Theory of Mind in Preadolescence: Relations Between Social Understanding and Social Competence

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Abstract

Theory of mind (ToM) underlies the ability to attribute mental states to people as a way of understanding their social behaviour. Although ToM development is an active area of research, most empirical investigations focus on infants and young children. Accordingly, the purpose of this study is to assess ToM in preadolescents and to determine whether individual differences in this mentalizing ability relate to social competence and relate differently for girls and for boys. It was hypothesized that preadolescents' ability to understand thoughts and emotions in others would be associated with their social competence. 128 preadolescents (64 girls; 64 boys; mean age 11–9) completed peer social competence ratings, a vocabulary task, and participated in a social understanding (ToM) interview. Teacher ratings of the participants' social competence were also collected. Based on composite ToM scores, results indicated positive associations between ToM and (a) peer ratings of social-interaction skills, (b) general vocabulary ability. Separate gender analyses revealed significant effects. Results are discussed in relation to (1) individual differences in social understanding and social competence and (2) effects of socio-cultural context.

Keywords: Theory of mind; social competence; preadolescents; gender

Over the past few decades, the question of whether links exist between children’s social thought and their social behaviour has been of great interest to social scientists. Most recently, this question has been investigated in the research area of ‘theory of mind’ (ToM). Research in this area assumes that children’s theory of mind underlies their ability to attribute mental states to people in order to make sense of the social world. One important domain in which this mentalizing ability can develop is that involving peer relations. In an effort to conceptualize social understanding within preadolescence, the research reported here investigates the link between the ability to interpret ambiguous social situations and to interact effectively with peers.

One of the main reasons why the relations between social thought and social behaviour remain unclear is that the constructs of social understanding and social competence are both complex. Within the framework of ToM, social understanding is defined as the ability to conceptualise mental states such as beliefs, desires, and
intentions and to use these constructs to interpret and predict the actions of others. Some ToM researchers agree with the social cognitive theorists’ view that the ability to understand self and others develops within the context of social relations and depends on complex, reflexive reasoning skills (Astington, 1996; Damon & Hart, 1988; Dunn, 1988; Selman, 1980; Wellman, 1990). However, the issues surrounding how this reasoning ability develops, what it consists of, and how it relates to social action lack consensus (Brooks-Gunn, 1989; Harter, 1993).

Similarly, the construct of social competence remains a problem for researchers. Although they agree that it is a concept that reflects a desirable end result of child development, there is ongoing debate surrounding the content of this competence, based on assumptions about the nature of childhood and about the personal qualities that ought to be fostered (see Schaffer, 1996, for a review). For example, definitions include one or more of the following: peer popularity, the ability to engage effectively in social interaction, specific social skills such as friendship formation, and the attainment of relevant social skills.

**Social Understanding and Social Competence in Preadolescence**

As other researchers have noted (Astington & Jenkins, 1995; Dunn, 1995), the concept of social understanding needs to be differentiated into various aspects, such as the understanding of beliefs and of emotions in others. Furthermore, research has shown that these various dimensions of social understanding may have different developmental trajectories. For instance, in a sample of preschoolers, Dunn (1995) found that false belief understanding related to negative ratings of school and sensitivity to teacher criticism but emotion understanding did not. If social understanding continues to differentiate in preadolescence into various capacities, such as conceptual role-taking, empathetic sensitivity, and person perception (proposed by Chandler, 1987 and Wellman, 1990), these aspects of social understanding may have different social-emotional correlates. Thus, examination of the links between various dimensions of social understanding and social competence may suggest that different aspects of social understanding have different implications for the emotional and social lives of the preadolescent.

Chandler (1987) has proposed that a multidimensional approach towards understanding the preadolescent’s mind may help to illustrate the social-cognitive and emotional processes that occur during preadolescence, when a shift from a realistic to a constructivistic epistemology occurs (e.g., Chandler, 1987; Erwin, 1993; Lalonde & Chandler, 1997). More specifically, Chandler suggests that the investigation of conceptual role-taking, empathetic sensitivity and person perception may provide a clearer picture of how preadolescents infer mental states in others. That is, the examination of these three constructs may help to explain the social-cognitive processes underlying social understanding during preadolescence. Moreover, these three abilities depend on an ability to envision multiple perspectives or alternate realities (e.g., Case et al., 1996; Selman, 1980). A comprehensive assessment of social understanding in preadolescents needs also to include this complex mentalizing ability (Johnston, 1988). Thus, in the study reported here, social understanding is comprised of four components: conceptual role-taking, empathetic sensitivity, person perception, and alternative thinking.

Research findings on the link between social-cognitive abilities and social relations in preadolescents have been contradictory and inconclusive. Social-cognitive
processes such as conceptual role-taking, empathetic sensitivity and person perception have all been found to be related to both teacher and peer ratings of positive social behaviour and peer acceptance (Ford, 1982; Pellegrini, 1985). In contrast, other studies have failed to find a relation between various social-cognitive abilities and sociometric status (Matthews & Keating, 1995; Rubin, 1972), suggesting a need for further study.

These studies and most other literature on preadolescent social cognition do not refer to ToM, despite conceptual similarities between the research paradigms of social cognition and ToM (Flavell & Miller, 1998). However, studies of younger children have shown positive links between the ToM ability of understanding false belief and: (1) positive teacher-ratings of social-emotional skills (Lalonde & Chandler, 1995), (2) skilled aspects of pretend play (Astington & Jenkins, 1995), and (3) peer ratings of likability or popularity (Dockett, 1997). In addition, studies have shown a link between positive peer relations and emotion understanding (Donelan-McCall & Dunn, 1996; Werner & Cassidy, 1997). Within the realm of ToM research, the possible links between preadolescents’ understanding of mental states and their social relations remain unexplored.

