The Mediating and Moderating Effects of Teacher Preference on the Relations between Students' Social Behaviors and Peer Acceptance

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Lei Chang *The Chinese University of Hong Kong*
Hongyun Liu *Beijing Normal University*
Kitty Y. Fung *The Chinese University of Hong Kong*
Yan Wang *Fudan University*
Zhonglin Wen *South China Normal University*
Hongli Li *The Chinese University of Hong Kong*
JoAnn M. Farver *University of Southern California*

Tested on a sample of 1,365 Hong Kong primary school students from five grades, teacher preference or the extent to which the classroom teacher likes a child in the class was found to both mediate and, to a lesser extent, moderate the relations between children's social behaviors and peer acceptance across age groups. The mediating effect suggests that peer acceptance responds not only to the behavior of a student but also to how much the classroom teacher likes or dislikes the student. The moderating effect suggests that the associations between student social behaviors and peer acceptance differ as functions of teacher preference. The mediating teacher preference was stronger with younger children, whereas a stronger moderating teacher preference was found for the older children. These findings confirm the supposition that three social processes involving the teacher, children, and peers contribute to children's social status and relations in the classroom.

Children's social interaction and relative status in their school classrooms derive from their relationships with fellow students as well as from relationships with their classroom teachers (Hartup, 1989; Hymel, 1986). In the peer relations literature, this first relationship is operationalized as peer preference or peer acceptance and has been commonly studied with regard to children's social behavior (Rubin, Coplan, Nelson, Cheah, & Lagace-Seguin, 1999). The relationships that children form with their teachers are in part determined by teacher preference of students or the extent to which the classroom teacher likes a student. Although theoretically the teacher may like or dislike all the students in her class equally, in reality teacher preference is a relative construct the valence of which depends on the teacher's like and dislike of other students. While the influence of teachers' preference of students has been studied in educational contexts (e.g., Babad, 1995), it has rarely been included in peer relations research (Chang, Liu, Wen, Fung, Wang, & Xu, 2004).

To integrate these two bodies of literature, we focused on the influence of teacher preference on the relation between children's social behavior and peer acceptance. Based on early studies of children's moral development, where adult efforts to socialize norms and values took varied forms and were manifested differently among children (Kohlberg, 1981; Grolnic, Deci, & Ryan, 1997; Piaget, 1965; Valsiner, 1988), we propose that there are two ways by which teacher preference can influence children's social behaviors. Operationalized within the statistical model to be discussed in the next section, these are mediating and moderating teacher preference. The mediating teacher preference refers to a process by which children adopt their classroom teacher's liking and disliking of students, or of certain kinds of students, relatively independent of prior experiences with those students or perceptions of their behavior (Chang et al., 2004). The moderating teacher preference describes another process whereby students identify with, adapt to, or internalize their classroom teacher's preferences, which results in a differentiation of responses to the same social behaviors initiated from different children. Unlike previous work on adult influence, which remains primarily theoretical (e.g., Valsiner, 1988), we used two existing mediating and moderating statistical models to delineate and examine these two modes of teacher influence on the relation between peer acceptance and children's social behaviors. Specifically, we hypothesized that there would be a mediating and a moderating effect of teacher preference on the relation between children's aggression, social withdrawal, and prosocial leadership, respectively, and their peer acceptance. Tested on a sample of 1,365 Hong Kong children from five primary school grades, the mediating and moderating teacher preference was also examined for grade-related developmental differences and possible gender interactions.
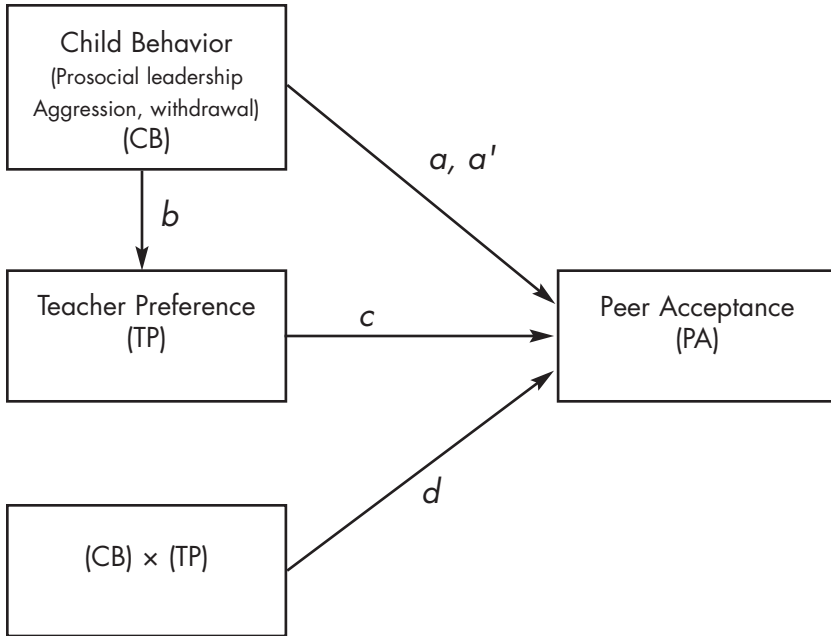
The Mediating Teacher Preference

Peer preference or acceptance has been widely studied in relation to children's social behavior in the social developmental literature (Rubin et al., 1999). This large and growing literature suggests a strong trend for children to reject peers who behave aggressively, to ignore or reject children who are socially withdrawn, and to admire children who behave prosocially (for reviews, see Rubin et al., 1999; see also Chang, 2003, 2004). As shown in these reviews, there are also variations in the relations between various children's social behaviors and peer acceptance. For example, some studies suggest that aggressive children are not rejected (Phillipsen, Bridges, McLemore, & Saponaro, 1999) or are even well accepted by peers (e.g., Hawley, 2003; Rodkin, Farmer, Pearl, & Van-Acker, 2000). These variations indicate potential contextualizing influences including the role of teacher preference.

