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Children's Observed Interactions With Best Friends: Associations With Friendship Jealousy and Satisfaction

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Abstract

This study examined the role of friendship jealousy and satisfaction in nine-year-old children's observed interactions with their best friends. One hundred five dyads (51 female, 54 male) participated in a 30-min closed-field observational setting and reported their jealousy and satisfaction within the friendship. The Actor–Partner Interdependence Model was used to estimate the effects of friendship jealousy and satisfaction on children's own and their friends' behavior. Friends were highly similar in observed behavior and friendship characteristics. Many observed dyadic behaviors were associated with overall levels of jealousy within the friendship, but differences in friendship satisfaction were only predictive of conflict resolution in boys. Children's reports of their friendship jealousy were strongly related to their own behavior in the dyad and the behavior of their best friends. Gender differences were discussed. The results further illustrate the importance of a dyadic perspective on friendship interaction.

Keywords: friendship; observed social interaction; jealousy; satisfaction

Introduction

Children's friendships contribute positively to their development (Erdley, Nangle, Newman, & Carpenter, 2001). Friendships give children opportunities to share affect and action, leading to feelings of personal connection (Bukowski, Motzoi, & Meyer, 2009). Bukowski, Newcomb, and Hartup (1996) indicated that when examining the developmental significance of friendships, a distinction should be made between having friends, the identity of one's friends, and the quality of one's friendships.

The quality of children's friendships has been studied frequently. High-quality friendships have positive features (e.g., helping, guidance, caring) and lack negative features (e.g., conflict, betrayal) (Berndt, 2002; Parker & Asher, 1993). Friendship

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quality has shown to predict adjustment over and above the effects of peer acceptance and number of friendships (Waldrip, Malcolm, & Jensen-Campbell, 2008). Moreover, low friendship quality predicts depression and loneliness (Nangle, Erdley, Newman, Mason, & Carpenter, 2003), low self-esteem and perceived social competence, and internalizing problems (Rubin et al., 2004).

However, positive and negative friendship qualities are not the only aspects of a friendship that might be important. Jealousy has not been studied frequently in the context of friendships, but, for example in romantic relationships, jealousy has been shown to be a major contributor to relationship dissatisfaction and problems (Andersen, Eloy, Guerrero, & Spitzberg, 1995; Barelds & Barelds-Dijkstra, 2007; Gatzeva & Paik, 2011). The same may occur in friendships. However, relatively few studies have been conducted on jealousy in friendships in general, or on jealousy in children's friendships particularly.

Parker, Low, Walker, and Gamm (2005) developed the Friendship Jealousy Questionnaire (FJQ), which presents children with hypothetical situations that may trigger jealousy. Parker and colleagues stated that jealousy occurs when a relationship is threatened by another relationship. They found that friendship jealousy among early adolescents predicted loneliness, over and above effects of low peer acceptance or victimization. The FJQ measures children's general vulnerability for jealousy in a friendship. The construct differs from negative friendship quality, which typically regards perceptions of conflict in a friendship.

Culotta and Goldstein (2008) studied the associations of friendship jealousy measured with the FJQ and aggression and prosocial behavior in adolescents. In their study, friendship jealousy was positively associated with both relational aggression and prosocial behavior. They concluded that jealousy motivates manipulative behavior toward another person (whether in a negative or positive way). However, the behavior measures in this study were measures of aggression and prosocial behavior in general, not measures of these behaviors toward the friend specifically.

Lavallee and Parker (2009) also measured jealousy with the FJQ in adolescents and did measure behaviors toward friends specifically (rather than toward peers in general). They found that adolescents' friendship jealousy was related to surveillance behaviors (jealous behaviors toward the friend) and friendship conflict. These two studies indicate that friendship jealousy is related to conflict and aggressive and controlling behavior. However, in both studies adolescents' behaviors were self-reported and not observed. The current study examined the association of friendship jealousy with actual observed behavior during an interaction with the friend. Based on the two previous studies, we expected friendship jealousy to be related to observed aggressive and manipulative behaviors while interacting with the friend.

In addition to friendship jealousy, friendship satisfaction—how children think a friendship is going and how happy they are with it—might also be of importance in children's friendships. Parker and Asher (1993) found that elementary school-aged children expressed relatively high satisfaction with their best friendships and that friendship satisfaction was positively related to friendship quality. Other studies have addressed the association of friendship satisfaction with perceptions of a friend's behavior. For example, friendship satisfaction has been found to correlate positively with perceiving a friend as caring and helpful and negatively with perceiving conflict in the friendship (Ladd, Kochenderfer, & Coleman, 1996; Parker & Asher, 1993). Less is known about the association of friendship satisfaction with actual behavior in the

friendship. The current study addressed this gap in the literature by examining whether friendship satisfaction is related to friends' observed behavior when they interact. We expected that children's friendship satisfaction should be related to their friend's behavior and to their own behavior. Predictably, we expected positive associations of friendship satisfaction with positive behaviors (by both friends), and negative associations of friendship satisfaction with negative behaviors.

