A Cross-Lagged Structural Equation Model of Relational Aggression, Physical Aggression, and Peer Status in a Chinese Culture

Wan-Ling Tseng1*, Adrienne M. Banny1, Yoshito Kawabata1, Nicki R. Crick1, and Susan Shur-Fen Gau2*

1Institute of Child Development, University of Minnesota, Twin Cities, Minneapolis, Minnesota
2Department of Psychiatry, National Taiwan University Hospital and College of Medicine, Taipei, Taiwan

This short-term longitudinal study examined the associations among relational aggression, physical aggression, and peer status (i.e., acceptance, rejection, and perceived popularity) across three time points, six months apart, in a Taiwanese sample. Participants were 198 fifth grade students (94 girls and 104 boys; Mean age = 10.35 years) from Taipei, Taiwan. Study variables were assessed using peer nomination procedure. Results from the cross-lagged structural equation models demonstrated that there were longitudinal associations between relational aggression and each of the peer status constructs while only one longitudinal association was found for physical aggression such that physical aggression positively predicted subsequent peer rejection. The longitudinal associations did not vary with gender. Results also showed high stabilities of relational aggression, physical aggression, and the three peer status constructs over 1 year as well as high concurrent association between relational and physical aggression. In addition, relational aggression and physical aggression were concurrently related to less acceptance, more rejection, and less perceived popularity, especially at the outset of the study. Findings of this study demonstrated both similarities and differences in relation to previous literature in primarily Western cultures. This study also highlights the bidirectional and complex nature of the association between aggression and peer status, which appears to depend on the form of aggression and on the particular indicator of peer status under study. Aggr. Behav. 39:301–315, 2013. © 2013 Wiley Periodicals, Inc.

Keywords: relational aggression; physical aggression; peer acceptance; peer rejection; perceived popularity

INTRODUCTION

Decades of peer relations research have demonstrated a robust association between aggression and peer rejection (see Asher & McDonald, 2009; Coie, Dodge, & Kupersmidt, 1990; Newcomb, Bukowski, & Pattee, 1993). Support for this association, however, largely originates from research examining physical forms of aggression and indicators of status that reflect likeability. Recent challenges to the aggression-rejection link show that not all aggressive children are rejected. In fact, some aggressive children are afforded high positions of status in the peer group (Parkhurst & Hopmeyer, 1998). The relationship between aggression and status appears to depend on a number of factors that include the indicator of status, as well as the form of aggression under study. Research reflects a growing awareness of the distinction between sociometric popularity (i.e., likeability) and perceived popularity—a measure of prestige and social power in the peer group (Cillessen & Rose, 2005). Similarly, relational aggression and physical aggression are increasingly recognized as different constructs with unique psychosocial correlates (Card, Stucky, Sawalani, & Little, 2008; Crick & Grotpeter, 1995; Galen & Underwood, 1997). Whereas physical aggression involves actual or threatened physical harm, relational aggression inflicts harm by damaging and manipulating peer relationships (e.g., rumor spreading, exclusion). The latter form of aggression also has been referred to as social aggression or indirect aggression. Although subtle distinctions among the constructs of relational, social, and indirect
aggression exist, their overlap appears to be more significant than their differences (Archer & Coyne, 2005); therefore, for the purposes of the current article, constructs of relational, social, and indirect aggression are referred to as “relational aggression.”

Despite these advances, research in this area has been largely restricted to concurrent investigations, precluding the examination of processes by which aggression and social status influence one another over time. Furthermore, a tendency to focus on a single direction of effects overlooks the fact that aggression and status are invariably intertwined. This is problematic, given multiple developmental theories that conceptualize development as a process driven by interactions between the child and his or her environment (e.g., Cicchetti & Lynch, 1993; Sameroff & Chandler, 1975; Sameroff & MacKenzie, 2003; Stroufe & Rutter, 1984). According to a transactional model, developmental outcomes emerge as a function of the continuous, dynamic interplay between the child and his or her context over time (Sameroff & Chandler, 1975; Sameroff & MacKenzie, 2003). Individual characteristics, like aggression, contribute to the construction of one’s own interpersonal context, which, in turn, influences continued behavioral development. From a transactional perspective, the development of psychopathology, such as aggression, is neither a product of the child nor of the environment; instead, it is the result of child-environmental transactions that reinforce and sustain maladaptive behavioral patterns over time (e.g., Parker, Rubin, Erath, Wojslawowicz, & Buskirk, 2006; Sameroff & MacKenzie, 2003). For example, a child who is aggressive may be more likely to be disliked or rejected by peers (e.g., for reviews, see Coie et al., 1990; Newcomb et al., 1993). Negative peer experiences, such as dislikes, unpopularity, and peer rejection, in turn, may further deprive a child of important developmental opportunities to interact with peers and friends, thereby resulting in fewer chances to learn social knowledge and to practice social skills through these interactions, all of which may lead him or her to continue behaving in maladaptive ways (e.g., being aggressive) during peer interactions (Parker et al., 2006). Guided by the transactional model, the present study examines longitudinal, reciprocal associations between aggression (i.e., physical, relational) and multiple indicators of status (i.e., acceptance, rejection, popularity) in a Taiwanese sample. We expect to observe transactional effects between aggression and status, such that aggression predicts future status in the peer group, which consequently influences the development of future aggressive behavior.

Measuring Peer Status

Peer status has been operationalized and measured in multiple ways. Many studies have utilized sociometric assessments of status that ask children to nominate the peers that they like the most and the peers that they like the least in their classroom or in their grade (Coie, Dodge, & Coppotelli, 1982). From these nominations, it is common to calculate social preference scores by subtracting rejection from acceptance in order to determine the degree to which a child is well-liked by his or her peers. Subtracting high rejection from high acceptance, however, may obfuscate relationships between aggression and status. Although acceptance and rejection are negatively correlated, being disliked does not necessarily preclude being liked. In cases of high rejection accompanied by high acceptance, a non-significant relationship between aggression and social preference may emerge (Orue & Calvete, 2011); therefore, it may be informative to independently examine acceptance and rejection as it relates to aggressive behavior.