Teacher preference has been studied in a separate teacher-student relationship literature (e.g., Babad, 1995; Birch & Ladd, 1997), and the findings have shown that teachers dislike children who are aggressive and disruptive (Birch & Ladd, 1998; Ladd & Burgess, 1999; Wentzel & Asher, 1995; Taylor & Trickett, 1989), although teachers also recognize that certain aggressive students and especially adolescent boys may have leadership abilities (Farmer, Estell, Bishop, O'Neal, & Cairns, 2003). However, teachers mainly endorse and try to foster and encourage prosocial leadership among children in their classrooms (Birch & Ladd, 1998; Gorman, Kim, & Schimmelbusch, 2002; Wentzel and Asher, 1995). Teachers also favor high academic achievers, students who are agreeable (Babad, 1995), and students who are somewhat sympathetic toward socially withdrawn children (Chang, 2003). Other studies also show a moderate positive correlation between social withdrawal and teacher preference (Gorman et al., 2002).

The teacher-preference literature also reports an association between teacher preference and peer preference. Gorman, Kim, and Schimmelbusch (2002) found that children's perceived peer popularity was positively correlated with their perceived teacher preference. Studies also suggest that teachers and peers may be drawn to similar student attributes (e.g., Howes, Hamilton, & Matheson, 1994; Taylor, 1989; Peterson, 1968). For example, both teachers and peers tend to appreciate students who are hardworking (Peterson, 1968) and behave prosocially (Birch & Ladd, 1998). Howes et al. (1994) contend that children who can form successful and positive relationships with adults (e.g., teachers) usually have good relationships with their peers.

Taken together, these findings suggest a potential mediating influence of teacher preference on the relation between children's social behavior and

Figure 1. The mediating and moderating effects of teacher preference on the relation between child behavior and peer acceptance.

their peer acceptance (Chang et al., 2004). As the focal point of students' attention, the classroom teacher's interaction with their classmates plays a salient role in how they perceive their classmates' behavior and in turn respond to it in a manner that is consistent with the teacher's liking (or disliking) of the child (Chang et al., 2004) or of certain kinds of children (Chang, 2003). Several studies of kindergarten and primary school children have documented how children have adopted their classroom teacher's liking and disliking of certain students and certain behaviors in forming friendships with their peers (Birch & Ladd, 1997; Ladd, Birch, & Buhs, 1999; Howes et al., 1994; Hughes, Cavell, & Willson, 2001).

The literature reviewed above can be summarized in a statistical model (Figure 1), where paths *a, b,* and *c* represent the direct links among children's social behavior, peer acceptance, and teacher preference, whereas a mediating teacher preference involves multiplying path *b* with path *c.* Statistically, $b \times c$ represents an indirect association between children's social behavior and acceptance by their peers through the mediating effect of teacher preference. Whereas the direct relation between children's social behavior and peer acceptance represents peers' primary experience with a

behavior, the indirect association through the mediating effect of teacher preference represents the secondary experience whereby students have adopted the teacher's preference in evaluating their peers' social behavior. Thus, due to the mediating teacher influence, a child's peer acceptance is no longer just a reflection of or a response to a particular attribute or behavior of the child but is also a manifestation of the teacher's liking (or disliking) of that child. This three-way association is inherent in typical classroom contexts where a child's social interaction involves three players: the child, the classroom teacher, and the peer group (Chang et al., 2004).

Statistical evidence for the mediating teacher preference can be derived by comparing path a with path a', the latter representing the direct effect of children's behavior on their peer acceptance without including the mediating teacher preference (see Figure 1). That is, when not considering teacher preference, children's peer acceptance seemingly responds only or primarily to the behavior (path a'). However, once teacher preference is considered, the valence of the attribute-induced response (path a') would presumably reduce in path a. The reduction from a' to a represents the mechanism by which school children emulate or adopt their teacher's liking of particular students.

The Moderating Teacher Preference

In addition to the mediating influence of teacher preference, we also predicted a significant moderating effect of teacher preference on the relation between children's social behavior and peer acceptance. Students may adapt to or internalize the classroom teacher's preference of their classmates when assessing each other's behavior. The adapted liking and disliking of a child by the classroom teacher may bias peers' evaluation of the focal child's behavior and their acceptance of that child (Hughes, Cavell, & Willson, 2001). Peers may respond to the child's behavior differently. They may react more or less positively or negatively than they otherwise would to the same behavior, depending on who the child is. For example, research has shown that primary school children who were previously rejected by their peers but subsequently received positive regard from their classroom teacher were less rejected over time than were children who received low teacher regard (Taylor, 1989; Taylor, & Trickett, 1989). This finding suggests the possibility that peers use different rules in evaluating differential teacher-preferred children. In another study of primary school children, White and Jones (2000) found that experimentally manipulated teacher feedback on a target child affected students' evaluation of the child's behavior beyond what was expected based on the child's existing peer group status (see also White & Kistner, 1992). Peer

acceptance of different social behaviors seems to vary depending on the teacher's attitudes toward the behaviors (Chang, 2003). Indirectly, this research implicates the potential effect of teacher preference in moderating students' evaluations of their peers.

The statistical model is also contained in Figure 1, where the moderating teacher influence is represented by path d and the associated interaction term. Consistent with earlier theorizing, the moderating teacher preference triggers different peer responses to a child's behavior as a function of teacher preference ($a + [d \times TP]$ in Figure 1). The moderating effect that is evoked by teacher preference may be perpetuated or self-fulfilling through a continual process of peer differential treatment. A likely scenario might be that peer acceptance of the students whom the classroom teacher likes is tied less to the behavior of these students in part because peers have adapted to the teacher's preference. In this scenario, peers do not respond to the behavior per se but also to teacher preference in evaluating the target children. Teacher preference contributes to and peers perpetuate a positive social reputation for the target children. For these children, both high and low prosocial behavior, for example, is somewhat associated with high peer acceptance, thus attenuating the association between prosocial behavior and peer acceptance. (The attenuated association between CB and PA in Figure 1 is $a - [d \times TP]$, where TP takes on a higher or more positive value representing high teacher preference.) On the other hand, peers may respond to children whom the teacher dislikes primarily because of their prosocial behavior. That is, peers are more likely to prefer children who display high rather than low prosocial behavior, thus strengthening the association between prosocial behavior and peer acceptance. (The strengthened association between CB and PA in Figure 1 is $a - [d \times TP]$, where TP takes on a lower or less positive value representing low teacher preference.) A similar scenario can be expected with negative behavior or in relation to teacher disliking. In both scenarios, the moderating teacher preference takes effect on the students by evoking differential evaluations of children's behavior.