**Gender Issues**

Most studies on social cognition and on ToM have not addressed issues of gender, or at least have not specifically aimed to investigate gender-related differences or patterns but only conducted post-hoc statistical tests. A socio-cultural approach to ToM (Vinden & Astington, in press) suggests that individual differences in social understanding may reflect cultural differences. Conceptualizing gender as a social category suggests that boys and girls grow up in different cultures (Edwards, 1993). Thus, one might expect gender differences in ToM, particularly during preadolescence when, according to the gender intensification hypothesis (Hill & Lynch, 1983), it is predicted that gender differences increase because of increased pressure to conform to traditional gender-role stereotypes.

Although peer relations play a large role in the preadolescent’s social-cognitive and affective development (e.g., Adler & Adler, 1998; Sullivan, 1953), teachers also continue to affect the preadolescent’s inner world (e.g., Pekrun, 1990). Both teachers and peers may convey gender-role stereotypic expectations which may influence preadolescents’ own thinking processes and self-views (Harter, 1996; Maccoby, 1998). Certainly, many gender-related differences reported in the literature on social behaviour and social cognition in preadolescence are in line with traditional gender-role stereotypes. In general, the majority of studies report that (1) girls are rated as more socially competent and are perceived by their teachers to be more compliant and prosocial than boys, who are seen to be more aggressive and (2) girls score higher on social perspective-taking and empathy tasks whereas boys score higher on nonsocial spatial perspective-taking tasks (Dodge & Feldman, 1990; Unger & Crawford, 1992).

Gender effects are little mentioned in the ToM literature and when they are, nonsignificant results are usually reported. However, Hughes and Dunn (in press) found among preschoolers that girls used mental state verbs more frequently and with more sophistication than did boys, and among adults, females were, in one study found to be better able than males to infer mental states from photographs of eyes (Baron-Cohen, Joliffe, Mortimore, & Robertson, 1997).
The Present Study

Although there exists a vast array of research on social cognition and social relations in preadolescence, these studies do not specifically speak to the possibility that (1) a ToM theoretical framework may be used to explain individual differences found between social understanding and social competence and (2) gender-related differences and linkages may exist between the two constructs. Thus, this study will address these two issues by examining the relations between social understanding and social competence in preadolescence, including an examination of gender patterns. We focus on the following abilities: the ability to attribute mental states to others including the ability to understand multiple perspectives (conceptual role-taking), the ability to recognize and understand emotional states (empathetic sensitivity), the ability to understand the concept of a person as a psychological being with stable personality characteristics (person perception) (Chandler, 1987), and the ability to imagine multiple perspectives and alternatives (Johnston, 1988).

Social understanding was assessed by means of a story-telling interview. Past studies have often measured various aspects of interpersonal understanding through the use of narratives followed by written questions as in a semi-structured interview (e.g., Selman, 1980). However, most studies from earlier social-cognitive literature have either failed to incorporate the concept of ambiguity or uncertainty into the stories (e.g., Selman, 1980) or have failed to ask children to justify their answers (e.g., Hatcher et al., 1990). Studies that have used ambiguous scenarios (e.g., Dodge & Frame, 1982), describe situations that deal with provocation as opposed to more common, everyday classroom experiences. Thus, based on Chandler’s (1987) conceptualization of ToM in preadolescence, the present study used ambiguous social vignettes followed by questions to assess the understanding of particular aspects of other’s mental states. The coding scheme was devised from a ToM perspective in order to quantify preadolescents' mentalizing abilities.

Social competence was defined in terms of both effective social-interaction skills and peer popularity. To assess effective social-interaction skills, children were asked for judgements of their peers’ competence in handling hypothetical social situations. To assess peer popularity or peer likability, that is, the extent to which peers are liked by others within classroom, the peer likability sociometric scale was used (see Matthews & Keating, 1995). In addition, social competence was also assessed by teacher ratings of global social competence, which includes both social-interaction skills and peer popularity (see Harter, 1985). This study aims to answer the following questions: (1) Does ToM relate to social competence in preadolescence, and (2) Does it relate differently for girls and boys? It was hypothesized that individual differences in preadolescents’ ability to understand the thoughts and emotions of others would be related to their social competence. In addition, gendered differences were predicted to exist within the constructs of social understanding and social competence.

Method

Participants

Participants were 128 sixth-grade children drawn from six Roman Catholic elementary schools in a rural area of Ontario, Canada. There were 64 girls, mean age 11
years 9 months (range 10-9 to 12-5) and 64 boys, mean age 11–9 (range 11–3 to 13–2). The sample was 98% white Euro-Canadian and 97% had English as their first language. The study also included the children’s teachers, five women and three men.

**Measures**

**Social Understanding (ToM).** Two brief vignettes of social situations were created to assess preadolescents’ ToM. The stories were socially ambiguous because past research has found interpretations of ambiguous social situations to be an effective method of eliciting children’s representational understanding of mind (Dodge & Frame, 1982; Levinson, 1995). Thus, this task was developed in the attempt to strike a balance between projective, open-ended narrative tasks (e.g., Fox, 1991; Selman, 1980) and more forced-choice, experimental tasks (e.g., Baron-Cohen et al., 1997). One story, referred to below as the Nancy/Margie story, involved three girls, and the other, referred to as the Kenny/Mark story, involved three boys. Each story was followed by questions to measure the specific concepts of conceptual role-taking, empathetic sensitivity, person perception, and alternative thinking (see Appendix). Two comprehension questions were asked before the main questions, to control for memory and comprehension effects. If the comprehension questions were answered incorrectly, the researcher re-read the story to the child.