Perceived popularity—measured by asking children to nominate who is “popular”—is another indicator of status in the peer group (Cillessen & Rose, 2005; Parkhurst & Hopmeyer, 1998). Whereas sociometric popularity reflects likeability, perceived popularity reflects social power and dominance in the peer group. Children who are perceived as popular are socially prominent and influential. Often emulated by their peers, popular children display a mixture of prosocial and aggressive traits (Puckett, Aikens, & Cillessen, 2008), in addition to other peer-valued characteristics (e.g., humor, athleticism, attractiveness; Vaillancourt & Hymel, 2006). Popular children are not necessarily well-liked—reflected in the only modest correlation between sociometric popularity and perceived popularity (Cillessen & Mayeux, 2004; LaFontana & Cillessen, 2002; Rose, Swenson, & Waller, 2004). Sociometric and perceived popularity overlap to some degree and the two constructs increasingly diverge with age (Cillessen & Mayeux, 2004; Rose et al., 2004). In a study by Cillessen and Mayeux (2004), the positive correlation between sociometric and perceived popularity decreased from .77 to .63 for boys, and from .67 to .04 for girls between Grades 5 and 9 (Cillessen & Mayeux, 2004). In another investigation, the correlation became negative after Grade 9 for adolescent girls (Cillessen & Borch, 2006).

Aggression and Status

Although numerous cross-sectional studies have established a correlation between physical aggression and rejection, longitudinal research is needed to determine the directionality of this association. Some suggest that physical aggression contributes to the development of subsequent peer rejection (Coie et al., 1982; Coie & Kupersmidt, 1983; Dodge, Coie, Pettit, & Price, 1990). In their classic study, Coie and
Kupersmidt (1983) demonstrated that physical aggression was instrumental in predicting emergent rejection in newly formed groups of fourth grade boys. In qualitative research, children cite aggression as a primary reason for rejecting a peer (Coie et al., 1982).

Conversely, research also suggests that initial rejection leads to the development of aggressive behaviors (Bierman, Smoot, & Aumiller, 1993; Coie, Lochman, Terry, & Hyman, 1992; Dodge et al., 2003). Dodge et al. (2003) found that rejection incrementally predicted aggression, even after controlling for early aggressive behavior. Deprived of interactions with competent peers, rejection may prevent children from learning appropriate social skills (Dodge et al., 2003). Furthermore, once rejected by their mainstream peers, rejected children may form deviant peer groups in which aggressive behavior is socialized and reinforced. It has been proposed that peer acceptance acts as a buffer against the development of aggressive behavior by allowing children to practice more adaptive, prosocial skills with their peers (Dodge et al., 2003).

Integrating these findings, longitudinal studies explicitly testing bidirectional associations between physical aggression and peer status have found that physical aggression predicts peer rejection, which in turn, predicts subsequent increases in aggression (Kuppens, Grietens, Onghena, & Michaels, 2009; Lansford, Malone, Dodge, Pettit, & Bates, 2010; Orue & Calvete, 2011). These findings support a transactional model of development. Consistent with such a view, children actively shape their social environment by engaging in aggressive behavior. Aggression evokes peer rejection, creating a stressful social environment for the child. The interpersonal context of peer rejection, in turn, appears to promote increases in aggressive behavior over time.

More recently, researchers have included measures of relational aggression in their examinations of the aggression-rejection link. Findings have been mixed. Some studies demonstrate parallel findings with the physical aggression literature, revealing both concurrent and longitudinal associations between relational aggression and rejection (Cillessen & Mayeux, 2004; Crick & Grootpete, 1995; Kuppens et al., 2009; Putallaz et al., 2007; Rys & Bear, 1997; Tomada & Schneider, 1997; Werner & Crick, 2004). Longitudinal studies indicated that relational aggression predicted increases in peer rejection over time (Werner & Crick, 2004). Others did not find an association between relational aggression and rejection (Orue & Calvete, 2011; Salmivalli, Kaukiainen, & Lagerspetz, 2000). For example, Salmivalli et al. (2000) found that relational aggression no longer predicted peer rejection once levels of physical aggression were held constant. In a longitudinal investigation, Orue and Calvete (2011) similarly did not find an association between relational aggression and rejection. Given relational aggression’s typically subtle nature, it may be more tolerated by peers compared to physical aggression (Salmivalli et al., 2000). Relational aggression can be enacted anonymously, allowing the aggressor to inflict harm while remaining undetected, thus preserving a semblance of “niceness.” Consequently, children who engage in relational aggression may be able to maintain likeability in the peer group.

Whereas correlations between aggression and rejection tend to be positive, correlations between aggression and acceptance tend to be non-significant (see Crick, Murray-Close, Marks, & Moharjeri-Nelson, 2009; Graham & Juvonen, 2002; Orue & Calvete, 2011; Salmivalli et al., 2000). Salmivalli et al. (2000) demonstrated a lack of an association between physical aggression and acceptance, which Orue and Calvete (2011) replicated in their longitudinal investigation. Furthermore, Salmivalli et al. (2000) found that relational aggression was positively associated with acceptance, and concluded that peer acceptance may be a prerequisite for engaging in relational aggression. This interpretation has been supported by longitudinal findings indicating that acceptance predicts relational aggression at later time points (Kuppens et al., 2009; Orue & Calvete, 2011). These findings highlight the benefits of independently examining the effects of acceptance and rejection on social behavior, and vice versa.

In addition to associations with acceptance and rejection, research indicates that physical and relational aggression are positively associated with perceived popularity (Cillessen & Mayeux, 2004; LaFontana & Cillessen, 2002; Lease, Kennedy, & Axelrod, 2002; Lease, Musgrove, & Axelrod, 2002; Parkhurst & Hopmeyer, 1998; Prinstein & Cillessen, 2003; Puckett et al., 2008; Rodkin, Farmer, Pearl, & Van Acker, 2000; Rose et al., 2004; Vaillancourt & Hymel, 2006). Among these studies, aggression is shown to have contrasting associations with perceived popularity and social preference (i.e., acceptance minus rejection); aggression is negatively associated with social preference and positively associated with perceived popularity.

Many studies interested in the influence of aggression on peer status have not systematically addressed the association between relational and physical aggression, which tend to be significantly correlated (average corrected correlation = .76; Card et al., 2008). Rose et al. (2004) highlighted this limitation, and proposed that associations between physical aggression and perceived popularity may be accounted for by the association between relational aggression and perceived popularity. They found that the positive association between physical aggression and perceived popularity was no longer significant when relational aggression was
controlled. Relational aggression, on the other hand, maintained its positive association with perceived popularity when controlling for physical aggression. Relational aggression may be particularly important for managing social power in the peer group.

