German children	Turkish children	F value ( $\eta^2$ )	F value ( $\eta^2$ )
Direct cross-ethnic friendship	1.71 (0.89)	1.96 (0.98)	1.59 (0.90)	1.78 (0.98)	4.35* (.029)	<i>ns</i>
Extended cross-ethnic friendship	1.80 (0.61)	2.38 (0.64)	2.18 (0.66)	2.76 (0.61)	37.28*** (0.202)	51.70*** (0.260)
Social norms	3.48 (1.15)	4.23 (0.94)	3.31 (1.09)	3.90 (1.14)	5.44* (0.036)	22.23*** (0.131)
Out-group evaluations	2.21 (0.50)	2.71 (0.55)	2.38 (0.66)	2.87 (0.53)	8.11** (0.052)	49.50*** (0.252)

*Note.* All the interaction effects between time and status were nonsignificant (all  $F_s < .54$ ).

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

Table 2

Intercorrelations for German (N = 76, Below Diagonal) and Turkish (N = 73, Above Diagonal) Children Between the Variables at Time 1 and Time 2 (Time 2 is Depicted in Italics)

	Direct cross-ethnic friendship	Extended cross-ethnic friendship	Social norms	Out-group evaluations
Direct cross-ethnic friendship	—	.43***/.29*	-.06/.06	.13/.02
Extended cross-ethnic friendship	.56***/.56***	—	.11/.18	.31**/.37**
Social norms	.03/.33**	.13/.28*	—	.22 <sup>†</sup> /.31**
Out-group evaluations	.11/.39***	.36*/.50***	.17/.59***	—

<sup>†</sup>p < .10. \*p < .05. \*\*p < .01. \*\*\*p < .001.

Table 3

Intercorrelations Between Time 1 (T1) and Time 2 (T2) for German and Turkish (in Italics) Children

	Direct cross-ethnic friendship T2	Extended cross-ethnic friendship T2	Social norms T2	Out-group evaluations T2
Direct cross-ethnic friendship T1	.65***/.50***	.41***/-.04	.28*/-.10	.38**/-.13
Extended cross-ethnic friendship T1	.38**/.23*	.42***/.08	.22 <sup>†</sup> /.09	.25*/-.02
Social norms T1	.06/.03	.21 <sup>†</sup> /.05	.19/.38**	-.03/.07
Out-group evaluations T1	.14/.01	.14/-.13	.35**/-.05	.41***/-.07

<sup>†</sup>p < .10. \*p < .05. \*\*p < .01. \*\*\*p < .001.

friendship were moderately correlated. In addition, it is interesting to note that, at both time points, extended friendship was strongly associated with positive out-group evaluations among German and Turkish children. Direct friendship, however, was only positively related to German children’s out-group evaluations at the end of the school year. Neither direct nor extended friendship was found to be significantly correlated to social norms at T1. At T2, for German children only, both direct and extended friendship were found to be positively associated with social norms. Social norms were positively associated with out-group evaluation at the end of the school year among both German and Turkish children.

In Table 3 correlations over time are given for both groups. Only among German children were direct and extended friendship found to be positively related to out-group evaluations over time. Furthermore, the correlations indicate direct and extended friendship to be positively related to social norms over time, but again only among German children. No significant correlations between social norms at T1 and out-group evaluations at T2 were found.

Cross-Lagged Effects

To test our causality hypothesis we performed cross-lagged panel analyses using multiple regres-

sion analysis (see Figure 1). By simultaneously entering the predictor variables (direct and extended cross-ethnic friendship) and the outcome variable (out-group evaluations), we controlled for the correlations between the T1 variables. A causal effect of cross-ethnic friendship on intergroup attitudes is said to exist if T1 friendship predicts T2 attitudes, controlling for T1 attitudes. Likewise, a causal effect of intergroup attitudes is indicated if T1 attitudes predict T2 friendship, controlling for T1 friendship. For longitudinal data, this is considered to be the best approach to identify a causal relationship (Bijleveld & van der Kamp, 1998; Cohen, Cohen, West, & Aiken, 2003; Finkel, 1995).