Further, as friendship jealousy seems to trigger negative behavior toward a friend and conflict in the friendship, we expected friendship jealousy to be negatively associated with friendship satisfaction. Indeed, a negative association between jealousy and satisfaction was found in research on romantic relationships (Andersen et al., 1995).

Best Friend Interactions

The unique ways in which children interact with their friends (Fonzi, Schneider, Tani, & Tomada, 1997; Newcomb & Bagwell, 1995) are the clearest in closed-field situations in which children cannot choose with whom, what, and where an interaction will occur, or how long it will last (Hartup, French, Laursen, Johnston, & Ogawa, 1993). In contrast to open-field situations such as the playground, in closed-field settings children cannot end an interaction and therefore must accommodate to each other. Therefore, in the current study, best friend dyads were observed during several tasks in a closed-field situation.

Researchers have argued that there is a need for observational data on childhood friendships. Berndt (2002) stated that many claims about children's friendships are made without ever seeing how friends actually behave with each other. Only a few studies have related friendships characteristics to observed behavior. Brendgen, Markievicz, Doyle, and Bukowski (2001) found that perceived positive friendship quality was related to positive affect and behaviors such as responsiveness whereas perceived negative friendship quality was related to negative behaviors such as criticism and conflict. Perceived negative quality was associated with adolescents' own behavior and with their friend's behavior. Friendship jealousy could be a friendship characteristic that potentially also predicts observable behavior toward a friend.

Observations can take place at an individual and a dyadic level. Dyadic behavior of two best friends is more than the sum of their individual behaviors. Parker and Asher (1993) argued that behavior in a dyadic relationship (as in best friend dyads) results from complex and unique interactions between characteristics of both individuals involved but also from the relationship's history and the context of the interaction. In addition, friendship brings along certain expectations and obligations that can inhibit, change, or intensify personal characteristics of both individuals and their typical behaviors. Therefore, we believe that it is important to observe behavior not only at an individual level but also at a dyadic level.

Gender Differences

Gender differences in friendship characteristics and observed behavior can be explained with the peer-socialization model (Rose & Rudolph, 2006). According to this model, exposure to same-gender peers contributes to the development of gender-typed dyadic interaction, prosocial behavior, best friend conflict, and friendship stress. As friendships in childhood are often same gender, this socialization process is further strengthened.

In general, girls are more focused on dyadic relationships and boys more on the larger peer group. As a consequence, girls are more concerned about the status of their friendships (Rose & Rudolph, 2006) and engage in more prosocial behavior toward their best friends, as this contributes to the maintenance of friendship. Indeed, empirical studies show that girls consistently report more positive friendship qualities than boys (e.g., Berndt & Keefe, 1995; Brendgen et al., 2001; Parker & Asher, 1993; Rose & Asher, 1999), and girl dyads display more positive behavior (Brendgen et al., 2001) than boy dyads. Paradoxically, girls' heightened concern for the status of their friendship also makes girls' friendships more fragile (Benenson & Christakos, 2003). Being concerned about the status of a friendship increases the likelihood of feeling threatened in the relationship, which in turn contributes to feelings of jealousy (Culotta & Goldstein, 2008). The higher jealousy in girls' friendships could thus contribute to the fragility of these friendships. Studies have indeed shown that girls report more friendship jealousy than boys do (Culotta & Goldstein, 2008; Parker et al., 2005), and we therefore expect to find a similar gender difference in the current study.

As boys are less concerned about the status of their friendships, they might be more likely to engage in behaviors that damage them. Indeed, boys show more negative affect and conflict in friendship dyads than girls (Brendgen et al., 2001). However, gender differences in negative friendship quality (conflict) seem to vary with age; adolescent girls reported fewer negative friendship qualities than boys (Brendgen et al., 2001), but no gender differences were found at younger ages (Parker & Asher, 1993; Rose & Asher, 1999). Children in the current study were nine years old, similar to the studies of Parker and Asher (1993) and Rose and Asher (1999). Therefore, no gender differences in friendship conflict were expected.

Observational studies of same-gender dyads in general have found gender differences in positive and negative behaviors. Brendgen et al. (2001) found that adolescent girls displayed more positive affect, responsiveness, and self-disclosure than boys. Boys displayed more criticism, negative affect, and conflict than girls. In line with these results and the peer-socialization model (Rose & Rudolph, 2006), we expected more positive behaviors in best friend dyads of girls and more negative behaviors in best friend dyads of boys.