Longitudinal studies have demonstrated reciprocal relationships between relational aggression and perceived popularity (Cillessen & Borch, 2006; Cillessen & Mayeux, 2004; Puckett et al., 2008; Rose et al., 2004). Consistent with a transactional model of development, relational aggression predicts increases in popularity, and popularity predicts increases in relational aggression over time. These findings suggest that relational aggression functions to both achieve and maintain popularity in the peer group. Like peer acceptance, popularity may be a precondition for engaging in relational aggression. Children who are perceived as popular are afforded positions of power and influence, which likely facilitates behaviors aimed at manipulating peer relationships (e.g., rumor spreading, social exclusion). Popular children may be especially able to enlist help in aggressing toward others. Additionally, peers may be hesitant to interfere with the behavior of high status youth because of their high position of power (Rose et al., 2004). Less popular or rejected peers may not have the social connections or possess the social influence necessary to effectively use relational aggression (Neal, 2009).

The Role of Age, Gender, and Culture in the Link Between Aggression and Social Status

The association between aggression and status is further complicated by factors such as age, gender, and cultural differences. For example, it has been suggested that the ability to use relational aggression as a means of achieving and maintaining popularity requires a level of cognitive and social sophistication that develops with age (Rose et al., 2004). Empirical research supports this hypothesis, as the positive association between relational aggression and perceived popularity has been demonstrated to increase with age, particularly as children transition into middle school and high school (Cillessen & Mayeux, 2004; LaFontana & Cillessen, 2002; Rose et al., 2004). This growing sanctioning of aggressive behavior appears to extend to physical aggression as well; physical aggression’s negative associations with social preference and positive associations with rejection weaken with age (Cillessen & Mayeux, 2004; Coie et al., 1990; Kuppens et al., 2009). It appears that as adolescents develop, they come to accept aggression among peers that they like and among peers to whom they ascribe popularity (Cillessen & Mayeux, 2004). Therefore, we conducted this short-term longitudinal study, in a group of fifth graders, to examine both concurrent and longitudinal associations between aggression and peer status over time. The specific age of the participants (fifth graders; mean age = 10.35 years) in this study was selected because (1) we aimed to target the transition period from middle childhood to adolescence; (2) past research suggests that developmental changes between aggression and social status occur as children transition into adolescence (e.g., Cillessen & Mayeux, 2004); and (3) research indicates that relational aggression increases in frequency (e.g., Murray-Close, Ostrov, & Crick, 2007) while physical aggression decreases (e.g., Côté, Vaillancourt, LeBlanc, Nagin, & Tremblay, 2006) during this developmental period.

The relationship between aggression and status may also vary as a function of gender. Although evidence for mean-level gender differences in relational aggression is mixed, most agree that when girls are aggressive, they are more likely to engage in relational aggression than in physical aggression (Card et al., 2008). It has been suggested that, given their relational orientation, relational aggression may be more salient for girls’ adjustment compared to boys’ adjustment (Crick, 1997). Evidence remains inconclusive regarding the role of gender in predicting status. Some studies indicate that relational aggression more strongly predicts peer status variables for girls (Cillessen & Mayeux, 2004; Rose et al., 2004) and that physical aggression more strongly predicts peer status variables for boys (Parkhurst & Hopmeyer, 1998); others have not found gender differences in the strength of these relationships (LaFontana & Cillessen, 2002; Prinstein & Cillessen, 2003).

The majority of work in this area has been conducted in North American and Western European samples (Crick, Ostrov, & Kawabata, 2007; Lansford et al., 2012). Although research has demonstrated a distinction between relational and physical aggression in other cultures (Kawabata, Crick, & Hamaguchi, 2010; Lansford et al., 2012), the degree to which the social correlates of relational and physical aggression vary across cultures remains unclear. This is a significant limitation, given that children evaluate their peers’ social behavior in ways that are consistent with their culture’s norms and values (Chen & French, 2008). For example, in cultures that emphasize social obligation, interdependence, and harmonious interpersonal relationships, such as the Chinese culture (Bond, 1996), individual behaviors that promote these values are likely to be favorably evaluated, whereas individual behaviors that damage these cultural values are likely to be harshly evaluated or punished (Chen & French, 2008). Accordingly, Chinese children who are aggressive may be more likely to be unpopular among peers and be rejected and disliked by peers, which further deprives their opportunity to learn social skills and appropriate social behaviors during peer
interactions. In turn, these children with low peer status as a result of their aggressive behavior may continue to engage in aggressive behavior in face of peer conflict. In light of these views, the current study was designed to examine the bidirectional associations between aggression and peer status in a context of Chinese culture in Taiwan. Recent research by Schwartz et al. (2010) showed that popularity and acceptance are distinct constructs among Chinese children in Hong Kong, and that their behavioral correlates correspond with research conducted in Western contexts. The current study aimed to replicate and extend this work by longitudinally examining these associations and by clarifying their directionality.

The Current Study

Using structural equation modeling (SEM), the current study aimed to examine longitudinal transactions between relational aggression, physical aggression, and peer status variables (i.e., acceptance, rejection, perceived popularity) in a Taiwanese sample of fifth grade students. With regard to the longitudinal, transactional effects between relational aggression and peer status, we expected relational aggression to be both maladaptive and adaptive. Specifically, we hypothesized that relational aggression would predict low peer status subsequently (i.e., high rejection, low acceptance, and low popularity); on the other hand, high-status children (low rejection, high acceptance, and high popularity) may use relational aggression as a tool to maintain their position in the peer group. Thus, peer acceptance and perceived popularity may predict subsequent relational aggression. Regarding the effect of physical aggression, we expected the pattern of associations to be less complex than that of relational aggression; specifically, we expected physical aggression to be maladaptive regardless, especially after the effect of relational aggression was controlled for. As such, physical aggression, after controlling for relational aggression, would predict subsequent peer status (e.g., more peer rejection, lower peer acceptance, and lower perceived popularity). In terms of gender effects, we hypothesized that relational aggression would be more strongly related to indices of peer status, longitudinally, for girls, whereas physical aggression would be more strongly related to indices of peer status, longitudinally, for boys.

In addition, we examined the stabilities of aggression and peer status over time. Consistent with previous research (Cillessen & Mayeux, 2004; Huesmann, Eron, Lefkowitz, & Walder, 1984; Jiang & Cillessen, 2005; Olweus, 1979; Zimmer-Gembeck, Geiger, & Crick, 2005), we expected relational aggression, physical aggression, acceptance, rejection, and perceived popularity to be highly stable across a 1-year period. Also, we investigated the concurrent associations between aggression and status. We hypothesized that both relational and physical aggression would be related to less peer acceptance, more peer rejection, and less perceived popularity within time, especially at the outset of the study; however, the effects of both forms of aggression on acceptance, rejection, and popularity may become less negative at later time points as children enter early adolescence.

