

Social Problem Solving and Strategy Use in Young Children

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ABSTRACT. In the present study, the authors investigated what prosocial–assertive, passive, and coercive strategies 6-year-olds ($N = 257$) would propose in response to stories about 2 socially challenging situations: displacing another child in a game and obtaining a toy from another child. The scenarios also varied the gender composition of the characters. Participants’ verbalizations while acting out their responses using toy props fell into 13 categories of strategies. Teachers reported antisocial behavior and social competence of the participants. Girls and boys responded similarly in their general suggestions of prosocial or assertive strategies, but girls were more likely to offer prosocial strategies with other girls than with boys. Teacher-rated competence and antisocial behavior interacted in predicting coercive responses by girls but not by boys. The results demonstrate that prosocial and antisocial behaviors need to be considered in interaction to fully understand the nature of social competence.

Keywords: resources, social competence, social problem solving, strategies

COOPERATIVE PLAY provides children with an important socialization function for the development of social competence. Through cooperative interactions in the years from preschool through early elementary school, children learn how to take turns, share resources, form and maintain positive peer relationships, and manage conflict (Howes, 1988; Parker, Rubin, Price, & DeRosier, 1995; Rubin, Bukowski, & Parker, 1998). A lack of skill in these areas may be detrimental to a

child's social and emotional development. Furthermore, mastering how to handle conflict is essential for social development because these early relationships are the foundation for future relationships (Shantz & Hartup, 1992; Weinstein, 1969). Thus, peer relations researchers have highlighted the importance of identifying the competencies associated with successful peer interactions in early childhood (Mize & Cox, 1990).

One definition of *social competence* is the ability to balance one's own needs in social situations while maintaining positive relationships with others (Rose-Krasnor, 1997; Weinstein, 1969). However, exactly how socially competent children master this balance is unclear. The balance between self and relationship goals is difficult to achieve in situations when children's needs clearly conflict with one another (Putallaz & Sheppard, 1992).

Although historically, researchers have treated positive and negative behaviors, cognitions, and emotions as opposite ends of one continuum, other researchers have proposed that these processes might be independent (e.g., LaFontana & Cillessen, 2002; Rodkin, Farmer, Pearl, & Van Acker, 2000). If this is true, socially competent children may display a mixture of prosocial and antisocial behaviors in conflict situations, instead of either one exclusively (see Bukowski, 2003; Green & Rechis, 2006; Hawley, 1999, 2002; Putallaz & Sheppard, 1992; Shantz, 1987; Vaughn, Vollenweider, Bost, Azria-Evans, & Snider, 2003).

Negotiating with peers over access to limited resources has a large potential for conflict and consequently evokes behaviors that are not observed in cooperative and equitable situations. Researchers have therefore identified accessing limited resources as a socially challenging situation that has the ability to elicit a range of prosocial, assertive, coercive, and passive behaviors (Charlesworth, 1996; Green & Rechis, 2006; Hawley, 1999, 2002).

Hawley (2002) found that young children's use of both coercive strategies (i.e., taking, thwarting, insulting, and being aggressive) and prosocial strategies (i.e., making suggestions, helping, and offering objects) in a limited resource situation was correlated with parent ratings of social competence. Green and Cillessen (2008) also found that young children used a mixture of prosocial and coercive strategies when accessing a limited resource, but they found no association with teacher ratings of social competence. Thus, there is mixed support for the possibility that combinations of prosocial and antisocial behavior are evidence of social competence. The differences between these two studies may reflect the different sources of information. Teachers may provide more

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objective assessments than do parents, but parents may observe children in a wider variety of social situations.

Because of the interdependent nature of social interactions in dyads or groups, children's strategy choices are determined not only by their own characteristics but also by the behaviors of their interaction partners (Borja-Alvarez, Zarbatany, & Pepper, 1991). Therefore, when examining the behaviors of children in limited resource situations, characteristics of the peers (e.g., aggressiveness, gender) also need to be considered. One frequently used method to study children's strategy use is the social cognitive interview. This method assesses social knowledge rather than performance by allowing children to respond to social challenges in a quiet environment away from peers (Asher & Hymel, 1981).

Researchers typically conduct social cognitive interviews to assess children's knowledge of social problem strategies in hypothetical dilemmas. An awareness of effective problem-solving strategies is seen as a defining feature of social competence (Rubin & Rose-Krasnor, 1992). Children's answers to hypothetical dilemmas are usually scored in terms of both the number of different answers that they generate and the nature and quality of their responses. In previous research, prosocial strategies such as simple requests have been by far the most frequent response. Other strategies that are less frequently used and considered less competent include waiting, coercion, demands, appeal to authority, bribery, and manipulation (Rubin & Krasnor, 1983). To date, the question of whether children use a combination of these strategies to solve social dilemmas has not been a focus of the social cognitive literature.