Developmental Considerations

Statistically, these two potential teacher influences must be contained in the same model. Although in a traditional moderating model the two main-effect variables making up the third interaction term are correlated, the model is statistically identical to the present model where one main-effect variable mediates the other. Consistent with Baron and Kenny (1986), the interaction effect, path d, can only be considered after the related main

effects (i.e., paths *a* and *c*) have been accounted for. This statistical assumption implies that the mediating and moderating teacher effects are relative to each other. Although both may occur, a strong effect of one kind precludes the other. Conceptually, this assumption means that the two teacher influences cannot equally explain the same peer behavior. For example, students who adopt their teachers' preferences 100% will like the children whom the teacher likes and dislike those whom the teacher dislikes. Thus, the association between children's social behavior and peer acceptance is entirely mediated by teacher preference. In this case, there will be no moderating teacher influence to result in differential treatment of students because they are treated equally in line with the adopted teacher preference. To the extent that both mediating and moderating teacher preferences exist, neither can be 100%. This position is consistent with developmental theories of socialization. For example, both Piaget (1965) and Kohlberg (1981) have observed that the inculcation of adult values takes place among children at different stages, and depending on the domain of socialization and children's age, this usually takes effect primarily in one form while reducing in influence in others. Similarly, recent work has concluded that adult influence on children occurs in different degrees at several levels of internalization (Grolnic et al., 1997; Valsiner, 1988).

Also implicit in our statistical presentation in Figure 1, the moderating or the interaction effect must be considered after the main effects including the mediating relation. Conceptually, this means that children initially adopt or blindly comply with adult values, and increasingly with age they process and begin to internalize these values. This developmental progression is consistent with findings that younger children are more susceptible to adult influence than are older children (e.g., Kuklinski & Weinstein, 2001) and that the teacher-student relationship is closer and more positive among kindergartners (Esposito, 1999) and the lower primary school grades (Lynch & Cicchetti, 1997) than among older children. These characteristics support the notion that younger children would be more likely to directly adopt their classroom teacher's views, likes, and dislikes than would older children. In contrast, older children, who can draw on their wider social experiences and make increasingly more sophisticated and independent judgments, may be more likely to adapt to or internalize teacher preference as their own in differentially evaluating similar behaviors from children receiving different teacher preference. We hypothesized that a mediating teacher preference would have a stronger impact on children in the lower primary graders (e.g., first through third grades) than on their counterparts in the fourth and fifth grades. In addition, when controlling for the adopted teacher-preference or the mediating teacher-preference

effect, the incremental effect due to the additional moderating teacher preference was hypothesized to be stronger with children in fourth and fifth grades than with those in the first through third grades.

Gender Differences

Finally, potential gender differences were also examined. A relatively consistent view emerging from our review of gender-related findings is that teachers maintain closer and more positive relationships with girls than with boys in kindergarten (e.g., Birch & Ladd, 1998) and throughout elementary school (e.g., Hamre & Pianta, 2001). Another predominant view is that throughout childhood and adolescence, girls, in comparison to boys, are more conforming to adult values, including those of their teachers (Maccoby, 2000). However, other findings are not fully consistent with these. In one study, teachers' ratings of students were more strongly related to boys' popularity than to girls' popularity (La Greca, 1981), while other studies revealed few gender differences (e.g., White & Jones, 2000; White & Kistner, 1992). Given these discrepant findings and the view that gender is often thought to be a nuisance variable that yields context dependent results, we took a more exploratory approach to gender and predicted that the influence of both mediating and moderating teacher preferences would be stronger for girls than for boys.

Cautionary Notes and a Summary of the Study

The proposed mediating and moderating influences of teacher preference that represent processes rather than outcomes were not directly observed in the present study. The variables that were measured and investigated in this study register only the end results of some processes. By formulating a set of direct and indirect relations among the observed variables, we hypothesized that the underlying processes took the statistical form of a mediating and a moderating teacher-preference effect. Confirmation of our statistical model—that is, the set of direct and indirect relations among the observed variables—would support our hypothesized inference regarding teacher influences on students' social interactions in the classroom. However, there are potentially other inferences that are yet to be theorized and tested.

The proposed model was tested on a sample of Hong Kong primary school students. Certain contextual factors unique to the Hong Kong population may facilitate or inhibit some of the proposed teacher processes. For example, the belief that Chinese children are more willing to adopt adult values than are Western children (Chang, McBride-Chang, Stewart, & Au, 2003) could facilitate the proposed teacher processes. However, we chose

not to speculate on potential cultural influences for two reasons. First, it is not appropriate to make cultural inferences or comparisons based on a single sample from one cultural community. Second, we have no direct measure of our participants' cultural goals, values, or beliefs. Whereas determining cross-cultural generalizations remains an interesting future inquiry, we first sought to examine our hypotheses with a single sample of Hong Kong primary school children and their teachers.

In summary, we predicted that teacher preferences of students would mediate and moderate the relation between children's social behaviors (i.e., aggression, social withdrawal, and prosocial leadership, respectively) and their peer acceptance. We expected that the mediating teacher preference would be stronger among first through third graders than fourth and fifth graders, whereas the moderating teacher preference was expected to be stronger for the higher rather than for the lower grades. Potential gender differences were also explored.