Study Goals

This study examined how friendship jealousy and satisfaction are associated with individual and dyadic behaviors in closed-field interactions between same-gender best friends. Male and female dyads were compared. Hypotheses were tested with the Actor–Partner Interdependence Model (APIM) (Cook & Kenny, 2005), a statistical model for dyadic research that takes dyadic dependence into account. Two types of effects were examined. Actor effects were associations between a child's predictor score and her or his own score on an outcome variable. Partner effects were associations between a child's predictor score and her or his best friend's score on an outcome variable.

For the variables that were observed at the dyadic level, we examined two types of predictors, consistent with earlier research (Burk & Laursen, 2005): the *mean* and the *difference* of both interaction partners on each predictor. Both provide unique information about the dyad. The mean indicates friends' average perception of the relationship. The degree to which friends on average see their relationship as positive

or negative is expected to influence their behavior. The difference indicates the similarity or consensus of both friends' views. A larger discrepancy may indicate less understanding of each other's feelings and behaviors whereas more concordance may indicate more shared understanding and meanings, and thus predict more positive interaction quality. Because our dyads were indistinguishable, means and differences were not affected by which dyad member is considered in which position (Little & Card, 2005). By including both predictors simultaneously in our models, we were able to examine their independent contributions to observed dyadic behavior.

Method

Participants and Procedure

This study was part of the ongoing Nijmegen Longitudinal Study. The original sample consisted of 129 children (67 boys, 62 girls) from the 1998 birth cohort of children born in Nijmegen (a city in the eastern Netherlands). In the fifth wave of the study, 118 of the original 129 focal children (63 boys, 55 girls) participated. Of these, 113 completed all measures of the current study. This age group (9-year-old children) was chosen because in middle childhood friendships are an important relationship context, and children's success in their friendships is an important indicator of social competence at this age (Bukowski et al., 1996).The original sample was randomly selected and representative of the Dutch population in SES. The majority of participants was White (98%).

Firstly, friendships were identified with peer nominations in the participating children's classrooms. In this first part of the data collection, the target children's classroom peers also participated (cf. Peters, Cillessen, Riksen-Walraven, & Haselager, 2010). Children were asked: 'Who of your classmates are your friends? Start with the name of your best friend and so on.' A child's best friend was the classmate who the child nominated as highest ranked among her or his top-three best friends and who also nominated the child in her or his top three in return. If there was no top-three reciprocal friend, priority was given to the target child's next ranked friend who also nominated the target child as a friend (irrespective of rank order). If there was no reciprocal friend, which happened on only one occasion, the best friend was defined as the highest ranked non-reciprocal friend.

The selected friends then received a letter for their parents describing the project. The parents of the friends were also called to ask permission for their children's participation in the observational tasks. All parents allowed their child to participate. For five children the reciprocal best friend was other gender rather than same gender. These dyads were excluded from the current analyses. Three dyads consisted of two children who were both from the original longitudinal study. In total, observational data were collected for 210 children in 105 dyads, 54 boy dyads (51%), and 51 girl dyads (49%). The friendship questionnaires were filled out just before the observations took place.

For 80 of the 105 dyads, a friendship journal was available that was not part of the current study. Of the 80 dyads, 33 (41%) knew each other more than 4 years, 14 (18%) 3–4 years, 12 (15%) 2–3 years, 13 (16%) 1–2 years, and 8 (10%) less than 1 year. The dyads also reported how frequently they spent time together: 53 (66%) more than twice a week, 18 (23%) once or twice a week, and the remaining nine (11%) less than once every two weeks.

Measures

Friendship Jealousy. The Friendship Jealousy Questionnaire (FJQ; Parker et al., 2005) consists of 15 scenarios. After each scenario, children rated how jealous they would feel in it (1 = not at all, 5 = very much). This questionnaire was also personalized to help children think specifically about their best friend. For example: 'You give Tom a present for his birthday. But he only pays attention to the present he received from another child you both know. How jealous would you feel at such a moment?' Cronbach's α across the 15 ratings was .94.

Friendship Satisfaction. Two items of the Friendship Quality Questionnaire (FQQ; Parker & Asher, 1993) measured friendship satisfaction: 'How satisfied are you with this friendship?' and 'How happy are you with this friendship?' Both items were answered on a 5-point scale (1 = not at all; 5 = very much). The two items were averaged to one friendship satisfaction score (Cronbach's $\alpha = .74$).

Observation Tasks. Observations were derived from a 30-min play session that was held with each of the 105 dyads. During a school visit, dyads were taken out of the classroom to a mobile laboratory where they played four co-operative, competitive, and joint problem-solving games that were developed for this study. The first game was a view master game in which the children together had to answer questions about the slides in the view master as quickly as they could. The second game was a fishing board game in which the friends each received different written instructions about the rules of the game. The third task was a joint party planning task, and the fourth task was a guessing game in which the experimenter left the room, creating the opportunity to peek at the cards the children later would have to guess. The games were selected to elicit a variety of behavioral responses. Each session was videotaped and coded later with a dyadic coding system and an individual coding system.