**Coding Responses to Social Understanding Stories**

A coding scheme was developed to obtain a score for ToM or understanding of mental states and feelings in others (see Bosacki, 1998, for complete coding guide). The questions for each story were grouped into four categories representing the constructs of conceptual role-taking (section A), empathetic sensitivity (section B), person perception (section C) and alternative thinking (section D) (see Appendix). The coding framework was based on various schemes in the social-cognitive and ToM literature (Flapan, 1968; Happé, 1994; Hatcher, Hatcher, Berlin, Okla, & Richards, 1990; Homer & Astington, 1995; Yuill, 1992). It represents levels of interpersonal understanding based on increasing cognitive complexity of the responses. That is, the coding of the responses reflects the child’s ability to understand the psychological world of the other, moving from simple, obvious (‘surface’) characteristics to the interaction of several different abstract psychological concepts and the integration of multiple and paradoxical perspectives.

Coding of responses to the conceptual role-taking and empathetic sensitivity questions, can be illustrated by scoring responses to the question ‘Why did Nancy and Margie move off together in the direction of the new girl?’ (question 3a). Zero points were given for ‘I don’t know/ no answer’ or tangential responses, 1 point for responses that included behavioural or situational descriptions (e.g., ‘To go play on the swings’), 2 points for responses that included a mental state, or acts or communication or perception (e.g., ‘Because they wanted to make friends with her’), 3 points for responses that included an integration of two or more mental states and related them to each other in a coherent manner such as moral judgements or recursive psychological statements (e.g., ‘Because I’ve seen kids on the playground who look lonely and you know don’t want them to feel bad, so you try to be their friend because you know it’s the right thing to do’). Only one score was given per response, so that participants were given credit for their ‘best’ answer. That is, if a participant
gave a response that appealed to both physical/behavioural and mental states, the justification would be scored as mental state. Thus, the total score represented a best estimate of the participant’s ability to understand social situations.

Responses to the person perception and alternative explanation questions were scored similarly; (i.e., tangential response = 0 points, situational/behavioural = 1 point, psychological = 2 points and integrated psychological = 3 points). Regarding person perception (Section C), responses to the question used to assess how children conceptualize a person (i.e., ‘Choose a character in the story and describe her/him—what kinds of things can you think of to describe [character’s name]?’) was coded in terms of complexity ranging from behavioural descriptions to complex psychological comparisons. Children received a score of zero if they responded with ‘I don’t know’. A score of 1 was given if the response included a reference to (a) a behavioural or physical description such as ‘She was blonde’ or ‘He was good at soccer’ or (b) a stereotypical trait phrase or clichés such as ‘She was nice’, or ‘He was bad’. A score of 2 was given if the description included a reference to (a) a psychological trait such as ‘She was thoughtful’ or ‘He was shy’, (b) intentional states such as ‘She wants to be nice’, (c) combination of stereotypical personality clichés and trait characteristics such as ‘nice and popular’, or (d) simple unelaborated contradictions such as, ‘He might be nice but might not be.’ A score of 3 was given if the response referred to (a) self-reflexive or recursive mental states such as ‘She thinks she’s conceited’ or ‘He knows that he’s mean’ or (b) complex psychological and/or elaborated contradictory traits such as ‘He was both nice and mean because a part of him wanted to be friends with Tom but a part of him wanted to make fun of him’ or ‘She was one of those people who expect and assume that things will happen’ or (c) psychological comparisons such as ‘She was much more sensitive than the average person’.

Responses to the question that assessed children’s ability to envision multiple perspectives (Section D—Alternative Explanations), ‘Is there another way that you can think about this story?’, were coded according to their level of complexity, ranging from behavioural descriptions to complex psychological comparisons. Children received a score of zero if their responses were ‘No’, ‘I don’t know’ or a simple ‘yes’ with no explanation (e.g., ‘Yes but I can’t explain it’), or if the ‘Yes’ response was followed by a repeat of the response to question 3a from the conceptual role-taking section. In other words, the child would say yes, there is another way to think about the story but would only describe their original interpretation. A score of 1 was given if the response was ‘Yes’ and was followed with a brief explanation with reference only to physical/behavioural descriptions (e.g., ‘Maybe they have sleepy eyes’). A score of 2 was given if the response was ‘Yes’ and was followed by a brief explanation with reference to an intentional action or a mental state (e.g., ‘Maybe they wanted to make friends with the new girl’; ‘They are going to make fun of her or tease her’). Finally, a score of 3 was given if the response was ‘Yes’ and was followed by an alternative explanation referring to the concept of intention and one or more references to mental states (e.g., ‘Maybe they made a different plan to go over and just laugh and ignore her because they might have thought that she wasn’t a good friend’).

Cronbach’s alpha for each subscale of each story (Nancy/Margie; Kenny/Mark) were as follows: (A) conceptual role-taking, .33 and .44 (5 items, maximum score = 9); (B) empathetic sensitivity, .61 and .52 (2 items, maximum score = 6); (C) person perception (1 item, maximum score = 3) and (D) alternative explanation (1 item, maximum score = 3).
The items for each story were summed resulting in a maximum total score of 21 for each story, with a high score representing a more sophisticated understanding of mental states and feelings (i.e., a more complex ToM). Cronbach’s alpha for each story revealed alpha coefficients of .67 and .69 for the Nancy/Margie story and Kenny/Mark story respectively.