METHODS

Participants and Procedures

This is a short-term longitudinal study that examined study variables across three time points. Participants were part of a large study in Taiwan that examined preadolescent peer functioning. A total of 392 fifth graders from 15 classrooms across four public elementary schools in Taipei area participated in the peer nomination procedure at the initial assessment. Only participants with data from at least two time points were included in this study.1 This resulted in a final sample of 198 fifth grade students (50.51% of the original sample; 94 girls and 104 boys) whose data were used in the analyses. The mean age of the sample was 10.35 years ($SD = 0.31$). The socioeconomic status of the sample was estimated to be middle class to upper class based on parents’ education attainment and household income. The distributions of parental education levels were 61.2% for college and above, 27% for senior high school and vocational, and 11.8% for junior high and below. The average annual household income of the participants was $30,698–$40,930. According to the government reports, the education attainment distributions for the overall population in Taiwan in 2008 (when the data was first collected) were 34.3% for college and above, 32.3% for senior high school and vocational, and 33.4% for junior high and below. The nation-wide average of household income was $36,782.

The data for the present study were collected at three time points at a 6-month interval: the fall semester of Grade 5 (Time 1), the spring of Grade 5 (Time 2), and the fall of Grade 6 (Time 3). The school system in Taiwan is similar to that in the U.S.; specifically, children start elementary school (first grade) at age 6–7 years, stay until the end of 6th grade, and move to junior high school (equivalent to Grades 7–9 in the U.S.). At each time point of data collection, peers reported on their classmates’

1 The high attrition rate was largely because one participating school decided not to continue in the follow-up assessment. Analyses indicated that participants in this study did not differ from those from the original sample who were excluded in all the study variables at Time 1 (i.e., physical aggression, relational aggression, acceptance, rejection, and perceived popularity), $F$ values ranged from .01 to .73 and $p$ values ranged from .39 to .99.

Aggr. Behav.
relational aggression, physical aggression, peer acceptance, peer rejection, and perceived popularity using a sociometric instrument (Coie et al., 1982).

Written informed consent was obtained from the parents of all the study participants while assent was obtained from the participating students following an explanation of the purposes and procedures of the study, the lack of an obligation to participate, and a reassurance of confidentiality. Participants were compensated for their time and participation with small items (e.g., a pencil and an eraser). The procedures and methods of this study were approved by the Institutional Review Board at the first author’s university. Measures used in this study were adapted from the English version by translating them into Chinese and then back-translating them into English to ascertain the comparability and validity of the measures.

**Measures**

**Relational and physical aggression.** A peer-nomination instrument was administered to assess children’s Relational Aggression (five items) and Physical Aggression (three items; Crick & Grooteter, 1995). During the administration of the peer-nomination instrument in grade school classrooms, participants were provided with a class roster and were asked by trained research assistants to nominate up to five classmates who best fit the behavioral descriptions provided for each of the items on the measure. Items for Relational Aggression included “Get even by excluding peers from his/her clique or play group,” “Spread rumors or gossip about peers,” “Get other children to stop playing or liking some peers,” “Threaten to stop being friends to hurt peers or get what she/he wants,” and “Ignore or stop liking some peers.” Items for Physical Aggression included “Hit or kick other peers,” “Initiate or get into physical fights with peers,” and “Threaten to hit or beat up other children.” It is noted that children who did not consent to this study were crossed out from the roster and the participants were told not to nominate those who did not participate in the study. Also, the participating children could only nominate children from their classrooms. The number of nominations children received from classmates for each of the items on these subscales was standardized within class. The average of the standardized scores for the items on each subscale was used in the analyses. We conducted confirmatory factor analysis (CFA) to further ensure the existence of a two-factor structure in this measure. Findings are described in the results section.

**Peer acceptance, peer rejection, and perceived popularity.** Participants were asked to nominate up to five peers that they “like to hang out with the most,” “like to hang out with the least,” and “see as most popular.” The number of nominations that children received from classmates on “like to hang out with the most” was standardized within each classroom and was defined as Peer Acceptance; the number of nominations that children received on “like to hang out with the least” was standardized and then defined as Peer Rejection; the number of nominations that children received on “see as most popular” was also standardized and then defined as Perceived Popularity.

**RESULTS**

**Confirmatory Factor Analysis (CFA)**

We conducted CFA using AMOS 19.0 to examine the existence of a two-factor structure of the measure on relational aggression (five items) and physical aggression (three items) at each time point. The two factors were allowed to correlate with each other, as well as the error variances between Item “Spread rumors or gossip about peers” and Item “Ignore or stop liking peers,” according to modification indices. Model fit was assessed with multiple criteria: chi-square ($\chi^2$), Comparative Fit Index (CFI), the Tucker–Lewis index (TLI), and Root Mean Square Error of Approximation (RMSEA).\(^2\) Results indicated that at all three time points, the two-factor model fit the data fairly well: $\chi^2$ ranged from 42.28 to 54.46, $df = 18$, $ps < .001$, CFIs = .98 to .99, TLIs = .95 to .97, and RMSEAs = .08 to .10 across time points. All factor loadings were significant at $p < .001$ with standardized factor loadings greater than .83. These findings suggested that the constructs of relational aggression and physical aggression as assessed using the current measure were distinct from each other in Taiwanese children, at each time point. We further computed Cronbach’s alpha ($\alpha$) for the internal consistency of the two subscales. Cronbach’s $\alpha$s for Relational Aggression and Physical Aggression across three time points were .94–.96 and .93–.94, respectively, demonstrating good reliability of these two subscales in the present sample.

We also conducted analyses to test the temporal invariance of the measure for relational and physical aggression across three data points in time. A constrained model where the factor loadings were constrained to be equal across three time points did not significantly differ from the unconstrained model where the parameters were

---

\(^2\)In general, non-significant chi-squares, CFIs and/or TLI greater than .95, RMSEA less than .05 suggest a good model fit with the observed data (Hu & Bentler, 1999; McDonald & Ho, 2002); however, some argues that CFIs or TLI >.90, RMSEA <.10 may also be considered adequate fit (Kline, 1998; McDonald & Ho, 2002). Because the chi-square statistic is considerably affected by sample size, it was not used as the primary indicator of the model fit (Hu & Bentler, 1999).
freely estimated, $\Delta \chi^2 = 5.46$, $\Delta df = 12$, $p = .941$, suggesting that the structure and factor loadings of this measure were similar across time. Model fit for the unconstrained model: $\chi^2 = 141.87$, $df = 54$, $p < .001$, CFI = .981, TLI = .970, RMSEA = .054 [.043, .065]. Model fit for the constrained model: $\chi^2 = 147.33$, $df = 66$, $p < .001$, CFI = .982, TLI = .977, RMSEA = .047 [.037, .057]. This finding provided evidence to support that the measure for relational and physical aggression assessed these two constructs similarly across the study period in our Taiwanese sample, offering a solid basis for longitudinal inferences involving these constructs.