In the dyadic coding, three trained observers coded the quality of the dyadic interaction in each play session with the Child–Friend Interaction Rating Scales (C-FIRS) (Peters, Van den Bosch, & Riksen-Walraven, 2007), an adapted version of the Observed Friendship Quality Scale (OFQS) developed by Flyr, Howe, and Parke (1995). Each dyad was rated on seven 5-point scales: positive connectedness (explicitly pleasant, nice, considerate behavior), disharmony (non-contingent interaction, interrupting each other), conflict (intensity, mutuality, and duration of conflict and disagreements), conflict resolution (solving disagreements in a constructive, positive way), disclosure (exchanging personal or private information), power balance (distribution of dominance/leadership), and overall friendship quality (a comprehensive judgment of overall quality). Inter-rater reliability based on 23 sessions (20%) ranged from .66 to .90 [intra-class correlations (ICCs)]. After reversing the scores for disharmony and conflict, the internal consistency reliability across the six scales was .63 (Cronbach's α).

In the individual coding, the same three observers rated the behavior of each child on eight 5-point scales (except for cheating that had a 3-point scale): positive behavior (sharing, helping), involvement (being attentive, interested), negative behavior (being intrusive, irritated), dominant behavior (bossiness, influencing or controlling play), cheating (on a game), disruptiveness (shouting, obscene language), submissiveness (child is controlled by peer and plays the 'follower'), and skillful leadership (child employs skillful social strategies to pursue goals). Reliability ranged from .64 (skillful

leadership) to .87 (disruptive), except for submissiveness, for which α was .49. A factor analysis with oblique rotation on the eight-scale scores yielded three factors: *prosocial* (positive behavior and involvement), *antisocial* (negative behavior, dominant behavior, cheating, and disruptiveness), and *withdrawn* (submissiveness and low skillful leadership). The factor scores on these factors were the final scores for each child's individual behavior.

Results

Descriptive Statistics

Table 1 presents descriptive statistics for all study variables. Gender differences were examined with *t*-tests. Girls scored higher than boys on friendship jealousy ($t = -3.18$, $p < 001$, $d = .46$), and individual prosocial behavior ($t = -2.00$, $p = .05$, $d = .27$). Boys scored higher than girls on individual antisocial behavior ($t = 2.30$, $p = .02$, $d = .31$).

Correlations

Table 2 presents the correlations among the main study variables by gender. As can be seen, friendship jealousy and satisfaction were unrelated. All dyadic behaviors except balance of power and conflict were related to each other. None of the three individual behaviors was significantly associated with each other as oblique rotation was used.

There was a remarkable gender difference in the associations of the friendship characteristics with the observed behaviors in the closed-field setting. For girls, jealousy and satisfaction significantly predicted a wide range of dyadic and individual behaviors. For boys, jealousy and satisfaction were unrelated to observed behaviors.

Intra-class Correlations

Table 3 presents the ICC for each study variable, indicating how strongly best friends resembled each other. Except for withdrawn behavior ($ICC_{total} = .33$), ICCs ranged from .60 to .84, indicating substantial within-dyad similarity. Therefore, an analysis model that takes dyadic dependence into account is necessary.

APIM Analysis Strategy

The APIM models were estimated using structural equation modeling in AMOS 20.0 (IBM SPSS, Hong Kong). Figures 1 and 2 present the models for the prediction of observed dyadic and individual behavior. The same-gender friendship dyads in this study had no role distinctions and were thus treated as indistinguishable dyads (Kenny, Kashy, & Cook, 2006). A dyadic data file was created for all APIM analyses. To rule out any differences between children originating from the longitudinal sample and their selected best friends, the dyadic file was randomized by switching the data columns of the longitudinal children and their friends in the upper half of the file as recommended by Kenny et al. (2006). Further, all predictors were centered as recommended by Kenny et al. (2006).

To test the APIM with indistinguishable dyads using Structural Equation Modeling, it is necessary that the means and variances for the predictor and outcome variables, the