Researchers have used a range of social situations in social cognitive interviews, including object acquisition and peer group entry. In the former, children are asked how they would obtain an object that is being used by another child. In the latter, children are asked how they would seek entry into a group of peers who are playing together. Despite the socially challenging nature of the tasks, they may not necessarily cause children to feel conflicted. The object is not necessarily the only one available and the child's inclusion into the peer group does not require that another peer depart. Therefore, these scenarios do not necessarily require children to balance their own needs with those of others. As a consequence, children may not feel the need to propose a combination of more and less competent strategies to solve the conflict. However, evidence from the limited resource literature suggests that these situations do evoke a mix of strategies. Thus, limited resource situations may be at least as useful in studying socially competent responses as object acquisition and group entry scenarios.

Our first aim in the present study was to investigate whether a mixed strategy approach was apparent in children's knowledge of social problem solving in situations that involve limited resources. We adapted traditional social cognitive scenarios by emphasizing the limited nature of the resources presented. In the object acquisition scenario, the desirability and uniqueness of the object was emphasized (i.e., a desirable and limited resource). We adapted the traditional

peer group entry scenario by specifying the type of group entry (i.e., entering a group of unfamiliar peers playing a board game) and by highlighting the game's unique feature that only a limited number of children could play at once. The board game did not have enough positions or counters for everyone; therefore, the entering child had to usurp the place of one of the players to enter the game.

In light of the inconclusive results regarding the relation between ratings of social competence and strategy use, our second aim in this study was to examine the association between children's hypothetical social problem solving in situations involving limited resources and teacher ratings of their social competence and antisocial behavior. We hypothesized that optimal problem solving would be predicted by a combination of prosocial and antisocial strategies. Specifically, we expected children who scored high on prosocial strategies and moderately high on coercive and assertive strategies to be the most socially competent.

Other factors that influence children's choice of strategies during social cognitive interviews are the gender of the interviewee and the gender of the interaction partners. Regarding the gender of the child being interviewed, girls are more likely than are boys to propose positive solutions, tone down the conflict situation, and react less aggressively to provocation (Musen-Miller, 1993; Walker, Irving, & Berthelsen, 2002). Rubin and Krasnor (1983) found that preschool and kindergarten girls used agonistic strategies (i.e., demand, force, grab) less than boys did. Charlesworth and Dzur (1987) found that in limited resource situations girls used more verbal behavior such as negative commands than did boys, whereas boys used more physical strategies than did girls. Green and Cillessen (2008) found that boys were more physical and more verbal than girls when negotiating access to a limited resource.

Rubin and Krasnor (1983) found that girls proposed more prosocial strategies when the target children in the hypothetical scenarios were boys than when they were girls. Walker et al. (2002) also found significant gender effects. In their study, boys produced less competent solutions to peer group entry scenarios than did girls. The gender of the target child also had an influence. Preschool girls gave more competent solutions to a peer group entry situation when the peer was a girl than when the peer was a boy. Preschool boys gave less competent solutions to a provocation situation when the peer was a boy than when the peer was a girl. These findings suggest that both the gender context and the type of scenario differentially affect boys' and girls' responses to social cognitive interviews.

Our third aim in this study was to compare boys' and girls' responses to hypothetical scenarios when they faced interactions with same-sex peers only, other-sex peers only, or both same-sex and other-sex peers in mixed-sex groups. We expected girls' responses to be more prosocial in general. Because the evidence for the effects of gender context in the social cognition and limited resource literature was inconclusive, we did not have specific expectations about the effects of the gender of the target but considered these analyses exploratory.

In summary, we designed this study to investigate young children's knowledge of strategies when facing challenging social dilemmas. We explored the

pattern of strategy use, whether children's responses were related to teacher-rated social competence, and whether the genders of the target child and of the peers affected children's strategy use.

Method

Participants

Participants were 257 first-grade children (124 girls, M age = 6.2 years, SD = 0.34 years; 133 boys, M age = 6.2 years, SD = 0.37 years) in 36 classrooms from 15 schools serving middle- to upper-middle-class communities in a large urban setting. We obtained active parental consent and verbal assent from each participating child prior to data collection. The overall participation rate was 30%, with 13 children participating on average from each classroom. The ethnic composition of the sample was 95% White Australian and the remaining 5% of participants were Aboriginal, Asian, or Polynesian Australian. All participants were born in Australia and spoke English as their primary language.

Materials

Teacher ratings. We created a 26-item teacher-rating instrument using items from four existing scales about children's social initiative (Gresham & Elliott, 1990), social influence (Kohn, 1988), peer group entry behavior (Guralnick, 1993), and prosocial, aggressive-disruptive, and withdrawn behaviors (Cassidy & Asher, 1992). Teachers rated the frequency with which a child engaged in each of the 26 behaviors on a 5-point Likert-type scale ranging from 1 (*never*) to 5 (*most of the time*). A principal components factor analysis with orthogonal rotation on the 26 items yielded two factors. We deleted 5 items because they did not load uniquely on one factor, contributed only marginally to the solution, or were ambiguous for the raters. We repeated the factor analysis on the remaining 21 items and again found two factors, which explained 64% of the variance. Factor I (Antisocial Behavior) was defined by the items "disrupts," "starts fights," "demands," "aggressive," "acts up," "is mean," "hurts," and "interrupts." Factor II (Social Competence) was defined by the items "invites others," "initiates conversation," "cooperates," "shares information," "is friendly," "is helpful," and "introduces self when meeting new peers." We computed the factor scores from the final factor analyses for each child, and these formed the teacher-based antisocial behavior and social competence scores.