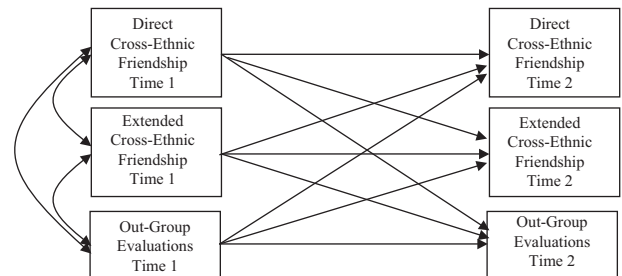


Figure 1. Cross-lagged panel model for examining causality directions regarding associations between direct and extended cross-ethnic friendship and out-group evaluations at both measurement points.



In sum, three sets of multiple regressions were performed for the German and Turkish children separately. First, T2 direct cross-ethnic friendship was regressed on T1 direct and extended cross-ethnic friendship and out-group evaluations. Following, T2 extended friendship was regressed on T1 direct and extended friendship and T1 evaluations. Finally, T2 evaluations were regressed on T1 direct and extended friendship and T1 evaluations. The results are given in Table 4. T1 direct cross-ethnic friendship was found to predict T2 out-group evaluations among German children ( $\beta = .41$ ,  $p < .01$ ) but not among Turkish children ( $\beta = -.15$ , *ns*). As the path from German children's T1 out-group evaluations did not significantly predict T2 direct cross-ethnic friendships ( $\beta = .08$ , *ns*), it can be concluded that direct cross-ethnic friendship causally predicted out-group evaluations over time among the majority status children only. T1 extended cross-ethnic friendship did not predict German children's ( $\beta = -.13$ , *ns*) nor Turkish children's ( $\beta = .07$ , *ns*) T2 out-group evaluations.

#### Multiple-Sample Path Analyses

We hypothesized that, overall, friendship effects would work better for majority compared to minority children. To compare the results across groups, we used structural equation modeling (SEM), spe-

cifically, path analysis (see Kline, 2005) using the program Amos 6.0.0 (Arbuckle, 1983–2005). An advantage of path analysis over multiple regression analysis is that it allows for a direct comparison of different paths in the model. More specifically, estimations of model parameters are compared to see whether they are equal or different across groups; by specifying cross-group equality constraints, group differences for specific model parameters (i.e., specific paths in the model) can be tested. The fit of the model with constrained paths is compared to that of the unrestricted model without equality constraints (which needs to fit the data well). Model fit is assessed using the chi-square test, the comparative fit index (CFI), the root mean square error of approximation (RMSEA), and the standardized root mean square residual (SRMR). A reasonable fit is indicated by a nonsignificant chi-square, a CFI value greater than .95, an RMSEA smaller than .06, and an SRMR smaller than .08 (Hu & Bentler, 1999; Kline, 2005). If the fit of the constrained model is significantly lower than the fit of the unconstrained model, it can be concluded that the parameters are not equal across the populations from which the samples were drawn, in our case the German and Turkish children.

Several indicators can be used for model comparison (Kline, 2005). If the chi-square difference statistic ( $\chi_D^2$ ) of the constrained model is significantly larger than the chi-square of the unconstrained model, it can be concluded that the unconstrained model fits the data better (note that a chi-square of 0 indicates perfect fit). Another indicator is the Akaike information criterion (AIC). The model with the smallest AIC is considered to fit the data best. So if the unconstrained model has a lower chi-square and AIC than the constrained model, the unconstrained model is preferred and it can be concluded that the groups differ on the constrained parameters.