Method

Sample

The sample was recruited from three primary schools in Hong Kong located in different government housing estates. To qualify for government assistance for ownership of nonluxury housing estates, the annual income of a four-person family, for example, could not exceed US$23,500, and the family's fixed assets could not exceed US$45,000 (Housing Authority and Housing Department, 2005). This income level represents lower middle class in Hong Kong.

Students from first through fifth grades were targeted. Sixth graders were not approached due to the high instruction and examination demands on these graduating classes. Each school had three classes in each grade. Parental consent forms were distributed to these students. All of the parents granted consent for participation. Teachers from one third-grade class and one fourth-grade class did not allow their students to participate. The final sample consisted of 1,365 students from 43 classes. The students' age ranged from 6 to 12 years ($M = 9.04$, $SD = 1.74$), and males accounted for 53.48% of the sample. The class size ranged from 25 to 38 children ($M = 31.74$, $SD = 3.51$). There was no significant difference in class size across the five grades ($F[4, 38] = 2.64$, ns).

Head teachers of the 43 classes also participated in the study. Thirty-five (81.40%) of the 43 teachers were female. The average age of the head teachers was 36.70 years ($SD = 11.54$), and the mean number of years of teaching experience was 13.61 years ($SD = 10.14$). A head teacher in Hong Kong schools is responsible for all the affairs of the students in her designated

class in addition to teaching in a subject area. Students may go to the head teacher for any problems they encounter, including those that occur outside school or in lessons taught by other subject teachers.

Procedures

After obtaining the signed consent forms, two research assistants came to each class to administer a short set of peer-nomination questionnaires. There were no other school adults present during peer nominations. One of the research assistants first explained to the students that their participation was voluntary and ensured confidentiality of their responses. The peer-nomination forms and class name list were then distributed to the students. One research assistant explained the procedures and then read out each item as students filled out student numbers representing the classmates whom they consider best fit the criteria of the stated item. While students filled out the nomination forms, the other research assistant walked around to make sure that the students were on task and the forms were correctly filled out. Separately, the 43 head teachers of these students were asked to rate, twice in four months, the extent to which they liked each of the students in their class.

Measures

Peer nominations were used to measure aggression, social withdrawal, prosocial leadership, and peer acceptance. The items were derived from the literature (e.g., Schwartz, McFadyen-Ketchum, Dodge, Pettit, & Bates, 1998) and were used previously with Chinese children of similar backgrounds (Chang, Schwartz, Dodge, & McBride-Chang, 2003; Schwartz, Chang, & Farver, 2001). The seven aggression items were, in abbreviated form, kids who start fights, hit, or push others; bully others; say mean things to others; pick on others; call bad names; and exclude others. The eight social withdrawal items were, in abbreviated form, kids who are often alone, are shy, are quiet, are submissive, would rather be alone, do not speak much, and do not join others. The eight prosocial-leadership items were, in abbreviated form, kids who are leaders, are helpful, are listened to when speaking up, organize play, get along with everyone, lead others, and stand up for themselves without hitting, fighting, or getting angry. For each item, students were asked to nominate up to three children in their class who fit these descriptors. Consistent with the literature (e.g., Schwartz et al., 2001), these nomination items were standardized within classes and were summed within each behavioral category—aggression, social withdrawal, and prosocial leadership—to form three composite scores. Internal

consistency reliability estimates based on within-class standardized scores were .94 for aggression, .86 for social withdrawal, and .90 for prosocial leadership. We also computed reliability estimates based on the latent variables approach (Jöreskog, 1971) through LISREL (Jöreskog & Sörbom, 1989). The estimates were .96 for aggression, .92 for social withdrawal, and .95 for prosocial leadership.

Peer acceptance consisted of two nomination items. One was unlimited nomination of "kids you like." The other was limited to three nominations. Internal consistency reliability based on the two measures was .72, and the latent variable reliability was .85. The two nomination items were within-class standardized, and the mean of the two items formed the peer acceptance variable.

Teacher preference was measured by asking each head teacher to rate, on a five-point scale (1 = not at all, 5 = very much) the extent to which she liked each student in her class. The ratings were conducted twice during a four-month interval. Test-retest reliability was .74. The mean of the two ratings formed the final measure. This measure and similar procedures have been used previously and showed adequate reliability (Chang et al., 2004).

Results

Descriptive Statistics

Table 1 presents the means, standard deviations, and ranges of the variables used in the study. Here, the peer-nomination variables were formed by summing the relevant items based on the original name counts or frequencies but not on within-class standardized scores in order to provide more meaningful results. Also based on the raw scores, separate *t* tests and ANOVA were conducted to examine grade, school, and gender differences on teacher preference and peer acceptance.[1]

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[1] Grade and school comparisons on peer-nomination variables were not conducted because these statistics are based on class means or totals. With limited nominations, comparing class means or totals is meaningless because unless a large number of students do not provide the fixed number of nominations as they are required to do, the class mean will always be the number of the fixed nomination independent of the actual class distribution of the concerning behavior that is being nominated.

Let K be the fixed number of nominations for an item (e.g., "name three kids who fight") Let N be the number of students in the class. The class total number of nominations for the item is KN. Let Y_i be the number of times ith student is nominated for the item. The class total number of nominations for the item is $\sum_{i=1}^{N} Y_i$. Clearly, $\sum_{i=1}^{N} Y_i = KN$ or, to use the class mean, $\frac{1}{N} \sum_{i=1}^{N} Y_i = K$ independent of class size or the actual distribution of the students having the behavior that is nominated.

Table 1. Unstandardized Means, Standard Deviations, and Ranges
of the Variables Used in the Study

	Mean	Standard Deviation	Minimum	Maximum
Teacher preference	3.78	.83	1	5
Peer acceptance	10.55	4.68	1	25
Prosocial leadership	18.72	19.60	0	26
Aggression	15.85	23.81	0	29
Social withdrawal	17.77	17.86	0	19

No significant grade differences were found for teacher preference (F[4, 1,357] = 1.43, *ns*). However, significant grade differences were found in peer acceptance (F[4, 1,358] = 92.96, $p < .001$). Post hoc comparisons showed that first grade ($M = 8.59$), second grade ($M = 8.48$), and third grade ($M = 9.34$) had lower mean peer preference scores than fourth grade ($M = 13.55$) and fifth grade ($M = 12.78$). There were no school differences on these variables.