Social cognitive interview. We based the social cognitive interview on Rubin, Daniel-Beirness, and Hayvren's (1982) Social Problem Solving Test, Spivack and Shure's (1974) Preschool Interpersonal Problem-Solving Test, and

Mize and Ladd's (1988) enactive assessment method. We adapted two scenarios from previous studies, Object Acquisition and Peer Group Entry, for the present study. Specifically, Scenario 1 involved obtaining a highly desirable and unique toy with which an unfamiliar same-sex peer was playing; Scenario 2 involved gaining access to the same toy from an unfamiliar other-sex peer; Scenario 3 involved entering a unique board game that was being played by three unfamiliar same-sex peers; and Scenario 4 involved entering the same game when the other players were an unfamiliar same-sex peer and two unfamiliar other-sex peers. In Scenario 3, the group (including the participant) consisted of four boys or four girls, whereas in Scenario 4 the group always consisted of two boys and two girls.

In a traditional social cognitive interview, children are presented with pictures of social dilemmas and asked what the protagonist should do in each situation (e.g., Mayeux & Cillessen, 2003; Rubin et al., 1982; Spivack & Shure, 1974). In their version of this method, Mize and Ladd (1988) did not use structured questions but encouraged children to enact their responses to the scenarios with puppets. We combined elements of both approaches in the present study. The interviewer presented children with hypothetical scenarios and asked them structured questions about how they would respond if they were the protagonist. In the present study, however, we replaced line drawings with 3-dimensional miniature toys and figures that children could manipulate in each scenario. Because young children are particularly motivated by hands-on activities, this was an effective way to engage them in the task.

The materials included toys and figures that looked like boys and girls. The object acquisition scenario used a toy house with miniature furniture. It looked like a haunted house and children were told about its magical qualities. We adapted the house and the story to make the scenario unique, desirable, and appealing to both sexes. The peer group entry scenario included a person-sized colorful snakes (i.e., chutes) and ladders game. Children were told that the game could only be played by three children because there were only three positions and counters in the game. Each scenario involved different figures, with the only constant being the character that represented the interviewee.

We refined the materials on the basis of pilot testing with 12 second-grade children from one of the schools. In the pilot study, we used just eight figures across the four scenarios. As a result, children sometimes answered questions by referring to a previous scenario (e.g., "I would just ask her because I was playing with her before"). To prevent this from happening in the real data collection, we created new figures for each scenario so that children never saw the same figures twice. Only the protagonist (representing the target child) was constant. Children also had trouble understanding that a new situation had begun if the game or house was not removed along with the characters. Therefore, we alternated house and game situations so that children never received two house or two game situations in sequence.

Procedure

For each classroom, the interviewer received a list of children who had permission to participate. To minimize disruption to children's learning, the teacher determined the order in which children were tested. After obtaining assent from the child, the interviewer escorted the child to a quiet place at school to conduct the interview, either a separate room or a covered walkway outside the classroom. The interviewer kept the figures and toys hidden in a box, only showing the figures and toys that were relevant to the situation. Once the child had been introduced to the figure that represented her or him, the interviewer would bring out either another single character (for Scenarios 1 and 2) or a group of three characters (for Scenarios 3 and 4). The child was then introduced to these characters and told about the house or the game. We counterbalanced the order of the scenarios across children so that dyad scenarios did not appear systematically before group scenarios and same-sex scenarios did not appear systematically before other-sex scenarios. After each of the four scenarios, children were asked two questions, yielding a total of eight open-ended responses for coding: (a) "What do you think you could say or do so that you could have a turn with the toy [game]?" and (b) "If that didn't work, what else could you say or do so that you could have a turn?" Children's answers to both questions were recorded verbatim for later coding (see Appendix). Each interview took approximately 15 min to complete.

After completing the interview, the interviewer asked children not to discuss their experience with any peers. The interviewer explained the importance of keeping this information to themselves but told children that they could discuss the interview with their teacher or family members if they wanted to. The children were then thanked and escorted back to their classroom. The interviews took place in the middle term of the school year, and teachers completed a rating instrument for each child who had permission to participate in the study.