**Preliminary Analyses**

Bivariate correlations between the main study variables, as well as means and SDs of the variables, at all three time points are presented in Table I. Results indicated that, in general, relational aggression was negatively correlated with peer acceptance and positively correlated with peer rejection within time and across time. Relational aggression was negatively correlated with perceived popularity in some cases (e.g., Time 1 relational aggression with Time 2 and Time 3 popularity). Physical aggression, in general, was negatively correlated with peer acceptance and positively correlated with peer rejection within time and across time. Physical aggression was also negatively correlated with perceived popularity within time and across time, except for between Time 2 physical aggression and Time 3 popularity and between Time 3 physical aggression and Time 3 popularity.

We also tested gender differences in the main study variables at each time point. Results indicated that boys had greater levels of physical aggression at all three time points than girls ($p s = .015$--.001). There were no gender differences in relational aggression, peer acceptance, peer rejection, or perceived popularity across time points ($p s = .177$--.947).

Before we conducted analyses for cross-lagged models, we attempted to account for the hierarchical structure of our data (i.e., students were nested within classrooms) in the associations between aggression and status by using mixed linear models that take into account the dependencies between individuals and classrooms, adjusting the variance that is due to individuals and classrooms (Raudenbush & Bryk, 2002). We found that variances of the random factor (i.e., classroom) was estimated to be zero, indicating that the classroom effect was negligible. In fact, our study variables were obtained from peer nomination procedure, and these variables were standardized within classroom prior to the analysis. This signifies that the means (i.e., set to be zero) and variances of the study variables are similar across classrooms. As such, classroom effect may not be an issue in this study.

**Cross-Lagged Models**

**Relational, physical aggression, and peer acceptance.** To examine the associations of relational and physical aggression with peer acceptance across time, we tested cross-lagged models with SEM. The five relational aggression items were used to create latent variables for relational aggression while the three physical aggression items were used to create latent variables for physical aggression. As what we did in the CFA of the measure, the error variances of Item “Spread rumors or gossip about peers” and Item “Ignore or stop liking peers” were allowed to correlate with each other within time, as well as the error variances of Item “Spread rumors or gossip about peers” across time and of Item “Threaten to hit or beat up other children” across time. A hypothesized model with all the paths shown in Figure 1 was tested. Included in this model were (1) cross-lagged paths between relational aggression and peer acceptance, as well as between physical aggression and peer acceptance; (2) stability paths of relational aggression, physical aggression, and peer acceptance across three time points; and (3) covariances among the residuals of these three constructs within time. This allows us to examine the unique effect of a specific form of aggression on peer acceptance while the effect of the non-focal form of aggression is controlled for; it also allows us to examine the continuity of constructs over time and the covariances between constructs within and over time that are over and above what may have already occurred in previous times.

Results showed an adequate model fit of our hypothesized model with the data, $\chi^2 = 665.74$, $df = 295$, $p < .001$, CFI = .94, TLI = .92, and RMSEA = .08 [.07, .09]. To examine gender moderation on the cross-lagged paths, we tested the hypothesized model using multigroup analysis in AMOS with gender as the grouping variable. An unconstrained model in which the cross-lagged paths were set to be freely estimated while the rest of the paths were constrained to be equal across gender was first tested and then compared to a constrained model in which the cross-lagged paths were set to be equal across gender group. Goodness of fit was tested and then compared to a constrained model in which the cross-lagged paths were set to be equal across gender group. Goodness of fit

---

1 Latent variables for peer status (i.e., peer acceptance, peer rejection, and perceived popularity) were created with single indicator, and the measurement error was set to be zero.

2 We did not test the paths between relational aggression and physical aggression because we did not have a prior hypothesis as to how the two forms of aggression affect each other over time and also because the interplay of the two forms of aggression is beyond the scope of the present study.
TABLE I. Correlations Among Observed Variables in the Theoretical Model

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>RA1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.06 (0.93)</td>
</tr>
<tr>
<td>PA1</td>
<td>.71</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.03 (0.95)</td>
</tr>
<tr>
<td>Accept1</td>
<td>-.24</td>
<td>-2.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.04 (1.02)</td>
</tr>
<tr>
<td>Reject1</td>
<td>.65</td>
<td>-.56</td>
<td>-.50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.03 (1.01)</td>
</tr>
<tr>
<td>Popular1</td>
<td>-.14</td>
<td>-.15</td>
<td>-.56</td>
<td>-.27</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.01 (1.00)</td>
</tr>
<tr>
<td>RA2</td>
<td>.80</td>
<td>.54</td>
<td>-.10</td>
<td>.43</td>
<td>-.02</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.04 (0.93)</td>
</tr>
<tr>
<td>PA2</td>
<td>.65</td>
<td>.83</td>
<td>-.21</td>
<td>.50</td>
<td>-.12</td>
<td>.60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.01 (0.92)</td>
</tr>
<tr>
<td>Accept2</td>
<td>-.31</td>
<td>-2.6</td>
<td>-.71</td>
<td>-.50</td>
<td>.54</td>
<td>-.22</td>
<td>-.25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.04 (1.02)</td>
</tr>
<tr>
<td>Reject2</td>
<td>.60</td>
<td>.45</td>
<td>-.41</td>
<td>.83</td>
<td>-.25</td>
<td>.52</td>
<td>.47</td>
<td>-.52</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.03 (0.99)</td>
</tr>
<tr>
<td>Popular2</td>
<td>-.21</td>
<td>-.18</td>
<td>.55</td>
<td>-.32</td>
<td>.84</td>
<td>-.09</td>
<td>-.15</td>
<td>.72</td>
<td>-.33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.04 (1.03)</td>
</tr>
<tr>
<td>RA3</td>
<td>.73</td>
<td>-.52</td>
<td>-.14</td>
<td>.45</td>
<td>-.01</td>
<td>.84</td>
<td>-.20</td>
<td>.42</td>
<td>-.06</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.04 (0.96)</td>
</tr>
<tr>
<td>PA3</td>
<td>.54</td>
<td>.77</td>
<td>-.17</td>
<td>.44</td>
<td>-.14</td>
<td>.49</td>
<td>.85</td>
<td>-.25</td>
<td>.38</td>
<td>-.15</td>
<td>.51</td>
<td></td>
<td></td>
<td></td>
<td>.01 (0.93)</td>
</tr>
<tr>
<td>Accept3</td>
<td>-.33</td>
<td>-.29</td>
<td>.67</td>
<td>-.48</td>
<td>.46</td>
<td>-.25</td>
<td>-.25</td>
<td>.78</td>
<td>-.48</td>
<td>.63</td>
<td>-.28</td>
<td>-.22</td>
<td></td>
<td></td>
<td>.04 (1.00)</td>
</tr>
<tr>
<td>Reject3</td>
<td>.55</td>
<td>.47</td>
<td>-.43</td>
<td>.85</td>
<td>-.23</td>
<td>.43</td>
<td>.47</td>
<td>-.84</td>
<td>-.26</td>
<td>.50</td>
<td>.41</td>
<td>-.52</td>
<td></td>
<td></td>
<td>.00 (0.99)</td>
</tr>
<tr>
<td>Popular3</td>
<td>-.21</td>
<td>-.17</td>
<td>.57</td>
<td>-.31</td>
<td>.73</td>
<td>-.09</td>
<td>-.11</td>
<td>.69</td>
<td>-.32</td>
<td>.83</td>
<td>-.10</td>
<td>.71</td>
<td>-.32</td>
<td></td>
<td>.04 (1.01)</td>
</tr>
</tbody>
</table>