T tests were conducted to examine gender differences on all the variables. Significant gender differences were found for teacher preference ($t = 10.79$, $p < .001$) and aggression ($t = 10.83$, $p < .001$). Females received higher teacher-preference scores ($M = 4.02$) and lower aggression ratings ($M = 8.90$) than did males ($M = 3.56$ and 21.89, respectively).

For all other analyses, nomination items were first standardized within classes before being summed (for aggression, social withdrawal, and prosocial leadership) or averaged (for peer acceptance) into composites and put into statistical tests. To test the moderating effect of teacher preference, teacher preference was multiplied with each of the three social behaviors (i.e., aggression, withdrawal, and prosocial leadership) to form three interaction terms. Prior to these computations, all the variables were standardized within the whole sample to make consistent the measurement units of the variables involved in the multiplication. Table 2 contains the correlations among all the variables including the computed interaction terms.

Path analyses using LISREL (Jöreskog & Sörbom, 1989) were conducted to test the hypothesized moderating and mediating effects of teacher preference. Residual centering approach (Lance, 1988) was used to test the interaction effects.[2] Following the suggestion of one of the reviewers, the cor-

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[2] To adjust for the high correlation between the interaction term, X_{12} (where $X_{12} = X_1X_2$ denotes the cross-product or the interaction term) and X_1 or X_2, Lance (1988) developed the residual centering method that involves a two-step regression analysis. In the first step, the cross-product term is regressed on the two main effect terms as shown in Equation 1:

relations reported in Table 2 were first disattenuated by the corresponding reliability estimates before conducting the path analyses. Because Cronbach's alpha provides a lower bound of reliability estimate, we used Jöreskog's (1971) latent variables method to estimate reliabilities by which to adjust the correlations. For the interaction terms, the lower of the two concerning reliability estimates was used to adjust the correlations. To facilitate interpretation, standardized regression coefficients are reported below.

Path Analysis Results

The mediating and moderating teacher-preference influences were estimated simultaneously with each of the three social behaviors—that is, aggression, social withdrawal, and prosocial leadership, respectively—as the child outcome variable. The results are reported in Table 3, which is prepared to match with the alphabetized paths in Figure 1.

Consistent with hypotheses, a significant mediating teacher-preference influence was found on the relation among all three behaviors and peer acceptance. The statistical testing was based on Sobel's (1988) procedure, which was recently found to be more conservative than other procedures (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). A comparison of the three behaviors showed that aggression registered a stronger mediating teacher preference ($\beta = -.15$) than social withdrawal ($\beta = -.08$) and prosocial leadership ($\beta = .07$). The moderating teacher preference was significant only with the relation between prosocial leadership and peer acceptance but not with that between aggression or social withdrawal and peer acceptance. Overall, with the present sample of primary school students, the mediating teacher preference was much more evident than the moderating teacher preference. Grade- and gender-related results are presented below with respect to each of the three behaviors.

Prosocial leadership. As hypothesized, the mediating teacher preference was stronger among first through third grades ($\beta = .09$) than fourth and

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$$X_{12} = \gamma_1 X_1 + \gamma_2 X_2 + residual \tag{1}$$

The resulting residual from Equation 1, which is called cross-product residual, reflects the interaction of the two independent variables after controlling for their separate linear relations to the dependent variable.

In the second step of Lance's method, the original cross-product term is replaced with the cross-product residual in the second-step regression, as shown in Equation 2:

$$Y = \alpha_3 \tilde{X}_{12} + \varepsilon \tag{2}$$

where $\tilde{X}_{12} = X_{12} - \hat{\gamma}_1 X_1 - \hat{\gamma}_2 X_2$ and $\hat{\gamma}_1 X_1$ $\hat{\gamma}_2 X_2$ are regression estimates obtained from Equation 1.

The interaction effect is examined by applying the usual statistical test to the coefficient, α_3, in Equation 2.

Table 2. Correlations among the Variables Used in the Study

	PA	TP	PL	AG	SW	TP × PL	TP × AG	TP × SW
Grades 1, 2, and 3								
PA	1.0							
TP	.400	1.0						
PL	.548	.289	1.0					
AG	-.157	-.266	-.025	1.0				
SW	-.179	-.209	-.197	.187	1.0			
TP × PL	.112	-.008	.312	-.015	-.021	1.0		
TP × AG	.055	.172	-.012	-.343	-.110	-.089	1.0	
TP × SW	.030	.086	-.018	-.128	-.260	-.209	.241	1.0
Grades 4 and 5								
PA	1.0							
TP	.311	1.0						
PL	.511	.330	1.0					
AG	-.207	-.281	-.042	1.0				
SW	-.384	-.063	-.270	-.014	1.0			
TP × PL	.137	-.020	.545	.033	-.070	1.0		
TP × AG	.097	.208	.025	-.378	.010	-.087	1.0	
TP × SW	.009	-.050	-.079	.017	-.106	-.263	-.035	1.0
Total								
PA	1.0							
TP	.362	1.0						
PL	.531	.306	1.0					
AG	-.178	-.272	-.032	1.0				

	PA	TP	PL	AG	SW	TP × PL	TP × AG	TP × SW
SW	-.276	-.140	-.233	.093	1.0			
TP × PL	.124	-.014	.420	.006	-.045	1.0		
TP × AG	.073	.187	.005	-.358	-.052	-.089	1.0	
TP × SW	.022	.027	-.045	-.066	-.185	-.230	.118	1.0
Female								
PA	1.0							
TP	.407	1.0						
PL	.554	.366	1.0					
AG	-.070	-.119	-.045	1.0				
SW	-.215	-.132	-.203	.038	1.0			
TP × PL	.216	.129	.664	.011	-.096	1.0		
TP × AG	-.071	-.381	-.140	.208	-.006	-.109	1.0	
TP × SW	-.042	-.027	-.129	-.067	.107	-.203	.106	1.0
Male								
PA	1.0							
TP	.292	1.0						
PL	.502	.248	1.0					
AG	-.190	-.244	.007	1.0				
SW	-.318	-.127	-.253	.098	1.0			
TP × PL	.001	-.188	.106	.033	.014	1.0		
TP × AG	.121	.355	.055	-.467	-.064	-.107	1.0	
TP × SW	.066	.055	.016	-.066	-.373	-.274	.126	1.0

Note. PA = peer acceptance, TP = teacher preference, PL = prosocial leadership, AG = aggression, SW = social withdrawal.