Coding of Open-Ended Responses

Two research assistants who did not know the goals of the study coded children's responses to the eight questions. The coders were each given a randomized and de-identified excel file containing a continuous list of all 2,056 responses. No obvious delineation was provided between each set of 8 responses. The list did not include the gender of the child making the response. We instructed the coders to code each statement into one of 13 mutually exclusive categories. These categories (or strategies) were request, extend the game, appeal to rules, exchange, wait-leave, appeal to authority, opportunistic entry, don't know, demand, manipulate, disrupt the game, verbally abuse, and threaten to physically abuse. Table 1 lists the complete set of categories and example answers for each. We based these categories on previous research (see Dodge, McClaskey, & Feldman, 1985; Rubin & Krasnor, 1983; Walker et al., 2002). Coder agreement was high

TABLE 1. Category System for the Coding of Open-Ended Answers

Category label	Category description	Example
Request	Makes a request	Can I please have a go now? You've been playing for a long time, now can I have a go?
Extend the game	Makes relevant suggestions about how the game could be extended	I could make a new counter. Could I roll the dice for you? Could I be on your team?
Appeal to rules	Appeals to rules, turn-taking, or a personal need	I have never had a chance to play any of the games. You are not sharing at all!
Exchange	Offers something to others	If I can play the game you can play with my favorite toy. Buy him an ice cream.
Wait or leave	Hovers over the game, waits to enter or leaves	Wait! After you're done can I play? Play another game.
Appeal to authority	Tells or threatens to tell the teacher/adult	Tell my mum. I will tell the teacher if you don't let me play.
Opportunistic entry	Enters the game when there is an empty spot	Play with it if no one takes notice of him. Wait until he goes away and then play with it without asking.
No response/ I don't know	Makes no response or irrelevant responses	I don't know. I like cookies.
Demand	Demands entry into the game	Let me play with it. Give it to me.
Manipulate	Manipulates others through negative emotion or distraction	It's not your game, it's someone else's, and we need it back. It's dinnertime.
Disrupt the game	Disrupts the game by removing the pieces or by physically stopping the play of the game	Take the counters from him. Stand in the middle of the game. Bust up the whole house.
Verbal abuse	Makes abusive aggressive comments	I will push you if you don't let me play. I will hit you. I hate you.
Physical abuse	Physically abuses others	Push her. Knock her over. Kick him.

(overall Cohen's $\kappa = .83$). Disagreements between the coders were resolved through discussion.

Results

Distribution and Range of Strategy Use

Table 2 shows the distribution of answers across the 13 strategies in the total sample and by gender. In the total sample, request accounted for 50% of all answers. The least frequent strategies were manipulate, demand, and verbal abuse (each < 2%). Of the 2,056 answers, 1,064 were from boys, and 992 were from girls. A chi-square test to examine whether the distribution of strategies varied by gender was significant, $\chi^2(12, N = 2,056) = 25.083, p < .014$. Boys were more likely than girls to give answers such as extend, demand, disrupt, and physical abuse. Girls were more likely than boys to give answers that appealed to authority.

TABLE 2. Raw Frequencies (*f*) and Percentages of Strategy Use for Each Category and the Composite Categories in the Total Sample and by Gender

Category	Total sample ^a		Boys ^b		Girls ^c	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Prosocial-assertive						
Request	1074	52.2	541	50.8	533	53.7
Extend	186	9.0	106	10.0	80	8.1
Rules	110	5.4	52	4.9	58	5.8
Exchange	104	5.1	60	5.6	44	4.4
Passive						
Wait-leave	184	8.9	90	8.5	94	9.5
Authority	80	3.9	30	2.8	50	5.0
Opportunistic	29	1.4	17	1.6	12	1.2
No response	158	7.7	86	8.1	72	7.3
Coercive						
Demand	16	0.8	12	1.1	4	0.4
Manipulate	15	0.7	9	0.8	6	0.6
Disrupt	43	2.1	27	2.5	16	1.6
Verbal abuse	16	0.8	6	0.6	10	1.0
Physical abuse	41	2.0	28	2.6	13	1.3
Composite categories						
Prosocial-assertive	1474	71.7	759	71.3	715	72.1
Passive	451	21.9	223	21.0	228	23.0
Coercive	131	6.4	82	7.7	49	4.9
Total	2056	100.0	1064	100.0	992	100.0

^a*N* = 257. ^b*n* = 133. ^c*n* = 124.

Because children answered eight questions (two for each of four stories), they could use a maximum of eight different strategies. In practice, children used an average of three different strategies across stories, thus using the same strategies more than once. The number of strategies did not vary by gender (boys, $M = 3.14$, $SD = 1.30$; girls, $M = 3.14$, $SD = 1.21$).