Table 1. Descriptive Statistics of All Study Variables by Gender

	M	*SD*	*M*	*SD*	*M*	*SD*	*t*	*p*	*d*
Friendship characteristics	Total (N = 210)		Boys (N = 108)		Girls (N = 102)		—	—	—
Friendship satisfaction	4.60	.55	4.58	.50	4.62	.60	.37	.61	−.07
Friendship jealousy	2.16	.89	1.96	.76	2.36	.98	−3.18**	.00	−.46
Observed dyadic behavior	Total (N = 105)		Boy dyads (N = 54)		Girl dyads (N = 51)		—	—	—
Balance of power	3.74	1.01	3.65	1.05	3.84	1.03	−.96	.34	−.18
Conflict	1.89	.79	1.85	.79	1.94	.80	−.56	.58	−.11
Conflict resolution	3.47	.84	3.61	.83	3.33	.83	1.42	.16	.34
Disclosure	2.63	.86	2.63	.85	2.64	.88	−.06	.95	−.01
Disharmony	2.33	.92	2.48	.84	2.16	.98	1.80	.07	.35
Observed quality	3.43	.99	3.43	.96	3.44	1.03	−.07	.94	−.01
Positive connectedness	3.50	.92	3.41	.88	3.60	.97	−1.06	.29	−.21
Observed individual behavior	Total (N = 210)		Boys (N = 108)		Girls (N = 102)		—	—	—
Antisocial factor	.00	1.00	.15	.97	−.16	1.01	2.30*	.02	.31
Prosocial factor	.00	1.00	−.13	1.00	.14	.98	−2.00*	.05	−.27
Withdrawn factor	.00	1.00	−.02	1.00	.02	1.00	−.26	.80	−.04

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

Table 2. Inter-correlations Between Main Study Variables by Gender

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1. Satisfaction		.15	−.02	−.06	.10	.07	−.03	.11	.04	−.06	.02	−.00
2. Jealousy	−.11	—	−.12	−.11	.05	−.02	.12	−.09	−.03	.14	.03	−.04
Observed dyadic behavior												
3. Balance of power	−.05	−.15	—	.05	.43**	.11	−.40**	.41**	.26**	−.03	.20*	−.17
4. Conflict	−.25*	.20	−.17	—	−.34**	.23*	.25*	−.14	−.18	.31**	−.00	−.04
5. Conflict resolution	.10	−.19	.29*	−.47**	—	.23*	−.65**	.61**	.58**	−.11	.43**	−.19
6. Disclosure	.09	−.00	−.28**	.13	.24*	—	−.12	.47**	.48**	.35**	.51**	−.21*
7. Disharmony	−.27**	.31**	−.29**	.58**	−.42**	.24*	—	−.52**	−.53**	.27**	−.25**	.09
8. Observed quality	.26**	−.36**	.50**	−.47**	.50**	.09	−.62**	—	.84**	.06	.63**	−.21*
9. Positive connectedness	.14	−.29**	.47**	−.22*	.41**	.21*	−.56**	.85**	—	.09	.69**	−.17
Observed individual behavior												
10. Antisocial factor	−.17	.28**	−.22*	.55**	−.17	.20*	.58**	−.40**	−.32**	—	.17	−.12
11. Prosocial factor.	.23*	−.25*	.24*	−.22*	.42**	.09	−.54**	.60**	.60**	−.17	—	−.08
12. Withdrawn factor	.04	−.02	−.16	−.09	−.01	−.04	.01	−.14	−.19	−.19	−.10	—

Note: Boys (N = 108) above the diagonal, girls (N = 102) below the diagonal.
* $p < .05$, ** $p < .01$.
Note: Correlations underlined were significantly different by gender, $p < .05$.

Table 3. Intra-class Correlations for Main Study Variables in the Total Sample and by Gender

	ICC		
	Total (N = 210)	Boys (N = 108)	Girls (N = 102)
Friendship characteristics			
Friendship satisfaction	.68***	.64*	.71**
Friendship jealousy	.60*	.51	.61*
Observed individual behavior			
Antisocial factor	.79***	.77***	.81***
Prosocial factor	.84***	.84***	.83***
Withdrawn factor	.33	.32	.33

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

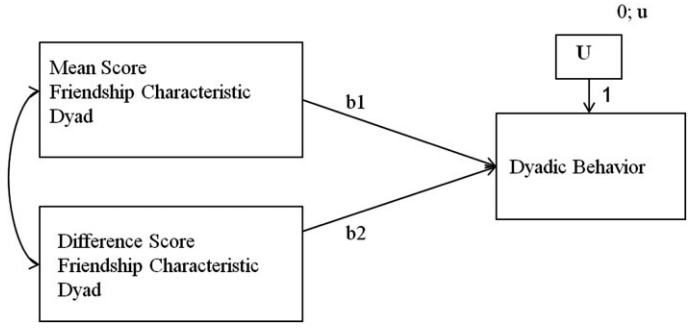

Figure 1. Actor–Partner Interdependence Model for the Prediction of Behavior Observed at the Dyadic Level.

actor and partner paths, and the intercepts are set equal for both dyad members (Olsen & Kenny, 2006). A separate APIM was run for each of the two predictors (satisfaction, jealousy) and 10 outcomes (seven dyadic and three individual behaviors), resulting in the estimation of 20 models.