A model with autoregressive paths was tested including the two predictor variables and the outcome variable 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 German and Turkish children. We then constrained path weights to be equal across groups. In Figure 2 the unconstrained model of the multiple-sample analyses is depicted with values for both German and Turkish (in italics) children. It fit the data well,  $\chi^2(10, N_{\text{Germans}} = 76, N_{\text{Turkish}} = 73) = 8.467$ ,  $p = .583$ , CFI = 1.000, RMSEA = .000

Table 4

*Cross-Lagged Effects Between Direct Cross-Ethnic Friendship, Extended Cross-Ethnic Friendship, and Out-Group Evaluations at Time 1 and Time 2 for German (N = 76) and Turkish (N = 73) Participants*

Effects	Group	
	German	Turkish
Direct cross-ethnic friendship		
Stability of direct friendship	.648***	.490***
Extended friendship to direct friendship	-.010	.045
Evaluations to direct friendship	.076	-.071
Extended cross-ethnic friendship		
Direct friendship to extended friendship	.261*	-.088
Stability of extended friendship	.264 <sup>†</sup>	.177
Evaluations to extended friendship	.013	-.168
Out-group evaluations		
Direct friendship to evaluations	.409**	-.154
Extended friendship to evaluations	-.131	.069
Stability of evaluations	.413***	-.073

Note. Standardized regression coefficients are given.

<sup>†</sup> $p < .10$ . \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

with the 90% confidence interval .000–.079, SRMR = .057, and there were no modification indices indicating possibilities to improve model fit for either group. Thus, the requirement of a fitting unconstrained model was met.

Comparing the unconstrained model with the constrained model revealed a significant change in the overall fit,  $\chi^2_D(4) = 21.295, p < .001$ . In addition, the AIC values indicated the unconstrained model (AIC = 96.467) fit the data better than the constrained model (AIC = 109.762). This clearly shows that there were differences between groups. To examine whether the path from direct friendship at T1 to out-group evaluations at T2 differed across groups we performed another hierarchical set of multiple-sample analyses. We compared the unconstrained model with a model in which the path from friendship to evaluations was constrained to be equal. A significant decrease in model fit,  $\chi^2_D(1) = 7.395, p < .01, AIC_{unconstrained} = 96.467 < AIC_{constrained} = 101.862$ , confirmed that the path differed across groups. These results support our prediction that cross-ethnic friendship effects on attitudes are stronger for majority status children than minority status children.

Mediation Analysis

Next, the mediation hypothesis of social norms was tested. As we found a significant effect of direct friendship over time among the German majority status children only, we focused on this group. To assess the mediating effects of social norms, we followed the procedure of regression based models by Baron and Kenny (1986). First, we regressed T2 evaluations on T1 friendship control-

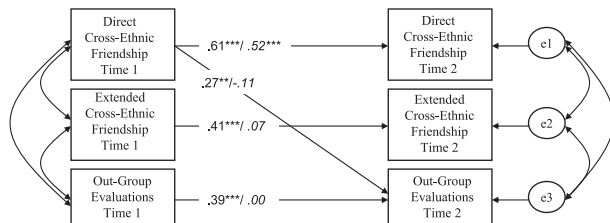


Figure 2. Multiple-sample analysis using maximum likelihood estimation of direct and extended friendship effects on out-group evaluations over time for German and Turkish (values depicted in italics) children.

Note. Path values are standardized beta weights.  $\chi^2(10, N_{Germans} = 76, N_{Turkish} = 73) = 8.467, p = .583$ , comparative fit index = 1.00, root mean square error of approximation = .000 with the 90% confidence interval .000–.079, standardized root mean square residual = .057.

\*\* $p < .01$ . \*\*\* $p < .001$ .

ling for T1 evaluations. Second, we regressed T2 social norms on T1 friendship, norms, and evaluations. Third, we regressed T2 evaluations on T1 friendship, T2 norms, and T1 evaluations. In a fourth step the significance of any mediating effects was tested with a Sobel test (Sobel, 1982). Strictly speaking, this design does not allow for a test of longitudinal mediation as the condition of temporal precedence is not met; the mediating variable is measured at the same time (T2) as the outcome variable. However, it is likely that social norms have an immediate effect on children’s attitudes. That is, any changes in social norms over time should be reflected by changes in attitudes over time. Therefore, a direct effect should be observed of social norms on out-group evaluations at T2 when controlling for T1 social norms and T1 evaluations.