Proportions of Strategy Use

We computed a new dichotomous score for each strategy, scoring a 1 if a child used the strategy at least once across the eight responses; otherwise, we scored a 0. Means and standard deviations for these new scores are shown in Table 3. The means in Table 3 indicate the proportion of children who used each strategy at least once. As can be seen, almost everyone (97%) suggested a request at least once. More than one third of the children used extend (38%) and wait-leave (39%). About one fifth of the sample referred to rules (26%), suggested an exchange (17%), or appealed to authority (20%). Each of the remaining strategies was used by less than 10% of the children. Many children were unable to come up with a response for at least one of the eight questions (34% of boys, 35% of girls). This highlights the challenging nature of the social scenarios. A

TABLE 3. Means and Standard Deviations of Category Use in the Total Sample and by Gender

Category	Total sample ^a		Boys ^b		Girls ^c	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Prosocial-assertive						
Request	.97	.16	.97	.17	.98	.15
Extend	.38	.49	.41	.49	.34	.48
Rules	.26	.44	.22	.41	.31	.47
Exchange	.17	.38	.17	.38	.17	.38
Passive						
Wait-leave	.39	.49	.35	.48	.44	.50
Authority	.20	.40	.17	.37	.23	.42
Opportunistic	.09	.29	.11	.32	.07	.26
No response	.35	.48	.34	.47	.35	.48
Coercive						
Demand	.05	.23	.02	.28	.02	.15
Manipulate	.04	.19	.03	.17	.05	.22
Disrupt	.09	.29	.12	.33	.06	.25
Verbal abuse	.04	.20	.05	.21	.04	.20
Physical abuse	.09	.29	.12	.33	.06	.25

^a $N = 257$. ^b $n = 133$. ^c $n = 124$.

multivariate analysis of variance on the 13 proportions with gender as the independent variable yielded no significant gender difference in strategy use, $F(13, 243) = 1.205, p = .276$.

Composite Categories

After careful examination of children's answers, we grouped the 13 strategies into three broader categories: prosocial-assertive, passive, and coercive answers. We then determined for each child what percentage of his or her total number of answers fell into each broader category (summing to 100% for each child). The averages of these percentages in the total sample and by gender are in the lower panel of Table 2. On average in the total sample, 72% of children's answers were prosocial-assertive, 22% were passive, and 6% were coercive. As can be seen in Table 2, this breakdown did not vary by gender.

Combinations of Composite Categories

To examine patterns in strategy use, we determined whether children used certain combinations of composite categories more than others. The three composites yielded the seven possible combinations listed in Table 4. Table 4 also lists the proportions of children who used each combination. More than 50% of participants used a combination of prosocial-assertive and passive strategies. Almost one fourth (23%) used prosocial-assertive strategies only. A small percentage (6%) used a combination of prosocial-assertive and coercive strategies. Only one child (a boy) used coercive

TABLE 4. Distribution of Combinations of Composite Categories in the Total Sample and by Gender

Combination	Total sample ^a		Boys ^b		Girls ^c	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Prosocial-assertive only	60	23.3	34	25.6	26	21.0
Passive only	0	0.0	0	0.0	0	0.0
Coercive only	1	0.4	1	0.8	0	0.0
Prosocial-assertive and passive	144	56.0	70	52.6	74	59.7
Prosocial-assertive and coercive	16	6.2	9	6.8	7	5.6
Passive and coercive	1	0.4	1	0.8	0	0.0
All three types of strategies	35	13.6	18	13.5	17	13.7

^a*N* = 257. ^b*n* = 133. ^c*n* = 124.

strategies exclusively. No children used passive strategies exclusively. As shown in Table 4, the distribution of category combinations was identical for boys and girls.

Effects of Gender Context on Composite Category Use

To determine the effect of context on composite category use, we conducted a 2 (participant gender) \times 2 (story type: same-sex vs. mixed-sex) analysis of variance on each of the three composite categories, with story type as a repeated measures factor. We found a significant interaction for prosocial–assertive, $F(1, 255) = 5.54$, $p < .05$. Post hoc testing showed that girls suggested prosocial–assertive strategies significantly more often when the scenario involved only other girls ($M = 0.74$, $SD = 0.23$) than when it involved only another boy or both sexes ($M = 0.70$, $SD = 0.29$), $t(123) = -2.097$, $p < .05$. We did not find any other significant results for the passive or coercive categories.

Associations Between Teacher Ratings and Composite Category Use

We computed Pearson correlations between the two dimensions of the teacher measure and the composite category scores. These correlations, in the total sample and by gender, are shown in Table 5. The three composite category use scores correlated negatively with one another in each case. This result is partially due to the fact that they sum to 100%.

TABLE 5. Correlations Between Composite Category Scores in the Total (200 < N < 257) and by Gender (100 < N < 133)

Category	1	2	3	4	5
Total sample					
1. Prosocial–assertive		-.752***	-.543***	.000	-.015
2. Passive			-.145*	-.165**	-.040
3. Coercive				.209**	.073
4. Antisocial					-.007
5. Social competence					
By gender ^a					
1. Prosocial–assertive		-.819***	-.413***	.175	.067
2. Passive	-.705***		-.184*	-.229*	-.147
3. Coercive	-.622***	-.116		.066	.118
4. Antisocial	-.100	-.105	.255**		.078
5. Social competence	-.072	.050	.046	-.068	

^aGirls above the diagonal, boys below the diagonal. Correlations in bold type were significantly different between girls and boys ($p < .05$).