**Note.** RA = relational aggression, PA = physical aggression, accept = peer acceptance, reject = peer rejection, popular = popularity.

\( p < .05 \)

\( ^* p < .01 \)

\( ^{**} p < .001 \)

---

statistics between the constrained and the unconstrained models revealed very negligible difference in fit, \( \Delta \chi^2 \) (8) = 3.48, \( p = .900 \), suggesting that the cross-lagged paths did not vary with gender. Therefore, gender was only included in the model as a covariate, and estimates of the paths in the hypothesized model for the whole sample were presented (Fig. 1). Results indicated that peer acceptance at Time 1 predicted more relational aggression at Time 2. In general, relational aggression, physical aggression, and peer acceptance were fairly stable over 1-year period in Taiwanese children. Concurrently, relational aggression and physical

---

*Fig. 1. Cross-lagged model of relational, physical aggression, and peer acceptance. Model fit: \( \chi^2 = 749.98, df = 316, p < .001, CFI = .93, TLI = .91, \) and RMSEA = .08 [.08, .09]. Significant paths (with standardized estimates) are shown in bold lines while non-significant paths are shown in dashed lines. Peer acceptance was treated as latent construct with a single indicator. \( ^* p < .05, ^{**} p < .01, ^{***} p < .001 \).*

*Aggr. Behav.*
aggression were highly correlated with each other at Time 1. The residuals of relational aggression and physical aggression were still highly correlated with each other at Time 2 and Time 3 when previous relations of the two constructs were controlled for. In addition, relational aggression was concurrently related to less peer acceptance at Time 1 and Time 3, while physical aggression was concurrently related to less peer acceptance at Time 1.

Relational, physical aggression, and peer rejection. Following the same procedures described above, the cross-lagged models for relational, physical aggression, and peer rejection and gender moderation were tested (see Fig. 2). First, we tested our hypothesized model using the whole sample. Results indicated an adequate model fit with the data, $\chi^2 = 738.00, df = 295, p < .001, CFI = .93, TLI = .92$, and RMSEA = .09 [.08, .10]. We then ran the multigroup analysis to examine gender moderation on the cross-lagged associations. Again, the difference in fit of the constrained and unconstrained models was not significant, $\Delta \chi^2 (8) = 10.34, p = .242$, which implied that the cross-lagged paths did not vary with gender. Therefore, gender was only included in the model as a covariate. Figure 2 presents the estimates of the paths from the hypothesized model with the overall sample. Relational aggression at Time 1 predicted more peer rejection at Time 2; in contrast, peer rejection at Time 1 predicted less relational aggression at Time 2. Further, physical aggression at Time 2 predicted more peer rejection at Time 3. Again, relational aggression, physical aggression, and peer rejection were stable over time. The concurrent association between relational aggression and peer rejection was high at Time 1. Even after controlling for the relations between relational aggression and peer rejection at previous time points, the residuals of relational aggression and peer rejection were still significantly correlated with each other 1 year later. Similar patterns were found for physical aggression; that is, physical aggression was highly related to peer rejection at each time point.

Relational, physical aggression, and perceived popularity. Again, following the same procedures described above, the cross-lagged models for relational, physical aggression and perceived popularity and gender moderation were tested (see Fig. 3). The overall hypothesized model fit the data fairly well, $\chi^2 = 626.54, df = 295, p < .001, CFI = .95, TLI = .93$, and RMSEA = .08 [.07, .08]. With respect to the multigroup analysis to test gender moderation, the difference in model fit between constrained and unconstrained models, again, was not significant, $\Delta \chi^2 (8) = 4.91, p = .767$, indicating no gender moderation on the cross-lagged paths. Therefore, gender was only included in the model as a covariate. Figure 3 presents the estimates of the paths in the hypothesized model with the
whole sample. Results showed that perceived popularity at Time 1 predicted more relational aggression at Time 2, whereas relational aggression at Time 1 predicted less perceived popularity at Time 2. Moreover, there was high stability of perceived popularity (in addition to relational and physical aggression) over time. Also, relational aggression and physical aggression at Time 1 were concurrently associated with less perceived popularity at Time 1.

**DISCUSSION**

Researchers have long been interested in the behavioral basis of status in the peer group. Over the years, physical and relational forms of aggression have emerged as important predictors of likeability (i.e., acceptance, rejection; see Asher & McDonald, 2009), and more recently, perceived popularity (Cillessen & Rose, 2005). The current study examined bidirectional, concurrent, and longitudinal associations between aggression and status in a Taiwanese sample of preadolescents. Although findings did not support a transactional view of development (i.e., individual behavior predicts the social environment, which in turn, affects continued behavioral development; Sameroff & Chandler, 1975; Sameroff & MacKenzie, 2003), bidirectional effects between relational aggression and peer status were evident. Furthermore, findings highlight the complex nature of the association between aggression and status, which appears to depend on the form of aggression and on the particular indicator of status under study.