Table 3. The Mediating and Moderating Teacher Preference on the Relation between Child Behavior (Prosocial Leadership, Aggression, and Social Withdrawal) and Peer Acceptance

	a		a'		b		c		b × c		d		R² of the Model
	Child Behavior on Peer Acceptance		Child Behavior on Peer Acceptance Not Including Teacher Preference		Child Behavior on Teacher Preference		Teacher Preference on Peer Acceptance		Mediating Effect of Teacher Preference		Moderating Effect of Teacher Preference		
	β	t	β	t	β	t	β	t	β	t	β	t	
	Child Behavior = Prosocial Leadership												
Grade													
1, 2, 3	.68	28.30	.77	34.39	.45	14.36	.19	7.97	.09	6.97	.04	−1.24	.46
4, 5	.64	18.85	.69	22.34	.44	11.48	.11	3.14	.05	3.03	−.14	−3.75	.40
Total	.67	33.86	.74	40.62	.44	18.09	.15	7.77	.07	7.14	−.08	−3.39	.43
Gender													
Female	.68	23.06	.76	29.42	.51	14.92	.17	5.65	.08	5.28	−.17	−5.40	.47
Male	.65	23.23	.70	26.45	.37	10.75	.13	4.58	.05	4.21	−.02	−.46	.38

													R^2
1, 2, 3	-.08	-2.33	-.26	-7.67	-.39	-12.07	.47	14.29	-.18	-9.22	-.03	-.99	.18
4, 5	-.19	-4.72	-.31	-7.64	-.36	-9.04	.32	7.75	-.12	-5.88	-.01	-.25	.18
Total	-.13	-4.19	-.28	-10.77	-.38	-15.17	.40	15.49	-.15	-10.84	-.02	-.89	.18
Female	-.11	-3.13	-.24	-6.22	-.27	-7.06	.48	13.63	-.13	-6.27	.10	2.67	.12
Male	-.15	-4.30	-.26	-7.27	-.33	-9.43	.32	8.85	-.11	-6.46	-.04	-1.02	.15

Child Behavior = Social Withdrawal

													R^2
1, 2, 3	-.18	-5.67	-.32	-9.62	-.32	-9.62	.44	14.08	-.14	-7.95	-.03	-.92	.15
4, 5	-.45	-12.99	-.49	-13.17	-.12	-2.83	.34	9.71	-.04	-3.42	-.02	-.41	.21
Total	-.32	-13.59	-.40	-16.11	-.22	-8.33	.38	16.35	-.08	-7.42	-.03	-1.23	.16
Female	-.24	-7.23	-.33	-8.80	-.19	-4.87	.46	13.86	-.09	-4.59	-.01	-.39	.11
Male	-.38	-11.74	-.44	-13.22	-.21	-5.80	.29	8.99	-.06	-4.87	-.06	-1.72	.19

Note. Absolute t-values of 1.98 or above were statistically significant at $p < .05$.

fifth grades ($\beta = .05$). The difference was statistically significant ($t = 2.70$, $p < .01$). The direct link between teacher preference and peer acceptance was also stronger for lower grades ($\beta = .19$) than higher grades ($\beta = .11$). The difference was statistically significant ($\chi^2[1] = 4.17$, $p < .05$).

The moderating teacher preference was negative and significant ($\beta = -.08$). As indicated by d in Table 3 as well as in Figure 1, the moderating influence of teacher preference represents the interaction between child behavior (i.e., prosocial leadership) and teacher preference. The negative value indicates that the positive association between prosocial leadership and peer acceptance (a in Table 3 and in Figure 1) was stronger among students who received lower rather than higher teacher-preference ratings. Also consistent with the hypothesis, higher grades ($\beta = -.14$) registered a much stronger moderating teacher preference than did lower grades ($\beta = -.04$, ns). The difference was statistically significant ($\chi^2[1] = 5.29$, $p < .05$). Finally, both the mediating and moderating teacher preference was stronger for females than males, and the gender differences were statistically significant ($t = 1.98$, $p < .05$, for mediating; $\chi^2(1) = 17.32$, $p < .01$, for the moderating).

Aggression. As hypothesized, first through third grades yielded a significant effect for the mediating teacher preference ($\beta = -.18$), which was stronger than that of fourth and fifth grades ($\beta = -.12$). This difference was statistically significant ($t = 2.16$, $p < .05$). The moderating teacher preference was not significant except for female students ($\beta = .10$, $p < .05$). The positive value suggests that the negative association between aggression and peer acceptance ($\beta = -.11$) was attenuated among students who received higher rather than lower teacher preference. This result was consistent with the hypothesis that the moderating teacher preference was such that students responded to the behavior less strongly for those receiving higher teacher liking.

Also reported in Table 3 are the other paths depicted in Figure 1. In first through third grades, for example, after considering the mediating influence, the direct link between aggression and peer acceptance was $-.08$ (a in Table 3 and Figure 1). Had teacher preference not been considered, the direct link between aggression and peer acceptance would have been $-.08 + -.18 = -.26$, which was the value of the direct link between aggression and peer acceptance when teacher preference was not included in the equation (a' in Table 3 and Figure 1). The difference between a and a' ($-.26 - -.08 = -.18$) was the attenuation due to the mediating effect of teacher preference.