Thirty-eight percent of the transcripts were coded by a second, independent coder. Inter-rater reliability analysis showed that the average Cohen’s kappa for the Nancy/Margie story was .98 (range from .90–1.00) and the Kenny/Mark story was .99 (range .95–1.00). All discrepancies were resolved by consultation between the coders.

To obtain further internal consistency data, intercorrelations were calculated among the four subscales within each of the stories. Significant ($p < .05$) positive correlations existed among all of the subscales. For the Nancy/Margie story, intercorrelations ranged from .19 (conceptual role-taking—alternative explanation) to .58 (empathetic-sensitivity—conceptual role-taking). For the Kenny/Mark story, intercorrelations ranged from .18 (conceptual role-taking—person perception) to .72 (empathetic sensitivity—conceptual role-taking).

Given the parallel story and question structure, it was expected that the four subscales of the two stories would be related. Between-story correlations of the subscales showed the four subscales to be significantly related ranging from $r(126) = .20$, $p < .05$ (conceptual role-taking subscales) to $r(126) = .42$, $p < .001$ (empathetic sensitivity subscales). The correlation between the two total scores (sum of sections A, B, C, D) was $r(126) = .60$ ($p < .001$).

To assess for story order bias, paired $T$-tests were conducted and no order effects were found. Also, to assess for story gender bias (i.e., girls and boys performing better on the stories that involved characters of the same gender), paired $T$-tests were conducted within each gender. Although there was no same-gender bias, the scores on the Nancy/Margie story were significantly higher than the Kenny/Mark story ($p < .001$) for both girls (Nancy/Margie $M = 15.90$, $SD = 2.23$, Kenny/Mark $M = 13.69$, $SD = 2.09$, $t(63) = -4.51$) and boys (Nancy/Margie $M = 13.93$, $SD = 3.43$, Kenny/Mark $M = 12.06$, $SD = 3.52$, $t(63) = -4.79$). These results show that a gender-related response bias existed irrespective of the participants’ gender, suggesting that perhaps the Nancy/Margie story was better able to tap into children’s understanding of ambiguous social situations than the Kenny/Mark story. Alternatively, the high Nancy/Margie score could reflect the fact that both girls and boys give more complex mentalistic interpretations of girls’ behaviour in comparison to that of boys.

**Social Competence**

Three measures were used to assess social interactions with peers: (1) Harter’s (1985) Teacher’s Rating Scale of Child’s Actual Behavior, (2) a modified version of the Social Competence Nomination Form (SCNF) (Ford, 1982), and (3) a rating scale sociogram to assess peer likability (Matthews & Keating, 1995).

(1) **Teacher’s Rating Scale of Child’s Actual Behavior (TRS).** Teachers rate the child’s actual behaviour in each of five specific domains. For example, an item reflecting teachers’ perceptions of a child’s social competence is: ‘This child finds it hard to make friends’ OR ‘For this child it’s pretty easy.’ Teachers first decide which statement best describes the child, then they rate it as either really true or sort or true. Harter (1985) found that only three items per subscale were needed to obtain
highly reliable judgements. In the present paper, results for only the social subscale are reported (3 items, possible range, 3 to 12). The reliability (Cronbach’s alpha) for the TRS social subscale was .92.

(2) Peer-Rated Social-Interaction Skills (SCNF). Research shows that peer ratings offer a more accurate assessment of students’ actual social-interaction skills than those of teachers or other adults (Harter, 1996). A slightly altered version of Matthews and Keating’s (1995) adapted version of Ford’s (1982) Social Competence Nomination Form (SCNF) was used to obtain a peer-rated measure of social-interaction skills. This paper and pencil measure consists of three brief vignettes consisting of social situations on which students rate their peers (on a 5-point scale, maximum score = 15) on the basis of their relative competence in the social problem tasks presented in the stories. The higher the score, the greater the ability to interact effectively in a social situation. The vignettes include (a) organizing a student play, (b) representing the class in expressing sympathy to an ill school staff member and (c) helping peers with personal problems. The SCNF has been extensively used with preadolescent samples and is considered to be a highly reliable and valid measure of social competence with high internal consistency reliabilities. In the present study, the SCNF was found to have high internal consistency as demonstrated by Cronbach’s alpha (for 3 items, .97), high within-child intercorrelations, ranging from .91 to 1.00 and high within-child item-total intercorrelations (.97, .97 and .96 for items a, b, and c respectively). Given this high internal consistency, to allow between-class comparisons of the scores and to obtain a total peer-related score of social-interaction skills, the peer ratings were transformed to standardized z-scores and a composite score was created (sum of a, b, and c).

(3) Peer-Rated Likability (PRLK). Given researchers’ claims that a rating sociogram is the least problematic and most appropriate method of assessing peer status (Matthews & Keating, 1995), a more global measure of social competence was assessed by a rating scale sociogram. Each participant was given a class list and asked to rate each other student participant in the class on a 5-point scale as to how much she or he would enjoy spending time with that person. The higher the score, the greater the peer status or popularity. As in the SCNF, the peer ratings were transformed to standardized z-scores and a composite score was created (individual ratings were summed for each child).