Consistent with previous research, relational and physical aggression were highly correlated (Card et al., 2008). Accordingly, all analyses controlled for the alternative form of aggression, such that associations between relational aggression and status were not confounded by physical aggression, and vice versa. Examining the unique effects of each form of aggression revealed that, similar to findings in North American and Western European samples, relational aggression and physical aggression differentially impact social status among preadolescents in Taiwan.

As expected, high levels of physical and relational aggression were associated with low levels of peer acceptance at Time 1. After controlling for the relations between aggression and acceptance at earlier time points, the negative association between relational aggression and peer acceptance retained significance at Time 3. Associations between aggression and acceptance do not consistently emerge in studies conducted in Western samples, leading to the conclusion that some aggressive children may be well-liked by a subgroup of their peers, while at the same time disliked by their victims (Crick et al., 2009; Graham & Juvonen, 2002; Orue & Calvete, 2011; Salmivalli et al., 2000). This does not appear to be the case, however, in our Taiwanese sample, where aggression is significantly related to low likeability.
Our findings may reflect cultural differences in the evaluation of aggressive behavior (Chen & French, 2008). That is, in the relationship-oriented Chinese culture, given the high emphasis on interpersonal relationships and group harmony (Bond, 1996), behaviors that are incongruent with the cultural values and emphases may be evaluated more harshly (e.g., Chen & French, 2008; Chen, French, & Schneider, 2006). As a result, children who are aggressive in the Chinese culture may violate social norms to a greater degree and thus compromise their peer liking compared to children in North American or Western European cultures.

Similarly, consistent with our hypothesis, both relational and physical forms of aggression were concurrently and positively associated with rejection. Associations between aggression (i.e., physical, relational) and rejection retained significance at all three time points, even after controlling for the covariances between constructs at earlier time points. This finding attests to the robust nature of the association between aggression and rejection among Taiwanese children, and corroborates previous research in both Chinese and Western cultures (Asher & McDonald, 2009; Chen, Cen, Li, & He, 2005; Crick & Grotpeter, 1995; Putallaz et al., 2007; Schwartz et al., 2010; Xu, Farver, Schwartz, & Chang, 2003).

Aggression and rejection also were longitudinally associated, supporting the hypothesis that aggression is implicated in the emergence of peer rejection. In particular, high levels of relational aggression at Time 1 predicted high levels of peer rejection 6 months later at Time 2. The longitudinal association between physical aggression and rejection did not emerge until later in the study; Time 2 physical aggression predicted Time 3 rejection. This finding may reflect the observation that physical aggression becomes increasingly non-normative with development, with typically developing children gradually desisting in their use of physical aggression over time (Broidy et al., 2003; Côté et al., 2006). Perhaps continued engagement in physically aggressive behavior increases the risk for peer rejection at later ages. Such a trend may be particularly evident in Chinese culture, where children are socialized to develop self-control, sensitivity toward others, and a cooperative and prosocial orientation with age (Bond, 1996) as discussed above. Nonetheless, these tentative interpretations need to be taken cautiously, and this finding requires replication and validation in a larger longitudinal study.

As predicted, relational and physical aggression were concurrently and negatively associated with perceived popularity—an indicator of status that reflects dominance and prestige in the peer group (see Cillessen & Rose, 2005). Concurrent associations between aggression (i.e., relational, physical) and perceived popularity were evident at Time 1 only; associations did not persist at later time points that controlled for the relations between these two constructs at earlier time points. In addition, in line with our hypothesis, longitudinal analyses revealed that high levels of relational aggression predicted low levels of perceived popularity 6 months later. This finding does not correspond with research conducted in North America and Western Europe, which identifies relational aggression as a strategy for achieving popularity (Cillessen & Borch, 2006; Cillessen & Mayeux, 2004; Rose et al., 2004). In a society that values group harmony and interdependence (Bond, 1996), relationally aggressive behaviors such as exclusion and ignoring may not function as they do in Western contexts to establish popularity in the peer group. Perhaps other traits and social behaviors that are not measured in the current study are more effective for the purpose of climbing the social ladder in Taiwanese middle schools. Findings could also reflect developmental differences in the strategies used to achieve popularity. Children in the present study were in fifth and sixth grade—slightly younger than the children in other investigations that have linked relational aggression to the attainment of popularity (Cillessen & Borch, 2006; Cillessen & Mayeux, 2004; Rose et al., 2004). It is possible that relational aggression predicts subsequent popularity at later ages in Taiwan.

Consistent with our hypothesis, results also indicated that status predicted aggressive behavior. In particular, findings support the notion of high status as a prerequisite for engaging in relational forms of aggression (Kuppens et al., 2009; Orue & Calvete, 2011; Salmivalli et al., 2000). Specifically, acceptance and perceived popularity positively predicted relational aggression 6 months later. Our findings corroborate other longitudinal investigations conducted in North American and Western European samples demonstrating that high acceptance (Kuppens et al., 2009; Orue & Calvete, 2011) and perceived popularity (Cillessen & Mayeux, 2004; Prinstein & Cillessen, 2003; Rose et al., 2004) predict high levels of relational aggression over time. Our findings are also consistent with research indicating that high network centrality, another measure of social prominence, is positively related to relational aggression (Neal, 2009; Xie, Cairns, & Cairns, 2002; Xie, Farmer, & Cairns, 2003). Furthermore, our results indicated that high levels of rejection longitudinally predicted low levels of relational aggression 6 months later. Taken together, these results suggest that high status may facilitate engagement in relational aggression, whereas low status may constrain the use of relational aggression (Neal, 2009; Orue & Calvete, 2011). High levels of acceptance and status may afford children with the social power necessary to manipulate peer
relationships. On the other hand, it may be difficult for rejected children to influence and manipulate others. It is likely that access to social ties is necessary in order to successfully implement relationally aggressive behaviors such as rumor spreading and social exclusion to control peer groups and achieve high social status (Neal, 2009).

Results from the present study support and extend findings by Schwartz et al. (2010), who demonstrated a positive bivariate correlation between relational aggression and perceived popularity among middle-school aged children in Hong Kong. The longitudinal nature of the current study helps to clarify the direction of this association. Although relational aggression negatively predicted later popularity, popularity positively predicted subsequent relational aggression. It appears that, in Taiwanese culture, relational aggression may be more important for the maintenance of status than it is for the achievement of status. In fact, research suggests that relational aggression, when skillfully implemented, may be used to maintain group boundaries and established dominance hierarchies (Cillessen & Mayeux, 2004).