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

In the total sample, teacher-rated antisocial behavior correlated positively with children's use of coercive strategies and correlated negatively with passive strategies. These associations were further qualified by gender: The positive correlation of antisocial behavior with coercive strategies occurred only for boys, whereas the negative correlation of antisocial behavior with passive strategies occurred only for girls. There were no significant correlations with the social competence dimension.

We also tested whether each correlation in Table 5 differed significantly by gender; correlations that differed significantly for boys and girls are in bold type in Table 5. Only the association between teacher-rated antisocial behavior and prosocial-assertive interview answers differed significantly by gender. This correlation was positive for girls ($r = .18$) but negative for boys ($r = -.10$).

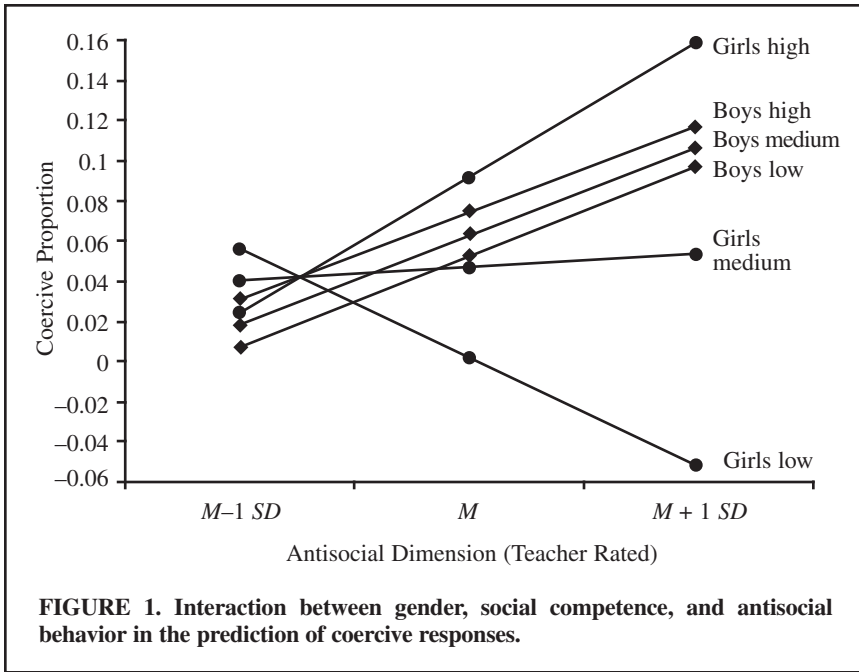
Last, we ran three regressions to predict children's use of prosocial-assertive, passive, and coercive strategies from teacher-rated antisocial behavior, teacher-rated social competence, and their interaction. To test for moderation by gender, we entered the interactions of these effects with gender. (The main effect of gender was also included). Thus, we examined whether strategy use could be predicted from gender, social competence, antisocial behavior, and all possible interactions among these three effects.

The model was significant for the prediction of coercive strategies and explained 9.7% of the variance, $F(7, 241) = 3.72, p < .001$. We found a significant main effect for antisocial behavior, $\beta = .279, p < .001$. Consistent with the correlations, higher teacher ratings of antisocial behavior predicted more frequent coercive answers. Gender and social competence moderated this effect, as indicated by the significant three-way interaction between gender, antisocial behavior, and social competence, $\beta = .230, p < .009$. We conducted post hoc probing of this interaction following Aiken and West (1991).

As Figure 1 shows, the effect of antisocial behavior on coercive responses varied by social competence for girls but not for boys. For boys, more antisocial behavior predicted more coercive responses regardless of their social competence. For girls with average social competence, there was no effect of antisocial behavior on coercion. For girls with low social competence, the effect of antisocial behavior on coercive responses was negative. For girls with high social competence, the effect of antisocial behavior on coercive responses was positive. Antisocial girls with low social competence made the fewest coercive responses of all children. Antisocial girls with high social competence made the most coercive responses.

Discussion

In this study, we examined children's open-ended responses to hypothetical dilemmas that involved obtaining access to limited resources from peers. The



social context of these situations consisted of one or three peers, and we manipulated the gender composition of the peer context to be either same-sex, other-sex, or mixed-sex. The more than 2,000 answers of the participants in response to eight stories were captured by an array of 13 strategies that we further reduced to three supercategories. Confidence in the validity of our method was derived from the distribution of these categories (mostly prosocial or assertive, with fewer passive and coercive answers) and from meaningful correlations of these scores with each other and with teacher ratings. Children often used a range of strategies. If they mixed strategies, they tended to combine prosocial–assertive with passive strategies. Overall, the answer patterns of boys and girls were quite similar, although the distribution of answers differed by gender and in the correlates of antisocial behavior. In addition, girls were more responsive to the gender context of the social situations than were boys.