The APIM models predicting dyadic behavior (Figure 1) differed in two aspects from the APIM models predicting individual behavior (Figure 2). Firstly, the models predicting dyadic behavior did not have separate outcome scores for each friend, but one shared dyadic score. As a result, there was no distinction between actor and partner effects in them and only one effect was estimated, indicating how the friendship characteristics of both children contributed to their shared dyadic qualities and interactions. Secondly, because the dyads were indistinguishable, it was theoretically irrelevant to enter the scores of both dyad members in the analyses. Therefore, a mean score and an absolute difference score were created for each predictor variable (e.g., friendship jealousy) for each dyad. These were then entered as the predictors in the dyad-level models. The models with dyadic observations measure as outcome variables were therefore path models.

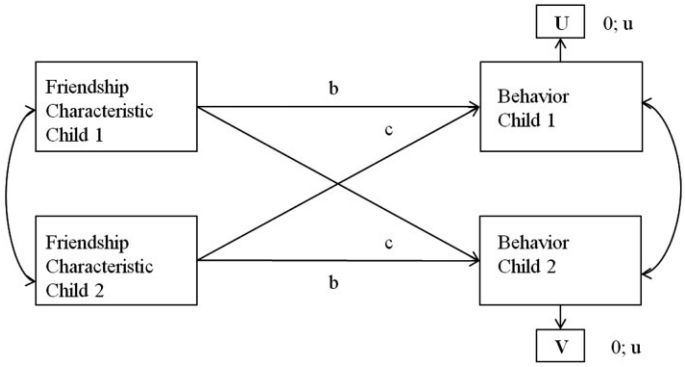

Figure 2. Actor–Partner Interdependence Model for the Prediction of Behavior Observed at the Individual Level.

For the models predicting observed dyadic behavior, each analysis had two steps. Firstly, a two-group model was run in which all parameters were allowed to vary between gender (fully unconstrained model, $df = 6$). Secondly, the same two-group model was run in which both partner effects were constrained between gender (fully constrained model, $df = 8$). If the fully constrained model had worse fit than the fully unconstrained model, there was moderation by gender. In that case, the third step was conducted testing whether each partner effect significantly differed between boy and girl dyads.

For the models predicting individual observed behavior, each analysis had three steps. Firstly, a two-group model was run in which all parameters were allowed to vary between gender (fully unconstrained model, $df = 11$). Secondly, the same two-group model was run with the actor and partner effects constrained between gender (fully constrained model, $df = 13$). If the fully constrained model had worse fit than the fully unconstrained model, there was moderation by gender. In that case, the third step was conducted testing whether each actor and partner effect significantly differed between boys and girls.

APIM Results

Table 4 presents the effects of the mean and difference scores for each friendship characteristic on observed dyadic behavior. For friendship jealousy, a higher dyad average predicted less balance of power, less conflict resolution, less observed quality, less positive connectedness, and more conflict and disharmony for both boy and girl dyads. For friendship satisfaction, dyad averages did not predict observed dyadic behavior. The difference in friendship satisfaction predicted more conflict resolution for boys but not for girls.

Table 5 presents the actor and partner effects of the friendship characteristics on the observed individual behavior. Friendship jealousy positively predicted antisocial behavior (actor and partner effect) for both genders. Children who reported more friendship jealousy displayed more antisocial behavior and so did their best friends. For girls, friendship jealousy also predicted less prosocial behavior in themselves and in their friends. Friendship jealousy did not predict observed withdrawal in children or their friends.

Table 4. Estimated Actor Effects for the Prediction of Dyadic Behaviors From Friendship Characteristics by Gender

	Friendship jealousy				Friendship satisfaction			
	Boys		Girls		Boys		Girls	
Dyadic behaviors	$\bar{X}$	Δ	$\bar{X}$	Δ	$\bar{X}$	Δ	$\bar{X}$	Δ
Positive								
Balance of power	−.21*	−.08	−.21*	−.08	−.08	−.06	−.08	−.06
Conflict resolution	−.29**	.18	−.29**	.18	.05	.51**	.05	.02
Disclosure	−.11	.19	−.11	.19	.10	−.01	−.10	−.01
Observed quality	−.47***	.11	−.48***	.11	.19	−.10	.19	−.10
Positive connectedness	−.38***	.02	−.38***	.02	.05	−.12	.05	−.12
Negative								
Conflict	.25**	−.38**	.27**	.04	−.17	.08	−.17	.08
Disharmony	.39***	−.22	.40***	.17	−.14	.13	−.14	.13

Note: $\bar{X}$ = mean score of both dyad members; Δ = difference score of both dyad members.
* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 5. Estimated Actor and Partner Effects for the Prediction of Individual Behaviors From Friendship Characteristics by Gender

	Friendship jealousy				Friendship satisfaction			
	Boys		Girls		Boys		Girls	
Factor	A	P	A	P	A	P	A	P
Antisocial	.16***	.11*	.20*	.13*	−.09*	.08	−.10*	−.15*
Prosocial	.01	.08	−.20**	−.14*	.08*	.09*	.10*	.11*
Withdrawn	−.04	−.03	−.05	.05	.02	−.03	.03	−.03

Note: A = actor effect, P = partner effect.
* $p < .05$, ** $p < .01$, *** $p < .001$.