Social withdrawal. The results for social withdrawal are also reported in Table 3. The mediating teacher preference was significant, whereas the moderating teacher preference was not. As hypothesized, the mediating

teacher preference was stronger for the lower grades ($\beta = -.14$) than the higher grades ($\beta = -.04$). The difference was statistically significant ($t = 3.42$, $p < .01$). Females again registered a stronger mediating teacher influence ($\beta = -.09$) than male students ($\beta -.06$), but the difference was not statistically significant ($t = 1.06$, $p > .05$).

Discussion

From a child's perspective, life in the classroom clearly involves three parties: the child, the child's peers, and the classroom teacher. In an effort to examine children' social interactions in the classroom by incorporating all three actors in one model, we focused on the mediating and moderating influence of teacher preference on the relation between children's social behaviors and peer acceptance. The hypothesized influence of mediating teacher preference was found on the relations among aggression, social withdrawal, and prosocial leadership, respectively, and peer acceptance, whereas the influence of the moderating teacher preference was found mainly with respect to that between prosocial leadership and peer acceptance. These findings are largely consistent with our anticipation that a mediating teacher preference would be more evident with primary school children, whereas with increasing age children learn to adapt to their teachers' preferences and points of view. Also, consistent with our age-related hypotheses, the influence of the mediating teacher preference was stronger among the first through third grades, and the moderating teacher preference on the relation between prosocial leadership and peer acceptance was stronger among fourth and fifth grades. Most of the teacher preferences were either stronger for girls than boys or showed no gender differences, partially corroborating the observation that girls may be more conforming and more susceptible to adult influence than are boys.

Teacher Influence with Respect to Different Social Behaviors

Teacher preference clearly influenced students' peer preference. However, the degree and the nature by which teacher preference affected students' evaluations varied depending on the specific behavior that was being considered. This conclusion is based on two findings. First, the mediating teacher preference was stronger on the relation between aggression ($\beta = -.15$) and peer acceptance than that between social withdrawal ($\beta = -.08$) or prosocial leadership ($\beta = .07$) and peer acceptance. The stronger mediating teacher preference with respect to aggression may have resulted from the

negative attention that aggressive children draw from classroom teachers. Across most cultures, controlling and correcting antisocial behaviors are the major socialization goals of classroom teachers (Kedar-Voivodas, 1983), who often spend much of their noninstruction time dealing with aggressive and disruptive students (Beaman & Wheldall, 2000). The large amount of time and effort devoted to these students provides abundant opportunities for teachers to transmit their liking and disliking of these students and of their behavior (Hughes, Cavell, & Jackson, 1999). Students subsequently adopt teachers' preferences and incorporate teachers' liking or disliking of aggressive children into their evaluation of behavioral repertoire in addition to responding to the aggressive behavior per se.

Student aggression is also likely to anger classroom teachers since such behavior challenges their authority and interferes with their work (Kedar-Voivodas, 1983). Teachers are more likely to openly express their dislike of students who behave aggressively rather than engaging in other undesirable behaviors (e.g., social withdrawal). Indeed, teachers have frequently used presentation punishment with aggressive students to let the class learn the consequences of misconduct (Tulley & Chiu, 1998). Thus, the stronger mediating teacher preference found for aggression rather than for the other behaviors suggests a more explicit process by which teachers transmit their disliking of aggressive children to other students who come to adopt the teachers' views (Goldstein, Arnold, Rosenberg, Stowe, & Ortiz, 2001).

On the other hand, the relatively weaker result with respect to social withdrawal suggests teachers' lack of aversive affect toward those students; most likely it is because social withdrawal elicits sympathy rather than aversion from teachers (Craig, Henderson, & Murphy, 2000). For similar reasons, the influence of the mediating teacher preference was also relatively weaker in relation to prosocial leadership than to aggression. In addition, this latter finding reflects the fact that prosocial behavior has been institutionalized as a norm for students (Eisenberg & Mussen, 1989) who respond to the behavior directly rather than indirectly by relying on the cues from their teachers' preferences.

A second finding is that the influence of the moderating teacher preference was found only with the relation between positive prosocial leadership and peer acceptance. The negative moderating effect (*d* in Figure 1 was negative) indicates that the association between prosocial leadership and peer acceptance was weaker among students receiving high rather than low teacher preference. Teacher liking of these students possibly creates a positive social reputation for them, as indicated in other studies (e.g., Wentzel, 1993). Peers adapt the teacher preference into their patterns of responding

and thus contribute to the child's positive reputation. The social reputation serves to attenuate the association between prosocial behavior and peer acceptance. That is, students who have a good reputation are well accepted by peers somewhat independent of the level of desirable social behaviors (e.g., prosocial leadership) they demonstrate.

It is equally likely that teachers' disliking of students who behave negatively (e.g., aggressively) would serve to create a negative reputation for these students. However, in comparison to positive behaviors, the potential negative reputation associated with aggression may function in ways more similar to teacher disliking. This is consistent with the finding of a particularly strong mediating teacher preference with respect to aggression. This finding suggests that peers respond to aggressive students according to their teachers' liking or disliking of them. Social withdrawal, on the other hand, did not register the moderating teacher effect. This finding and its similarly weak mediating teacher preference could be attributed to the fact that teachers pay relatively little attention to withdrawn children. This was also shown in the finding that the correlation between teacher preference and social withdrawal ($r = -.14$) was much lower than the correlation between teacher preference and aggression ($r = -.27$) or prosocial leadership ($r = .31$). Social isolation as a negative behavior receives the least attention from classroom teachers (Finn, Pannozzo, & Voelkl, 1995), most likely because it does not interfere with their instruction and socialization goals (Bender & Smith, 1990).