This study increased the social challenge of the hypothetical scenarios by emphasizing the limited nature of resources and roles. We asked children to tell us how they would obtain a desirable object from an unfamiliar peer and how they would negotiate a role for themselves when entering a peer group. In addition, our analyses addressed the extent to which children used combinations of strategies. The results showed that children use a mix of strategies, even when responding to hypothetical scenarios. However, we found no clear evidence that many children used a combination of coercive and prosocial strategies; rather,

children were more likely to use a combination of prosocial–assertive and passive strategies. It is possible that the nature of our interviews increased the likelihood that children would respond in a socially desirable way. There is also a difference between abstract cognitions assessed with social dilemmas and actual interactions with peers. Despite this drawback, examining how children combine strategies is important for understanding how children find balance between their own needs and those of their peers.

Because researchers frequently use problem-solving scenarios to assess children's social competence at school, another of our goals in this study was to examine the associations between teacher ratings and strategy use. Teacher ratings of antisocial behavior were positively related to coercive strategies for boys and negatively related to passive strategies for girls. These findings are consistent with the literature (e.g., Cassidy & Asher, 1992; Weir & Duveen, 1981) and corroborate the validity of our measures. However, teacher ratings of social competence and antisocial behavior were not related to strategy use. This is inconsistent with Hawley (2002), who found relations between social competence and both prosocial and coercive strategies. Perhaps what teachers see as competent in the structured classroom setting may not map onto the behaviors and skills that children need to succeed with peers when they are away from adult supervision. A traditional measure of classroom-based social competence may not be the best predictor of children's behavior in specific interactions with peers.

We designed the present study to determine whether story context influenced children's responses. We compared children's responses to situations with same-sex peers, an opposite-sex peer, and groups containing both same and opposite-sex peers. Gender context influenced girls more than it did boys: Girls were more likely to suggest prosocial–assertive strategies when faced with other girls than they were when faced with boys only or with a mixture of boys and girls. This result is consistent with Walker et al. (2002), who suggested that same-sex interactions may evoke more competent responses because young children have more experience with same-sex peers. However, Rubin and Krasnor (1983) found that girls suggested more prosocial strategies with boys than with girls. We expect that subtle differences in the nature of the tasks between those studies and our own are responsible for these differences. For some tasks, girls may suggest more prosocial strategies with other girls than with boys. In other tasks, girls may decide that they need to be more prosocial with boys than they would be with girls to achieve their goals. This may be particularly true in situations in which boys have the opportunity to dominate (see Green, Cillessen, Berthelsen, Irving, & Catherwood, 2003).

The frequency data revealed gender differences in children's social problem solving that were consistent with previous findings (Rubin & Krasnor, 1983; Walker et al., 2002). Boys used coercive strategies more than girls, and girls appealed to authority more than boys. Aside from these differences, boys and girls responded very similarly when we examined whether a child had used a

strategy at least once. Ramsey and Lasquade (1996) also found no gender differences in the entry strategies of preschool children. It is noteworthy that we found relatively few gender differences in our study. More gender differences may have emerged if we had used a wider range of problem situations. It is also possible that girls and boys of the age group of this study are similar in their knowledge of social problem-solving strategies and that behavioral differences only emerge under certain conditions, such as real-life competition (Leaper, 1994). Hyde (2005) emphasized that contexts can increase or diminish gender differences. More research is needed to integrate the mixture of gender effects that are found within and between studies.

One of our most interesting findings was the three-way interaction between gender, antisocial behavior, and social competence in the prediction of coercive responses. For boys, the effect was straightforward: Coercive responses were correlated with being antisocial irrespective of social competence. Thus, being more or less coercive was not a correlate of social competence for boys. For girls, however, the correlation between coerciveness and social competence was positive, at least for those girls that teachers rated as high on antisocial behaviors. That is, if the highest rated antisocial girls were also highly coercive, teachers perceived them as socially competent. However, if those girls did not offer coercive strategies, teachers perceived them as socially incompetent. Thus, being coercive is not necessarily a bad thing for girls. The combination of skill and a certain degree of coerciveness is reminiscent of the controversial character of perceived popular girls, who are both manipulative and socially successful at the same time (or are socially successful because they are manipulative). Perhaps one of the best strategies for girls is to use a medium level of coercion; it is clear that being entirely noncoercive does not bode well for their social success with peers.

In the present study, we tested a method of assessment that combined the developmentally sensitive practice of enactive assessment (with hands-on props) with a more traditional interview procedure. This method was effective in eliciting a range of strategies: Children used three different strategies on average. Although for most children one of these strategies was request, children were otherwise quite creative in their problem solving. A number of children used group-centered strategies by suggesting how they could extend the game so that they themselves could be included. This is a highly competent strategy that tends to vary by gender. Walker et al. (2002) found that this was the third most frequently used strategy, but only for girls entering a peer group. In our study, it was the second most frequently used strategy for both genders, but was more commonly used by boys than by girls.