Vocabulary Measure

Studies have shown that social understanding measures are often language dependent (Happé, 1995; Matthews & Keating, 1995). Thus, vocabulary ability was assessed using the Gates-MacGinitie Vocabulary Test, Level D 5/6 (MacGinitie & MacGinitie, 1994). This is a 45-item paper and pencil, multiple choice subtest from the Gates-MacGinitie Reading Test series which is frequently used by Canadian schools to assess language competency. Indicated by normative data obtained from Grade 6, this test has been found to be a valid and reliable measure of language proficiency with a Kuder-Richardson Formula 20 (KR-20) reliability coefficient of .91 and strong correlations with other reading tests such as the Iowa Tests of Basic Skills (ITBS) ($r = .80$) and the Comprehensive Tests of Basic Skills (CRBS) ($r = .73$) (MacGinitie & MacGinitie, 1994).
Procedures

Teachers completed one TRS questionnaire for each student participant. In each Grade 6 classroom, the SCNF, the sociogram, and the vocabulary task were given during regular class time, taking approximately 20 minutes to complete. Then participants were interviewed individually to assess social understanding. For the social understanding (ToM) measure the experimenter read the two stories to each participant (order counterbalanced across participants) and asked questions following each one (see Appendix). The entire interview was recorded on audiotape for subsequent transcription. The interview was 15 minutes long on average.

Results

The analyses are organized into three sections, described below. First, preliminary analyses examined the overall distribution of scores and descriptive statistics. To check for various effects such as the order of the tasks, school and gender, multivariate analyses of variances were performed. To address the first research question, whether relations exist between social understanding social competence, Pearson correlations were conducted on the entire sample. To address the second research question regarding gender differences, separate correlational analyses were repeated for girls and boys on all of the variables. Fisher’s Z transformations were used to check for any significant differences between the correlations. To examine if interaction effects exist between the gender of teacher and gender of student, 2 × 2 ANOVAs (Student Gender × Teacher Gender) were performed with the main outcome variables. Furthermore, in line with past research on children’s and adults’ social reasoning (e.g., Happé, 1994; Matthews & Keating, 1995), to control for language effects, repeat analyses were performed with general vocabulary ability as a covariate.

Preliminary Analyses and Descriptive Statistics

Normal distribution of the scores was assessed by examination of the frequency of the scores as displayed by histograms and stem and leaf diagrams. The majority of the scores approximated normal distribution. Table 1 shows the means and standard deviations. To allow for inter-class comparison of the sociometric scores, following procedures used in related research (Matthews & Keating, 1995), scores for peer-rated social interaction skills (SCNF) and peer-related likability (PRLK) were transformed to standardized scores (z scores). The means and standard deviations obtained from the vocabulary measure were in agreement with findings from past studies (MacGinitie & MacGinitie, 1994). Table 1 also indicates significant differences between girls’ and boys’ mean scores, controlling for vocabulary effects. Multivariate analyses of variance showed no significant task order or school effects.

Links Among Vocabulary, Social Understanding, and Social Competence

General vocabulary ability was related to the social understanding total score ($r(126) = .31, p < .01$). Table 2 shows that correlations between general vocabulary ability and social understanding subscale scores ranged from $r(126) = .19, p < .05$ (conceptual role-taking) to $r(126) = .32, p < .01$ (empathetic sensitivity). There were
also significant positive correlations between general vocabulary ability and peer-ratings of both social-interaction skills \(r(126) = .44, p < .01\) and peer likability \(r(126) = .22, p < .05\).

### Table 1. Means, Standard Deviations, and Gender Effects for Main Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
<th>Possible range</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTROLE</td>
<td>Total conceptual role-taking score</td>
<td>0–18</td>
</tr>
<tr>
<td>TOTEMP</td>
<td>Total empathetic sensitivity score</td>
<td>0–12</td>
</tr>
<tr>
<td>TOTPP</td>
<td>Total person perception score</td>
<td>0–6</td>
</tr>
<tr>
<td>TOTALT</td>
<td>Total alternative explanation score</td>
<td>0–6</td>
</tr>
<tr>
<td>TOMTOT</td>
<td>Total social understanding score</td>
<td>0–42</td>
</tr>
<tr>
<td>SCNF</td>
<td>Total score computed from an adapted version of Social Competence Nomination Form (SCNF)</td>
<td>(-2.23–1.80)</td>
</tr>
<tr>
<td>PRLK</td>
<td>Peer likability score</td>
<td>(-2.64–1.84)</td>
</tr>
<tr>
<td>TRS</td>
<td>Total score from social subscale of Teacher’s Rating Scale of Child’s Actual Behaviour, Harter (1985)</td>
<td>3.00–12</td>
</tr>
<tr>
<td>GMAT</td>
<td>Total score from Gates-MacGinitie Vocabulary Test Score (1994)</td>
<td>0–45</td>
</tr>
</tbody>
</table>

Notes. Mean scores shown with standard deviations in parentheses. 
F represents results from MANCOVA, partialling out the effects of Gates-MacGinitie Vocabulary Test score. 
*Scores derived from social understanding stories. The higher the scores, the greater the social-understanding. 
*For both of the peer-rating measures, scores were standardized within each classroom. 
**p < .01; *p < .05

**Relation Between Social Understanding (ToM) and Social Competence**

Total peer-related social-interaction skill scores (SCNF) were significantly related to total scores for social understanding (ToM), for the whole sample \(r(126) = .39, p < .001\) and also for the girls \(r(62) = .30, p < .05\) and the boys \(r(62) = .30, p < .05\) considered separately (see Table 2). However, once the effect of vocabulary ability was partialled out, only the correlation for the whole sample remained significant.
For the whole sample, peer-related social-interaction skills correlated positively with all of the social understanding subscales ($p < .01$), ranging from .22 (social competence and alternative thinking) to .33 (social competence and empathetic sensitivity). Repeat analyses controlling for vocabulary showed partial correlations remained significant.