The results of the mediation analysis are given in Figure 3. In the third step of the analyses a significant effect of T2 social norms on T2 evaluations was found ( $\beta = .44, p < .01$ ). The effect of T1 direct cross-ethnic friendship on T2 evaluations reduced when social norms was included in the model (from  $\beta = .34, p < .01$  to  $\beta' = .23, p < .05$ ). The Sobel test showed that this reduction was significant ( $z = 2.03, p < .05$ , two-tailed). Hence, having cross-ethnic friends predicted more positive perceived social norms among German children and, in turn, more positive attitudes toward the out-group.

Discussion

Three findings from our study extend previous work on the association between children’s cross-ethnic friendships and intergroup attitudes. First, we demonstrated for the first time that direct but not extended cross-ethnic friendship predicted over time positive out-group evaluations among children in middle childhood. Our second original

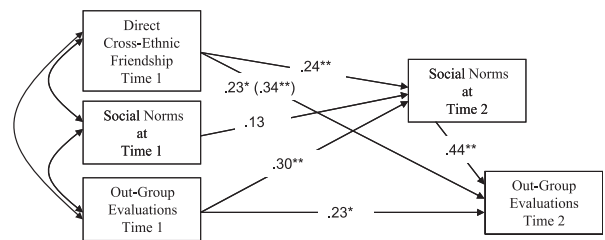


Figure 3. Multiple regression analysis of direct and indirect effects of German children’s (N = 76) cross-ethnic friendships at Time 1 on evaluations at Time 2 via norms at Time 2 controlling for evaluations and norms at Time 1.

Note. Path values are standardized beta weights. \* $p < .05$ . \*\* $p < .01$ .

finding was that this association was evident among ethnic majority German children but not ethnic minority Turkish children. Finally, perceived social norms about cross-ethnic friendship relations were found to partially mediate this association.

The multicultural and tolerant nature of the schools in the present study was evident in the frequent opportunities for positive interethnic contact over a prolonged time that were supported by the authorities while equal status was emphasized (e.g., through a recognition of the language by offering Turkish language courses). These conditions closely reflect Allport's (1954) contact conditions, which should both allow the formation of cross-ethnic friendships and positive change in intergroup attitudes (Pettigrew, 1998; see also Hewstone et al., 2005). Indeed, our longitudinal results suggest that cross-ethnic friendships positively altered children's intergroup attitudes, rather than intergroup attitudes affecting children's friendship relations. These findings are in line with previous cross-sectional studies showing positive associations between majority children's cross-ethnic friendships and their intergroup attitudes (Aboud et al., 2003; Turner, Hewstone, & Voci, 2007, Study 1).

Another significant finding of the present study, as predicted, was that direct cross-ethnic friendship effects differed across the majority and minority groups; having direct cross-ethnic friends early in the school year predicted positive attitudes among German but not among Turkish children. This is in line with previous meta-analytic findings showing the contact-attitudes association to be stronger among ethnic majority group members (Tropp & Pettigrew, 2005) and findings of Aboud et al. (2003) who found associations between cross-ethnic friendship and low levels of prejudice among ethnic majority but not minority children. These results suggest that minority children's intergroup attitudes are determined by other factors than direct cross-ethnic friendship.

Interestingly, the cross-sectional correlations indicated extended friendship to be moderately associated with positive out-group evaluations among both the German and the Turkish children. As reported elsewhere (Feddes, Noack, & Rutland, 2008) our results indicate that the strength of the association between extended friendship and out-group evaluations is independent of group membership (i.e., majority or minority status). This is in line with a previous cross-sectional study by Turner, Hewstone, and Voci (2007, Study 2) investigating extended contact effects among Asian (minority

status) and White (majority status) children in secondary schools in the United Kingdom. Their results indicated no differences in the association between extended contact and explicit out-group attitudes across groups. The present results, however, suggest extended friendship to be less effective than direct friendship in changing majority children's attitudes over time. In accordance with our prediction that direct friendship is more effective than extended friendship in changing children's intergroup attitudes in contexts where there is high opportunity for direct contact with out-group members.