Children in our study used passive strategies such as waiting more often than did the participants in Walker et al.'s (2002) study, but they indicated less often that they did not know what to do. Even if we removed requests from our coding list, only 16% of responses fell into the *don't know* category, compared with 43% in the Walker et al. study. The difference could be due to the interactive nature of our

scenarios, which may have helped children to visualize the situation and access their solutions. A direct comparison of the two assessment techniques should determine whether this interpretation is correct. Despite this caveat, our method seems to have potential for increasing the number and range of children's responses.

One limitation of the present study is that we did not include a control group of children who were interviewed using enactive or traditional methods. Another limitation is that we only included scenarios that tested children's ability to approach another peer or group; however, a broader range of situations could be covered. Furthermore, teacher reports of social competence and antisocial behavior may have been too general to predict children's strategy use in a hypothetical situation. Future researchers should include other measures of social competence. For example, peer nominations of acceptance and popularity (e.g., Cillessen & Rose, 2005) are measures of social competence that may be related to children's reasoning about difficult social situations.

Understanding the social world of children remains a fascinating area of research, for both fundamental and applied reasons. Children's social cognitions about challenging situations influence and are influenced by their current and future engagement in the social world. In this study, we used a relatively new method to assess this understanding. Gender differences and social context effects are promising areas for future research, suggesting that children's responses may reflect not only stable individual differences but also the demands of the immediate social situation.

AUTHOR NOTES

Vanessa A. Green recently accepted an appointment as associate professor in the Jessie Hetherington Centre for Educational Research at Victoria University of Wellington, New Zealand. She is currently a lecturer in child development in the Faculty of Education at the University of Tasmania, Australia. Her research interests include peer relationships, the development of social competence, bullying, gender role development, and developmental disabilities. **Antonius H. N. Cillessen** is a senior research scientist in the Department of Psychology at the University of Connecticut and professor and chair of developmental psychology in the Behavioral Science Institute at the Radboud Universiteit Nijmegen, The Netherlands. His research interests include peer relationships and peer interaction in middle childhood and early adolescence, development of aggression and antisocial behavior, developmental social psychology (small groups and interpersonal perception), and research methods for developmental psychology (sociometric methods, social network analysis, observational research, longitudinal design and analysis). **Ruth Rechis** is a planning and evaluation specialist at the Lance Armstrong Foundation in Austin, Texas. Her research interests include understanding children's and young adults' cognition, motivation, and emotions as they apply to cancer survivors from the point of diagnosis and beyond. She is also interested in evaluation and research techniques and methodologies. **Meagan M. Patterson** is an assistant professor of psychology and research in education at the University of Kansas. Her primary research interest is in the development of personal identity and attitudes regarding social group membership. **Julie Milligan Hughes** is a doctoral candidate in developmental psychology at the University of Texas at Austin. Her primary research concerns the effects of children's understanding of racial discrimination on their racial attitudes and racial-political reasoning.

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APPENDIX

Transcript of Interview Procedure for the Hypothetical Social Problem Scenarios

Overall First Statement

We want to know how children think about things. I have got some characters and toys and I am going to tell you some stories about them. The stories are not finished and I would like you to help me finish them. I want you to tell me what you would do or say in each story. OK. Now listen and watch carefully. First of all I would like to introduce you to (child's name). He/she is (child's age) and goes to (child's school) and is in (child's grade).

The experimenter then gave the child the character (which they kept for all four stories).

Example Scenarios for the Toy House and the Game

Object Acquisition Same-Sex Scenario (Toy House)

The experimenter placed the house in front of the child. The experimenter said,

This is a very special house, as it has an arrow on the roof and a big star on the back door. It is a magic house that all the children want to play with. Look inside, there are all sorts of objects, a television, a bed and a bath.

A same-sex character was placed in front of the child. The experimenter said, "This other child is the same age as you. She/he has been playing with the toy for some time. What do you think you could say or do so that you could have a turn with the toy?"

The experimenter recorded the first response.

The experimenter then continued with, "If that didn't work, what else could you do or say so that you could have a turn with the toy?"

The experimenter then recorded the second response.

Peer Group Entry Opposite-Sex Scenario (Game)

The snakes and ladders game was placed in front of the child. The experimenter said, "This is a very special and unusual game of snakes and ladders, because look there are only three positions and three counters, so only three children can play at one time." The experimenter then placed three figures around the game and said,

This boy and two girls [or girl and two boys, depending on the sex of the child] are all [insert age of child], and suppose you have all been given the chance to play with this unusual game, and the others have been playing with it for a long time. What would you do or say to get a turn with the game?

The child's first response was recorded, and then the experimenter said, "If that didn't work, what else could you do or say so that you could have a turn with the game?"

The experimenter recorded the second response.

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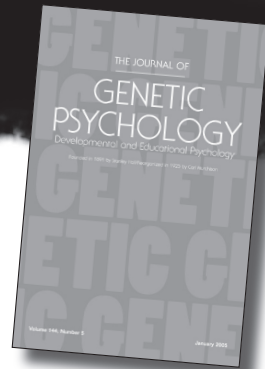
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