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CHILDREN'S THEORY OF MIND AND THEIR FRIENDSHIP QUALITY

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Abstract

Friendships are an important context of development during the elementary school years, buffering children against bullying and victimization and promoting positive social development in many ways. However, not all children develop stable, satisfying friendships. This study investigated the association between friendship quality and Theory of Mind in the early primary school years. Participants were first- and second-graders who took part in the study with a close friend. Both children completed a battery of first- and second-order ToM tasks and measures of friendship quality, loneliness, and social dissatisfaction. Results found that children with a close friend stronger in theory mind reported lower validation and caring, help and guidance, companionship and recreation, and intimate exchange in their friendships. A MANOVA showed significant differences between validation and caring, help and guidance, companionship and recreation, and intimate exchange based on gender.

Keywords: friendship quality, theory of mind, loneliness and social dissatisfaction

Introduction

Friendship formation is an important developmental task in middle childhood. Friendships are mutually reciprocated dyadic bonds, rich in social and cognitive learning opportunities (Fink, Begeer, Peterson, Slaughter, & de Rosnay, 2014). A child's ability to form these close relationships is a reliable measure of social competence (Cassidy & Asher, 1992). Previous research has found that a single friend can act as a buffer against the adverse outcomes of friendlessness, peer rejection, as well as the cycle of social isolation (Newcomb, Bagwell, Bukowski, & Hartup, 1998; Hodges, Boivin, Vitaro, & Bukowski, 1999; Laursen, Bukowski, Aunola, & Nurmi, 2007). Children navigate these peer relationships by relying on social cues from others to establish their self-esteem and gain self-knowledge (Gruenenfelder-Steiger, Harris, & Fend, 2016), emphasizing friendship as an integral component in defining the self (Marion, Laursen, Zettergren, & Bergman, 2013). Contributing to the health, happiness, and well-being of children (Bukowski, Buhrmester, & Underwood, 2011), friendships establish a sense of belonging and acceptance, intimacy and companionship, and emotional and physical support (Furman & Buhrmester, 1985; Hartup, 1994).

Alternatively, some children are friendless, and the outcomes for these children are less positive. Chronic loneliness and peer rejection are common realities for children unable to build and maintain friendships (Jones, Hobbs, & Hockenbury, 1982; Spitzberg & Canary, 1985). By definition, loneliness involves both the circumstance of aloneness and the feeling of sadness or another type of depressed effect (Cassidy and Asher, 1992) and undermines a child's feeling of well-being (Parker and Asher, 1993). Therefore, previous research has linked friendlessness to low self-worth, social anxiety,

depression, and loneliness amongst other negative mental health outcomes (Bagwell, Newcomb, & Bukowski, 1998; Pedersen, Vitaro, Barker, & Borge, 2007; Fink *et al.*, 2014). These early side effects of lacking a reciprocated friendship are chronic, reiterating the seemingly inescapable cycle of social isolation and loneliness without a friend (Bagwell *et al.*, 1998).

Prior research asserts the depth of these friendships as more intricate than simple participation with classmates or peers, and that evidence of social adjustment is harder to gauge than previously believed (Parker, Rubin, Erath, Wojslawowicz, & Buskirk, 2006). Children's peer relations research has established that making friends is an easier task for children who are prosocial, nonaggressive, good communicators, and who have good social problem solving skills—for example, who choose cooperative and relationship-maintaining strategies for dealing with peer conflict, rather than antagonistic or hostile strategies (Rubin, Bukowski, & Parker, 2006). This evidence suggests that children with better emotional coping skills are more likely to successfully initiate or form friendships, and are likely to be more advantageously equipped to maintain these friendships (Hodges *et al.*, 1999).

Friendship and Theory of Mind

However, friendships have more subtle aspects of social competence involved, as well. For example, a child's developing *theory of mind* is an important component of social-cognitive development that can facilitate or impede a child's friendships, depending on their level of skill. Theory of Mind (ToM) is a child's ability to recognize that people's behavior is shaped by their mental representations, separate from one's own mental states, even when at odds with external reality (Slaughter, Imutu, Peterson,

& Henry, 2015; Fink *et al.*, 2014; Wellman, 1990). Research describes the development of ToM as a cognitive milestone in early childhood (Wellman, 1990), and a precondition for self-consciousness and social interaction (Dennett, 1978). Theory of Mind development begins in early childhood and gains complexity throughout middle childhood and early adolescence.

Research supports social interaction as an influence on healthy ToM development (Caputi, Lecce, Pagnin & Banerjee, 2012; Hughes & Dunn, 1998; Watson *et al.*, 1999). For example, the number of siblings a child has is correlated with their ToM development (Perner, Ruffman, & Leekham, 1994). Conversely, having good ToM skills is associated with more positive social interactions. Children with good theory of mind skills are typically better-liked by peers, are more prosocial in their behavior, and are more likely to have reciprocated friendships (Fink *et al.*, 2014; Slaughter *et al.*, 2015). Due to the plausibility of an advanced ToM assisting in how children are perceived by their peers, it makes sense that these children are communicatively competent, benefitting their early friendships (Slaughter *et al.*, 2015). Additionally, previous research indicates that children were more popular with peers when they were better able to gauge causes of emotions (Denham, McKinley, Couchoud, & Holt, 1990). Furthermore, children's involvement in and exposure to mental state talk with their parents and sibling(s) is correlational with quick ToM development (Dunn & Brophy, 2005; Ruffman, Slade & Crowe 2002). These social-cognitive skills likely improve children's peer relations by making them able to recognize their friend's desires, adequately strategize and negotiate during play, and develop conflict management skills (McAlister & Peterson, 2013). A previous study

found that 6-year-olds' ability to solve conflicts with peers was predicted by their ability to understand emotion at 3 years of age (Dunn & Herrera, 1997).