In line with the predictions, social norms about cross-ethnic friendship were found to partially mediate the effect of direct friendship on German children's evaluations of Turkish children. More specifically, the present study focused on *injunctive* norms, children's perceptions of whether other German and Turkish children think it is normal to have an out-group friend. Our results are in line with previous findings by Cameron and colleagues (Cameron, Rutland, & Brown, 2007; Cameron, Rutland, & Hossain, 2007), who found that both direct and extended contact promoted more positive social norms regarding cross-ethnic friendship, which then resulted in improved outgroup attitudes among majority children. It appears that social norms about cross-ethnic friendships are an important mediator of the friendship-attitude relationship among majority children.

#### *Limitations and Further Research*

A possible limitation in our study was the measures of direct cross-ethnic friendship. Children were asked to mention their three best friends, but they could have had more or less. In addition, one-way friendship nominations were used as an index of friendship, which does not necessarily reflect a friendship relationship. Further research can complement the present findings by examining mutual friendship nominations and friendship quality (Aboud et al., 2003). An additional limitation of the present research is that we used only positive items measuring intergroup attitudes after omitting the negative item to get reliable scales. It would be interesting to see whether similar effects occur when including both positive and negative traits (e.g., Aboud, 2003).

Our operationalization of extended contact differed from Wright et al. (1997), as we examined extended friends via direct friends who could have been of similar (in-group) or different (out-group or

other) ethnicity. This is a consequence of the context in which the study was performed, which was characterized by high opportunity for friendship formation with individuals who were not necessarily in-group members. Our results indicate, however, that even when controlling for direct out-group friends, extended friendship was positively associated with out-group evaluations (see also Feddes et al., 2008). This is a promising finding, as it suggests that extended friendship may affect attitudes independent of the ethnicity of the direct friend. Additional research is needed directly testing whether the strength of extended friendship effects depends on whether these friendships are through a direct in-group or out-group member.

Further research should examine what other factors may mediate and moderate associations between children's direct and extended cross-ethnic friendships and their intergroup attitudes. Our results showed that direct friendship effects were partially mediated by social norms. This suggests that other processes are involved which is in line with previous findings by Turner and colleagues (Turner, Hewstone, & Voci, 2007; Turner, Hewstone, Voci, et al., 2007; Turner et al., 2008), who showed that multiple variables mediated direct and extended friendship effects. For example, Turner and colleagues (Turner, Hewstone, & Voci, 2007; Turner, Hewstone, Voci, et al., 2007) and Paolini et al. (2007) point out the importance of self-disclosure (i.e., the voluntary presentation of information that is of an intimate or personal nature to another person; Dovidio et al., 1997; Ensari & Miller, 2002) within cross-ethnic friendships. With respect to this point, it is striking that Aboud et al. (2003) found that a key difference between same-race and cross-race friendships were the levels of intimacy.

Further research is required to understand how direct and extended cross-ethnic friendships may be structured to promote positive attitudes among both ethnic majority and minority status children. For example, as interventions aimed at improving intergroup attitudes often rely on creation of optimal contact conditions (i.e., cooperative learning programs; see Banks, 1995; Slavin, 1995), it is important to investigate whether these yield different patterns of friendship-attitudes associations for minority and majority children. Castelli et al. (2007) found that White Italian (high-status and majority) children evaluate other White children more negatively when they interact with Black (low-status and minority) children on the basis of free choice. Instead, when children were told that an external agent (i.e., a teacher) formed the inter-

acting pairs, in-group members were not evaluated differently.

To conclude, the present research suggests that direct cross-ethnic friendship is more effective in changing children's intergroup attitudes compared to extended cross-ethnic friendship. However, this was evident among ethnic majority but not ethnic minority status children. Perceived social norms about cross-ethnic friendship seem to play an important role in mediating the association between cross-ethnic friendship and children's intergroup attitudes. Our findings are in line with a growing body of evidence that direct and extended friendships affect intergroup attitudes differently (i.e., Paolini et al., 2007; Turner, Hewstone, & Voci, 2007; Turner, Hewstone, Voci, et al., 2007) and that social status may be an important factor moderating friendship effects (i.e., Tropp & Pettigrew, 2005). Further research is needed to examine the conditions under which direct and extended friendships affect minority and majority status children's intergroup attitudes. This knowledge would greatly benefit the design of effective strategies aimed at improving *all* children's intergroup attitudes within the multitude of ethnic contexts children experience in their everyday lives.

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