Peer likability was less strongly related to social understanding (ToM). Correlations between peer likability (sociogram scores) and social understanding scores were significant for the whole sample ($r(126) = .23$, $p < .05$) but did not reach significance for girls and boys separately considered (see Table 2). Once the effect of vocabulary was controlled for, the relation between peer likability and social understanding was no longer significant ($pr(126) = .16$, $p < .10$). Thus, independent of language, social understanding was related to peer-rated social competence but not to peer likability.

**Relation Between Social Understanding (ToM) and Social Competence (Teacher Ratings)**

Once the effect of children’s vocabulary ability was controlled for, there were no significant correlations between teacher-ratings of children’s social competence and children’s social understanding (ToM) total or subscale scores. Correlations between teacher-ratings of social competence and children’s social understanding were also computed for boys and girls separately. None were significant.

**Gender Effects and Patterns**

Overall, results from ANOVA and MANOVA analyses revealed significant main effects of gender for each of the main groups of dependent measures (social understanding and social competence). For social understanding (ToM) there was a significant multivariate main effect for gender, Wilk’s lambda = .81, $F(1, 127) = 7.04$, ($p < .001$) followed by significant univariate gender main effects for all of the subscale totals except for the Alternative Explanation response which was marginally significant ($p < .10$). Examination of the means shows that compared to boys, girls scored higher on the social story subscale totals (see Table 1). To control for the possible confounding effect of language ability, an analysis of covariance (MANCOVA) was performed in which the means of girls’ and boys’ scores on the social stories were examined with Gates-MacGinitie Vocabulary scores acting as the covariate. Table 1 shows that even when the effect of vocabulary ability was controlled for, girls’ scores were significantly higher than boys on three of the four subscales. That is, girls scored higher than boys on the social understanding measure, independent of vocabulary ability.

In regard to teacher and peer social competence ratings (both social-interaction skills and popularity), results from the MANOVA showed significant multivariate main effects for gender, Wilk’s lambda = .84, $F(1, 127) = 4.63$, ($p < .001$). Table 1 shows significant gender effects for all social ratings, with girls receiving higher ratings than boys. To assess the independence of these ratings from the children’s vocabulary ability, a MANCOVA was performed with the vocabulary scores as the covariate. Results showed that gender differences among the social-interaction skill ratings remained significant, even after controlling for the effects of vocabulary ability. Interestingly, results from the MANOVA showed that girls and boys did not
That is, in the present study, girls and boys did not differ on general vocabulary ability.

Regarding the links between teacher ratings of social competence and social understanding, a marginally significant positive correlation was found between teacher-ratings and the conceptual role-taking subscale score for boys ($r(62) = .22, p < .05$) but not for girls ($r(62) = -.16, ns$). Further, these two correlations were sig-

Table 2. Pearson Correlations Between Social Understanding, Teacher Ratings of Social Competence, Peer Ratings of Social Competence and Peer Acceptance and Vocabulary Ability

<table>
<thead>
<tr>
<th>Variable</th>
<th>Teacher Ratings</th>
<th>Peer Ratings</th>
<th>Vocabulary</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SOCIAL</td>
<td>SCNF</td>
<td>PRLK</td>
</tr>
<tr>
<td><strong>Social understanding†</strong></td>
<td>Total (N = 128)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. TOTROLE</td>
<td>.09</td>
<td>.28**</td>
<td>.19*</td>
</tr>
<tr>
<td>2. TOTEMP</td>
<td>-.05</td>
<td>.33**</td>
<td>.20*</td>
</tr>
<tr>
<td>3.TOTPP</td>
<td>.00</td>
<td>.30**</td>
<td>.15</td>
</tr>
<tr>
<td>4. TOTALT</td>
<td>.04</td>
<td>.22**</td>
<td>.04</td>
</tr>
<tr>
<td>5. TOMTOT</td>
<td>.02</td>
<td>.39***</td>
<td>.23**</td>
</tr>
<tr>
<td><strong>Girls (n = 64)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. TOTROLE</td>
<td>-.16*</td>
<td>.25*</td>
<td>.02</td>
</tr>
<tr>
<td>2. TOTEMP</td>
<td>-.13</td>
<td>.25*</td>
<td>.00</td>
</tr>
<tr>
<td>3.TOTPP</td>
<td>.07</td>
<td>.38**</td>
<td>.17</td>
</tr>
<tr>
<td>4. TOTALT</td>
<td>-.04</td>
<td>.20</td>
<td>.15</td>
</tr>
<tr>
<td>5. TOMTOT</td>
<td>-.11</td>
<td>.30*</td>
<td>.11</td>
</tr>
<tr>
<td><strong>Boys (n = 64)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. TOTROLE</td>
<td>.22*</td>
<td>.36**</td>
<td>.21</td>
</tr>
<tr>
<td>2. TOTEMP</td>
<td>-.09</td>
<td>.24</td>
<td>.13</td>
</tr>
<tr>
<td>3. TOTPP</td>
<td>-.12</td>
<td>.14</td>
<td>.05</td>
</tr>
<tr>
<td>4. TOTALT</td>
<td>.07</td>
<td>.16</td>
<td>.12</td>
</tr>
<tr>
<td>5. TOMTOT</td>
<td>.02</td>
<td>.30*</td>
<td>.17</td>
</tr>
</tbody>
</table>

**Variable**

- **TOTROLE** = Total conceptual role-taking score
- **TOTEMP** = Total empathetic sensitivity score
- **TOTPP** = Total person perception score
- **TOTALT** = Total alternative explanation score
- **TOMTOT** = Total social understanding score
- **SCNF** = Total score computed from an adapted version of Social Competence Nomination Form (SCNF)
- **PRLK** = Peer likability score
- **TRS** = Total score from social subscale of Teacher's Rating Scale of Child's Actual Behaviour. Harter (1985)
- **GMAT** = Total score from Gates-MacGinitie Vocabulary Test Score (1994)

**Note**

† Scores derived from social understanding stories. See Table 1 for variable definitions.