Grade-Related Differences

As hypothesized, the mediating teacher preference was stronger for younger than older children, whereas the moderating teacher preference was stronger for older than younger children. These findings are consistent with two developmental themes presented in the literature. First, younger children in general are more susceptible to adult influences than are older children (e.g., Kuklinski & Weinstein, 2001). Second, the socialization of adult influence occurs partly as a function of age (e.g., Grolnic, Deci, & Ryan, 1997; Piaget, 1965), with younger children being more likely to adopt adult views without internalizing them and with older children more likely to adapt to adult values with increasingly sophisticated cognitive processing. Older children spend more time with and know each other better than younger children and thus should rely less on others' views about their peers. With respect to the first theme, our grade-related findings underscore several developmental characteristics of the socialization processes in the classroom.

Primary schools mark the beginning of formal schooling or the institutionalized transmission of adult values. Encouraged by parents to embrace this new socialization experience, early primary school children, as shown by the findings with first through third grades, may have a heightened desire and motivation to adopt their teachers' likes and dislikes. Closer teacher-student relationships (Lynch & Cicchetti, 1997) and smaller peer groups (Chen, Chang, & He, 2003), characteristic of lower primary school grades, also render the resulting teacher-child relation, in contrast to peer relations, more relevant for the younger age group than for older children.

Thus, it is important to factor in teachers' influences in assessing and understanding the peer relations of young children. Teachers may be influential when intervening with young children's problematic peer relations. The same teacher influence may be reduced among older children due to their expanding peer networks and other social experiences as well as physical and psychosocial changes. Examples of the latter include the onset of puberty and children's emerging need for autonomy and the accompanying cognitive changes inherent in the Piagetian progression toward formal operational reasoning. Starting from late primary school grades, peer culture becomes important in shaping children's behavior (Chang, 2004; Chen et al., 2003; Chen, Chang, He, & Liu, 2005), and the teachers' ability to influence children relies increasingly on an internalized socialization process.

With respect to the second developmental theme of socialization, it is important to distinguish among different kinds of adult influence. In the present study, we relied on existing statistical models to empirically distinguish between mediating and moderating teacher preferences. This work is among the first empirical studies of its kind to operationally define different adult influences on children. Our theory and findings complement existing conceptual work on the socialization of adult values. According to the internalizing theory of socialization (Valsiner, 1988; Grolnic, Deci, & Ryan, 1997), adult influence on children occurs on four levels. The second of the four is referred to as the introjected level, where children adopt adult values in their entirety without critical thinking or processing. On the third level—the identified level—children identify with, adapt to, or internalize the adult proscriptions. The mediating and moderating teacher influences we proposed and investigated approximate these two levels. However, the Valsiner model is not explicit about development but only suggests that socialization occurs on different levels. Our theorizing and findings further contend that as children grow older, the relative contribution associated with an internalized or adaptive process of socialization of adult values should increase. This interpretation is consistent with cognitive developmental theories. For example, the Piagetian conception of socialization

starts with moral heteronomy or blind compliance with adult views and moves on to culminating at moral autonomy whereby humanity rather than the views of significant individuals are of importance (Piaget, 1965).

Limitations and Directions for Future Research

Our questionnaire and peer-nomination data cannot provide a detailed account of the processes by which children adapt to, internalize, partially internalize, or merely adopt an adult's perspective, value system, and, in this case, preferences of students. Observational methods rather than statistical modeling alone are needed to understand the processes by which teachers may influence students' social interactions in the classroom. Our use of existing statistical models to dissect different sections of the data allowed for plausible inferences to be made about different age groups but not about what was actually taking place. We hypothesized and tested the mediating and moderating effect of teacher preference on the relations between children's social behaviors and peer acceptance. These hypotheses reflect the overall approach we took about our study that, given the lack of similar studies, emphasizes how teachers may influence children's social interactions in the classroom but not the other way around. However, peer popularity may also influence teacher preference, and the relations between teacher and student variables in general may be reciprocal rather than causally fixed in either one direction. This and other causal issues are unresolved in the present study. Consistent with the literature, we used "mediating effect" and "moderating effect" as fixed statistical terms to refer to statistical associations rather than formal cause and effect. Future studies may build on and improve our study by using other methods and longitudinal data to explore the process and the causes and effects of the classroom social interactions that are participated by students, their peers, and their classroom teachers.

The findings for the mediating and moderating teacher preferences were of moderate effect size. The narrow age range of primary school grades may have especially limited the findings on the moderating teacher preference, which was expected to affect older children and adolescents more than young children. Future studies employing more heterogeneous samples and wider age ranges may uncover larger effect sizes. Statistically, however, the mediating teacher preference represents an indirect effect, which is a cross-product of two main effects. For example, a mediating effect based on two standardized regression coefficients of .30, which is considered substantial in much social science research, is reduced to .09. This statistical artifact should be considered when interpreting the present

findings. The small standard errors reported in the present study are also indications of robust findings.

Finally, future studies could include potential correlates of teacher preference to better understand the latter's unique impact on children's peer relations in the classroom. One potential correlate that should be controlled is academic performance. Because, in general, teachers prefer children who are academic high achievers, academic performance may serve similar functions as teacher preference in regulating children's peer relations in the classrooms (Chen et al., 2003). Future studies that include both students' academic performance and teacher preference may provide additional insight into how these two correlated, yet distinct constructs independently and interactively influence the relation of children's social behaviors to their peer acceptance.

Despite these limitations, this study is among the first to examine how teacher preference influences children's social evaluations of each other. Three decades ago, Rosenthal and Jacobson (1968) demonstrated the Pygmalion in the classroom effect (i.e., students treat each other according to teachers' differential expectations of their academic abilities), which has since generated much empirical research. The present study revealed similar Pygmalion effects in shaping children's social evaluations and peer relations in their classrooms. The results of the current study serve to broaden current peer relations research by focusing on teacher-related processes as a new direction for future work. Similarly, a practical implication of the present study is that the opinions of the classroom teacher may extend beyond academia, especially among younger children. In addition, working on teachers' preferences of students, which is something that teachers can do themselves, may contribute to fostering positive student relationships.

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