The positive association between relational aggression and popularity does not immediately appear to be consistent with interdependent or collectivistic cultural values; however, Schwartz et al. (2010) invoke the concept of “vertical collectivism,” in order to reconcile this apparent paradox. Under vertical collectivism, which is based on hierarchical structures of power and cultural conformity, individual behavior is conceptualized as contributing to the overall functioning of the group (Triandis, 1995). Behaviors, like relational aggression, that serve to maintain the social hierarchy may be acceptable if they promote the collective functioning of the group as a whole.

Interestingly, the only longitudinal, cross-lagged association between physical aggression and peer status was found between physical aggression and peer rejection (but not peer acceptance or popularity), after the effect of relational aggression was taken into account. This suggests a possibility that relational aggression may be more salient and may have a greater influence on peer status than physical aggression in the Chinese culture. Given the expectation of forming harmonious relationships in Chinese culture (e.g., Chen & French, 2008; Chen et al., 2006), individuals who violate these cultural norms through engagement in relational aggression may be especially likely to be rejected by peers or to be unpopular among peers (Kawabata, Tseng, Murray-Close, & Crick, 2012). A future study with children in the Chinese culture is necessary to test this notion.

Unexpectedly, some of the longitudinal associations were not significant. For example, relational aggression at Time 2 did not significantly predict peer rejection at Time 3. There are several possible explanations for this unexpected finding. First, because the relations between relational aggression and peer rejection both within and across time at Time 1 and Time 2 have been accounted for in the model, relational aggression at Time 2 did not make an additional contribution to the prediction of peer rejection at Time 3. Another possible explanation is that Time 2 relational aggression did not contribute to changes in Time 3 peer rejection, especially at the developmental period when children transition to early adolescence (sixth grade). It may be that the function and meaning of relational aggression undergoes some changes during this developmental period (Cillessen & Mayeux, 2004; Zimmer-Gembeck et al., 2005). Relational aggression may be used as a tool to gain status among peers, and relational aggression may be perceived differently (e.g., more neutrally, or even positively in some cases) by peers during this period. In addition, this null finding may be due to the timing of assessment on relational aggression and social status. Time 1 assessment occurred when children entered fifth grade, when they just changed classrooms from the previous year. Time 2 assessment occurred during the same academic year, and Time 3 assessment was conducted when the participants were in the sixth grade (same classroom). During the first 6 months (as compared to the period after that), children may be more likely to use relational aggression to seek new peer groups in which they can gain social status among peers. These children may not use relational aggression as much as at a later time presumably because their peer groups may be more stable and, thus, change less dynamically.

Likewise, some of the concurrent associations were not significant. Specifically, relational aggression and peer acceptance were not significantly correlated with each other at Time 2 (but they were at Time 1 and Time 3). This non-significant residual covariance between relational aggression and peer acceptance at Time 2 may be due to the fact that Time 1 peer acceptance was predictive of Time 2 relational aggression. That is, the effect of Time 1 peer acceptance on Time 2 relational aggression may overshadow the correlation between Time 2 peer acceptance and Time 2 relational aggression. This explanation is consistent with the finding that Time 3 relational aggression, which was not predicted by Time 2 peer acceptance, was correlated with Time 3 peer acceptance.

With regard to gender moderation, the current study found that the associations between aggression and status do not vary as a function of gender, which is inconsistent with our hypothesis. Research in this area has been inconclusive. Some studies suggest that relational aggression is particularly salient in the achievement and maintenance of status for girls, whereas physical aggression is more salient for boys (Cillessen &
Mayeux, 2004; Parkhurst & Hopmeyer, 1998; Rose et al., 2004); others have not revealed gender differences (LaFontana & Cillessen, 2002; Prinstein & Cillessen, 2003). Consistent with other studies that do not demonstrate gender differences (LaFontana & Cillessen, 2002; Prinstein & Cillessen, 2003), results from the current investigation suggest that aggression operates similarly in the peer group for both boys and girls in a Taiwanese sample.

**Limitations and Future Directions**

Although the current study provides new information about the development of aggression and status in Taiwan, a number of limitations should be addressed in future research. First, longitudinal studies that span a longer study period, especially extending to adolescence, are needed in order to clarify long-term stabilities, as well as developmental changes in the associations between aggression and status. Participants in the current study were followed over the course of 1 year. In fact, longer studies with longer intervals may better elucidate the transactional development between aggression and peer status, which is not supported by our data. Consistent with previous research, high stability was found for all study constructs (Cillessen & Mayeux, 2004; Huesmann et al., 1984; Jiang & Cillessen, 2005; Olweus, 1979; Zimmer-Gembeck et al., 2005); however, research with a longer duration of follow-up may be instrumental in revealing both continuity and change in development. Furthermore, the present study examined the processes and mechanisms involving forms of aggression and social status during 1 year with the initial assessment occurring in fifth grade. Given evidence that associations between aggression and status change with age, it will be important to expand longitudinal timeframes in order to determine if findings extend to adolescence.

Results from the current study indicate that relational aggression may be more important for maintaining status than it is for achieving status in Taiwanese classrooms. This finding may reflect an important cultural difference, as research in Western contexts suggests that relational aggression is important for both the achievement and maintenance of status (Cillessen & Mayeux, 2004; Rose et al., 2004). Future research is needed in order to determine what kinds of social behaviors are important for achieving status among Taiwanese children. In addition, our moderate sample size is not large enough to allow for analyses comparing peer status (i.e., rejection, acceptance, popularity) afforded by “mainstream” peers versus “aggressive or deviant” peers. It would be interesting for future studies to make this distinction and to investigate if the dynamic associations between aggression and status vary with different peer groups.

Furthermore, although the use of peer nomination in peer relation research is favorable, we cannot rule out the possibility that the results may be influenced by the issue of shared-method variance because all the study variables were obtained from peer nomination. Future research that incorporates data from other informants or sources, such as teacher report or self-report, in addition to peer report, is needed to verify the validity of the present findings. Moreover, findings from this study are relevant to Taiwanese children and may not generalize to other Chinese societies such as Hong Kong or mainland China. Finally, the current study revealed important cultural differences in the associations between aggression and status; however, future research that employs direct cross-cultural comparisons is needed.

Overall, findings from the current study did not support a transactional model of development whereby aggression and social status mutually influence one another over time, although bidirectional effects between relational aggression and peers status (i.e., rejection and popularity) were evident. Results highlight the complexity of relational aggression, which appears to be associated with both adaptive and maladaptive outcomes with regard to peer status, whereas physical aggression unilaterally predicted poor peer group adjustment. Interventions aimed at reducing individual aggressive behavior may benefit from addressing contextual factors, such as status in the peer group, that potentially promote or constrain the use of aggression.

**REFERENCES**