*Correlations significantly differ at $p < .05$, Fisher’s $Z$ Test

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

differ in their scores on the Gates-MacGinitie Vocabulary Test (see Table 1). That is,

Regarding the links between teacher ratings of social competence and social understanding, a marginally significant positive correlation was found between teacher-ratings and the conceptual role-taking subscale score for boys ($r(62) = .22, p < .10$) but not for girls ($r(62) = -.16, ns$). Further, these two correlations were sig-
nificantly different (Fisher’s Z test, $p < .05$). That is, boys but not girls who scored higher on the conceptual role-taking subscale were rated as more socially competent by their teachers.

Vocabulary ability was related to peer-ratings of social competence for both boys and girls. However, it was related to peer-ratings of likability and teacher ratings of social competence only among the boys ($r(62) = .28$, $p < .05$, $r(62) = .31$, $p < .05$, respectively). These relations were not significant among the girls.

**Teacher-Gender × Student-Gender Interaction Effects**

Because there were five female teachers and only three males, teacher ratings were not tested for gender effects. However, once the sample was divided into four groups (girls with female teacher, girls with male teacher, boys with female teacher, boys with male teacher), the means of the variables were tested for interaction effects (gender of teacher × gender of student, see Table 3). Controlling for general vocabulary ability, ANCOVAs and MANCOVAs were performed on the appropriate variables. Results of a MANCOVA on the subscale scores of the social understanding stories yielded significant multivariate interaction effects (teacher gender × student-gender), Wilk’s lambda = .91, $F(5, 119) = 2.48$, $p < .05$. The univariate analyses of covariance illustrated in Table 3 show that only the total Empathetic Sensitivity score and the Alternative Explanation score reached marginal significance. Examination of the means shows that for all of the social understanding subscales, girls with male teachers scored the highest whereas boys with female teachers scored the lowest. This result suggests that independent of vocabulary ability, girls with male teachers demonstrated the greatest social understanding (as determined by social story scores), whereas boys with female teachers achieved the lowest social understanding scores.

**Discussion**

In this study we asked whether social understanding is related to social competence in preadolescence, and if it relates differently for girls and boys. The main finding is that social understanding, as measured by children’s interpretation of ambiguous social situations described in stories, is related to their peer-related social-interaction skills and to their general vocabulary ability. Separate gender analyses revealed significant effects, with girls scoring significantly higher than boys on both the social understanding and social competence measures. It was also found that the gender of the teacher played a role in children’s social understanding ability. The theoretical and educational implications of the results are discussed below.

**Relations between social understanding (ToM) and social competence**

The main hypothesis that individual differences in preadolescents’ ability to understand the thoughts and emotions of others would be related to their social competence was partially supported. Partial correlational analyses indicated that independent of general vocabulary ability, social understanding (ToM) was associated with some, but not all aspects of social competence. Social understanding related to children’s social-cognitive ability to solve social problems, as measured by peer-ratings of the ability to behave effectively in hypothetical social situations.
However, independent of language, social understanding did not relate to children’s popularity as measured by peer likability ratings. These findings support previous work that suggests the links between social understanding and social behaviour are complex (Astington & Jenkins, 1995; Dockett, 1997; Dunn, 1995; Hughes & Dunn, in press; Werner & Cassidy, 1997). The present study found that the relation of social understanding with peer ratings of social-interaction skills was more robust than with peer ratings of popularity. This suggests the more ‘cognitive’ aspects of measured skill competence (i.e., peers’ judgements of competent behaviour in hypothetical social events), are more closely linked to social understanding than peer popularity, which is a more affective measure.

This finding—that preadolescents’ social understanding was linked to how their peers view their ability to deal with social situations—does not indicate the direction of the relation between social understanding and social interaction. Children who had relatively high scores on a task that assessed their understanding of the mental states and emotions of story characters were also viewed as being able to cope effectively in social situations by their peers. We do not know whether children’s ability to read others’ minds and emotions influences or is influenced by how their peers view them socially, or whether there is mutual influence.

Although all of the social understanding subscales were found to be linked to peer ratings of social-interaction skills, the most robust correlation was found with the empathy subscale score. The positive relations between the empathy subscale score and children’s peer ratings suggest that children who have a sophisticated or advanced ability to understand the emotions of others may also be perceived by their peers as competent in dealing with social situations. Perhaps it is this emotion under-
standing that is the most salient in social interactions with others. In line with past and recent work on social understanding and social behaviour (e.g., Astington & Jenkins, 1995; Dockett, 1997; Hughes & Dunn, in press), researchers must continue to examine both the affective and cognitive dimensions of social understanding and the possibility that the various dimensions may have different implications for social competence.

In contrast to peer ratings, there were no significant links found between teacher social competence ratings and social understanding. These findings contrast with those of recent studies that have found positive relations between teacher ratings of social competence and young children’s ability to understand others’ mind and emotions (Astington & Pelletier, 1997; Lalonde & Chandler, 1995). The fact that in this preadolescent sample, peer but not teacher ratings were linked to social understanding supports the claim that peers play a greater role in preadolescents’ social lives than their teachers do (Adler & Adler, 1998; Maccoby, 1998; Sullivan, 1953). The lack of a relation between teacher ratings of social competence and social understanding may reflect the fact that teachers do not know the social lives of preadolescents as well as they know preschoolers’. Also, the concept of social competence may grow in complexity as children reach preadolescence, and may be comprised of various factors not assessed in the present study such as physical attractiveness, attainment of social goals, and so on (Harter, 1996; Matthews & Keating, 1995). Furthermore, the measure of teacher rated social competence consisted of only three items, which could also have suggested a lack of clarity.