Friendship satisfaction positively predicted prosocial behavior (actor and partner effects) for both genders. Children who reported more friendship satisfaction displayed more prosocial behavior, and so did their best friend. For girls, friendship satisfaction also predicted less antisocial behavior by them and by their friends (actor and partner effect). For boys, friendship satisfaction also predicted less antisocial behavior by them, but it did not predict their friends' antisocial behavior. Thus, for both genders, friendship satisfaction negatively predicted antisocial behavior by them in interactions with their friends. For girls, friendship satisfaction also negatively predicted antisocial behavior by their best friends. Friendship satisfaction did not predict observed withdrawal in children or their friends.

Discussion

The goal of this study was to examine the associations of jealousy and satisfaction with observed behaviors in children's friendships. It was expected that jealousy would predict negative behaviors in friendships (and the absence of positive interactions) whereas friendship satisfaction was expected to predict positive behaviors (and the absence of negative interactions). Girls were expected to report more jealousy than boys, but no gender differences were expected in friendship satisfaction. Finally, it was expected that girls would show more positive behaviors and boys more negative behaviors in their interactions with their best friends.

Friendship Jealousy

The results demonstrated that friendship jealousy is an important construct. The level of jealousy in children's friendships predicted conflict, disharmony, balance of power, observed quality of interaction, and disconnectedness. Further, it predicted negative, dominant, rule-breaking, and cheating behaviors in both friends. For girls, friendship jealousy also negatively predicted prosocial behavior toward their friend. These associations also validated the measure that was used to assess friendship jealousy.

Jealousy in a relationship often results from feeling threatened, which may lead to (counterproductive) strategies such as surveillance, destructive communication, or conflict (Lavallee & Parker, 2009). Such behaviors do not make a relationship better, but worse. The negative interactions in a relationship that result from jealousy will trigger a negative reaction from the friend. This may eventually cause the friend to seek other friendships, further increasing jealousy and starting a cycle of jealousy and negative behaviors.

Contrary to expectations, friendship jealousy was not associated with friendship satisfaction. Our expectation was based on adult romantic relationships (e.g., Gatzeva & Paik, 2011) that are less likely to end than children's friendships. Jealousy contributes to the termination of friendship (Casper & Card, 2010). It is possible that the friendships with enough jealousy to affect satisfaction negatively were terminated whereas only friendships in which jealousy did not affect satisfaction continued and participated in the study. Another possible explanation is that friendship satisfaction depends more on friendship quality than on jealousy.

Jealousy in friendships has only been examined recently (Parker et al., 2005). Our study adds to this work by showing that friendship jealousy is a meaningful construct that can be reliably assessed in 9-year-old children. Further research should focus on the development of friendship jealousy over time.

Friendship Satisfaction

Average levels and differences between friends in friendship satisfaction were not related to observed dyadic behavior, except for conflict resolution in boy dyads. However, friendship satisfaction played a larger role in the prediction of individual behaviors. Friendship satisfaction predicted prosocial behaviors in children and their friends and the absence of antisocial behavior in all children and in girls' friends.

It is very interesting that friendship jealousy primarily affects the dyad whereas friendship satisfaction primarily affects the individual. This may be because the negative behaviors displayed by jealous children elicit strong reactions from their friends

and then create an intense dynamic negative interaction pattern in the friendship. This dynamic is further magnified when the other friend is also jealous, and both end up engaging in negative and controlling behaviors, 'counterattacking' the other, yielding much negativity and disharmony. In contrast, the positive behaviors (and absence of negative behaviors) by children who are satisfied with their friendship may not evoke a strong response from the friend, because such behaviors are normative. Prosocial behavior is less likely to trigger a strong response from a dyad partner than would aggressive behavior.

The relative lack of associations in this study between satisfaction as a more positive aspect of friendships and observed dyadic behavior is not uncommon. In an observational study of adolescents, Brendgen et al. (2001) found no associations between positive friendship quality and observable behavior. Perhaps positive friendship qualities underlying friendship satisfaction such as spending time together and helping each other are necessary to initiate and maintain friendships but in themselves do not elicit positive behavior in an observational setting. Negative aspects of friendships such as conflict and jealousy are more salient and therefore more visible in observed behavior.

Friendship Similarity

Friends were highly similar in observed behavior and self-reported friendship characteristics. This is consistent with earlier work on the similarity of friends (e.g., Haselager, Hartup, van Lieshout, & Riksen-Walraven, 1998; Poulin et al., 1997), and can be explained by both selection and influence (Sijtsema et al., 2010). The similarity of friends and the dependence it creates in the data underscore the importance of using a statistical model that accounts for it, such as the APIM framework.

An exception to dyadic similarity was withdrawn behavior, for which dyadic dependence took the form of complementarity rather than similarity. This is not surprising given the nature of withdrawn behavior. In the observational coding system, submissive behavior was defined as 'The child is controlled by the peer and plays the role of "follower" in the dyad' whereas skillful leadership was defined as 'The child employs skillful social strategies to pursue goals'. After reversing the scores for skillful leadership, both categories form the factor withdrawn behavior. The definitions show that these behaviors are ranked in comparison; only one child can be the 'follower'.

Gender Differences

As girls are focused more on friendships and boys on the larger peer group, they view their friendships differently and also behave differently with their friends (Rose & Rudolph, 2006). As expected, girls reported more jealousy, but there were no differences in friendship satisfaction. As girls are more concerned with dyadic relations than boys (Maccoby, 1998), it is not surprising that they are more vigilant to potential threats to the relationship and are jealous. This concern, however, does not seem to lower their satisfaction with the relationship. The gender difference in jealousy also emerged in its associations with negative behaviors. For girls, jealousy predicted conflict, low observed quality, and the absence of prosocial behavior more strongly than for boys. Thus, although jealousy did not affect friendship satisfaction differently, it did affect behavior in the friendship more negatively for girls than for boys.

It would be interesting to examine how boys and girls view the role of jealousy in their friendships. Although jealousy is usually disapproved of in general, it might also

be seen positively to some extent. Jealousy may signal that people care deeply for one another and value their relationships enough to preserve and protect them (Bringle, Renner, Terry, & Davis, 1983; Guerrero & Eloy, 1992). Girls especially might view jealousy in this way, as it signals someone's motivation to stay involved in the friendship. Examining children's views on the meaning and origins of friendship jealousy could further our understanding of the role that jealousy plays in friendships, and how this role might differ for boys and girls.

The observations demonstrated that individually, girls showed more positive behavior and boys more negative behavior. As boys' friendships are less fragile than girls' (Benenson & Christakos, 2003), they were expected to take more risks and show more negative behaviors. Interestingly, such gender differences did not appear for behavior observed at the dyadic level. Perhaps individual behaviors such as rule breaking and cheating do not necessarily lead to mutual negativity or conflict. Alternatively, the lack of gender differences on the dyadic observation scales might be due to the fact that the individual behavior variables were composite scores (factor scores) across subscales of behavior whereas the dyadic behavior variables were not composites but the original subscales themselves. The composite variables might have been better able to detect gender differences than the single-score measures.

Strengths and Limitations

The current study had several strengths, including its design and analytical framework. A multi-method approach was used by associating self-reported friendship characteristics with observations of behavior. In these associations, shared method variance did not influence the results. Further, observational data make it possible to reach conclusions about behavioral processes. Observational data are still relatively scarce in the friendship literature; this study helped to fill that gap. The APIM framework makes it possible to obtain separate estimates for actor and partner effects. Therefore, we now know that children's views of their friendship are related not only to their own behavior but also to the behavior of their friends.

In addition, friendship jealousy was related not only to dyadic behavior but also to individual antisocial behavior between friends. The Friendship Jealousy Questionnaire (Parker et al., 2005), originally designed for adolescents, can be reliably used in younger children. Our results show that even for 9-year-olds, friendship jealousy is a meaningful concept.

In addition to these strengths, this study had some limitations. One is the relatively small sample size. We had 105 dyads—a reasonable number for observational research but a relatively small number for statistical purposes. Further, we only examined one age group (9-year-old children), although friendship processes vary across development. Further research should include larger samples and other age groups.

As our study employed a correlational framework, no causal inferences can be drawn. We examined the prediction of dyadic and individual behavior from reported friendship characteristics. However, behavior is also likely to affect friendship characteristics in return. For example, if one friend behaves increasingly negatively (e.g., sarcastic) and decreasingly positively (helping, sharing), the other friend might perceive the friendship as less optimal. Thus, associations between friendship characteristics and behavior might be bidirectional. Best friendships in particular are susceptible to change, as they have a high degree of shared knowledge, mutual dependence, and

intimacy (McChristian, Ray, Tidwell, & LoBello, 2012). Longitudinal research is needed to examine such bidirectional influences.

For five children, only mixed-gender best friend's dyads could be identified. Because of this low number, these dyads were removed from the analyses. However, it remains interesting to compare same-gender and mixed-gender friendship dyads. Do they behave differently? What is the role of jealousy in such friendships? Do boys or girls exert greater influence in such relationships? These questions remain open for further investigation.

Conclusion

In summary, this study showed that 9-year-old children can reliably and meaningfully evaluate jealousy and satisfaction in their friendships, and that these are related to individual and dyadic behaviors toward their best friend. Friendship jealousy in particular was related to observed behaviors, showing that friendship jealousy is an important construct for further investigation in children's and adolescents' friendships.

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