Gender Differences

Independent of vocabulary ability, girls performed significantly higher on the social understanding task than boys. Such results support Hatcher et al.’s (1990) findings that girls scored higher than boys on social understanding tasks across grades four through twelve. Furthermore, as compared to boys, girls were rated as more socially-skilled and popular or likable by their peers. This result supports related studies that find girls generally receive higher social competence ratings than boys (Matthews & Keating, 1995). Interestingly, no gender-related differences were found on the vocabulary task. This finding contradicts past research that has shown girls to score significantly higher than boys on vocabulary and language ability (Halpern, 1992). However, the possibility of gender-related differences in language ability has been an ongoing debate among educators and psychologists, and many would argue that differences found between girls’ and boys’ language ability reflect methodological and sociocultural influences (Tavris, 1992; Unger & Crawford, 1992). Thus, researchers need to remain cautious when interpreting gender-related differences and implications of the present-gender related findings.

Marginal interaction effects found between the genders of student and teacher showed that girls with male teachers obtained the highest empathetic sensitivity scores, and boys with female teachers obtained the lowest empathetic sensitivity scores. Similar to the gender differences in the peer-ratings, such results implicitly support the gender intensification hypothesis (Hill & Lynch, 1983). In other words, how teachers and peers view other students may be guided by traditional societal gender-role stereotypes, which in turn may affect students’ cognitive and social abilities. Such results agree with the claims that links between social competence and social reasoning abilities may differ according to gender (Adler & Adler, 1998).
may be that the children in the present sample have internalized such gender stereotypes and hence, their gender-typed beliefs have affected how they value certain social-cognitive abilities in terms of popularity.

In sum, the results showed that social understanding in these preadolescents was linked to how their peers viewed them. The results support (implicitly) the gender intensification hypothesis by suggesting that teachers’ and peers’ perceptions and expectations of students may be guided by traditional societal gender-role stereotypes, which in turn may affect students’ cognitive and social abilities. Teachers and peer may expect girls to be naturally more caring, socially understanding, dependent and more likely to conform to school rules whereas they may expect boys to be more autonomous and concerned with justice, independent, and less likely to conform. Eventually, in a process of self-socialization (Maccoby, 1998), girls and boys may come to believe these expectations and adopt them as part of their self-concept, thus behaving along the lines of gender-role stereotypes.

Future Directions

Given the limitations of the present study (i.e., lack of memory or general intelligence measure, use of non-standardized measures, ethnically homogeneous sample), interpretations of the present findings are to be made with caution. Nonetheless, the present findings illustrate that the links between social understanding and social competence are not straightforward. Moreover, the present findings suggest that the nature of social understanding and social competence may differ according to gender. This should encourage researchers to integrate feminist epistemological work with ToM research (Brown & Gilligan, 1992). For example, studies on social-moral and epistemological development in girls and boys can be framed and interpreted within a ToM framework, focusing on the understanding of mental states (Mansfield & Clinchy, 1997). The collaboration of ToM and child epistemology researchers may help to create a more ‘thick’ description of the social and emotional world of the preadolescent.

The results from this study are also in line with the ‘second wave’ of ToM research that focuses on individual differences and various social-emotional aspects of ToM (Astington, 1997). As many ToM researchers have already begun to note, social-cognitive development needs to be studied from a ToM perspective, taking into account both mental states (beliefs, intentions) and feelings (Dunn, 1996). To continue to bridge the gap between traditional ToM research and human development research, future research should include longitudinal studies that involve girls and boys from various cultures. The role of language ability must also be acknowledged, in addition to other social factors such as the importance of relationships in the development of social understanding (family size, parenting style, attachment). Such a research agenda will add to the current discourse on social cognition by providing a deeper understanding of how preadolescents think and feel about themselves and others.

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Appendix

Social Understanding (ToM), Nancy/Margie story
Nancy and Margie are watching the children in the playground. Without saying a word, Nancy nudges Margie and looks across the playground at the new girl swinging on the swingset. Then Nancy looks back at Margie and smiles. Margie nods, and the two of them start off toward the girl at the swingset. The new girl sees the strange girls walk towards her. She'd seen them nudging and smiling at each other. Although they are in her class, she has never spoken to them before. The new girl wonders what they could want.

Comprehension Questions
1. Does the new girl see Nancy and Margie nudging and smiling at each other? Yes/No
2. Has the new girl ever spoken to Nancy and Margie before? Yes/No

A. Conceptual Role-Taking
1. Why did Nancy smile at Margie?
2. Why did Margie nod?
3. a) Why did Nancy and Margie move off together in the direction of the new girl?
   b) Why do you think this/How do you know this?
4. a) Does the new girl have any idea of why Nancy and Margie are walking towards her?
   Yes/No
   b) How do you know that the new girl has [or doesn’t have] any idea of why Nancy and Margie are walking towards her?

B. Empathetic Sensitivity
5. a) How do you think the new girl feels?
   b) Why? Does she feel anything else? Why?

C. Person Perception
6. Choose a character in the story and describe her.
   What kind of things can you think of to describe her? What kind of person do you think she is?

D. Alternative Explanations
7. Is there another way that you can think about this story? Yes/No
   If so, how?

Note. This measure was designed by the first author. The second story may be obtained from the first author.

Author Note

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