Walker (2005) addresses the negative aspect of children with the inability to understand mental states cause actions, and the hindrance their cognitive shortcomings have on peer relationships. Children incapable of recognizing the connection between thoughts and action are at risk for continuous difficulties with peer relationships leading to problems in social adjustment (Walker, 2005). Therefore, an understanding of others' mental states and how they contribute to behavior might enhance children's sense of empathy and compassion for those peers and their choices, leading to lower-conflict, more supportive, and more harmonious friendships with schoolmates that are more likely to endure. This paper tests the role of ToM in children's perception of the quality of their close friendship.

Friendship Quality

Although the literature is dense with studies supporting the importance of having a friend and the beneficial consequences accompanying mutual liking, the predictors of what builds quality friendships are left largely undiscovered (Cillessen, Jiang, West, & Laszkowski, 2005). Past research has emphasized quality as one of the three important components of friendships (Hartup, 1996), adding to the dyadic friendship after controlling for individual characteristics and noting the difference tasks involved in a quality friendship at different stages of development (Berndt, 2002). Berndt (2002), also suggests high-quality friendships contribute positively to developmental processes and outcomes, such as enhancing adjustment and self-esteem, and improved stress coping (Hartup & Stevens, 1999). Friendship quality, defined by

its components, can be measured using the Friendship Quality Questionnaire (FQQ) designed by Parker and Asher (1993). This scale is a constructive measure of friendship quality because of the six subscales that address the mechanisms valued uniquely by each friendship participant. The subscales include: validation and caring, conflict resolution, conflict and betrayal, help and guidance, companionship and recreation, and intimate exchange (Parker & Asher, 1993). Bernt and Perry (1986) highlight conflict and disagreement as influencers of friendship quality, while other researchers suggest support as a positive aspect when keeping in mind varying stress (Bukowski *et al.*, 1987). Finally, Berndt (2002) includes the reciprocal actions and responses to good friendships, indicating that good friendships can lead peers to have a positive view of their classmates, and in turn their classmates have a positive view of them. There is a trickle-down effect accompanying a few good friendships – the good opinion of a couple classmates may open doors to best friendships of additional classmates (Berndt, 2002).

Friendship Quality and Theory of Mind

Previous research has addressed theory of mind understanding with general peer acceptance (e.g. Denham *et al.*, 1990;), but little to no research has addressed advanced theory of mind development with friendship quality. Further, there are no studies that address the role of ToM in friendship quality from the friend's perspective. The gap in this literature begs the question - is theory of mind a mechanism influencing friendship quality in a dyadic relationship? Researchers have found that the amount of time spent in a role assignment during pretend play, and engaging in joint planning during pretend play is correlated with child development of theory of mind (Astington & Jenkins,

1995; Jenkins & Astington, 2000). Therefore, does the aiding of theory of mind in friendship quality explain why children with better ToM are more likely to have reciprocated friends? For example, a child with good ToM might be more likely to have a friendship high in help and guidance because they are good at understanding the needs of others and offer appropriate help when it's needed.

These dyads are important to understand as children develop deeper interactive social cognitive skills, and focus on the partnership is vital. By using the dyadic data, I am able to separate the friendship into its components and delve into the strengths and weaknesses involved in friendship maintenance and how theory of mind may assist in quality participation, beyond just social competence (Walker, 2005). For example, imagine two young friends, boys named David and Jacob. If David has excellent theory of mind skills, he is more likely to understand his pal's habits, motivations, and desires, and thus perhaps more likely to be responsive to them. This level of responsiveness might in turn help Jacob feel closer to David, and more trusting of him, yielding a positive relationship in which Jacob wants to be responsive to his friend's needs as well. However, is theory of mind enough to build a quality friendship, and more importantly, is it different for boys and girls?

Gender and Theory of Mind

Social experiences take many different forms based on gender, and therefore social-cognitive development is gender differentiated (Rose & Asher, 2017). For example, how children think about social problems and then how they solve that conflict has been discerned throughout many studies (Miller, Danaher, & Forbers, 1986; Walker, Irving, & Berthelsen, 2002). Dunn and Cutting (2006), found that girls score

higher on theory of mind collectively, by a marginally significant difference. Walker (2005) ran a study on gender differences in four-year-olds' social competence and found surprising results highlighting gender-specific behaviors. Boys rated more proficient at false-belief tasks were more likely to engage in disruptive and aggressive behavior, and yet girls' prosocial behavior was related to ToM ability (Walker, 2005). In a commentary by Rose and Asher (2017), the researchers discuss gender differences in social task skills, suggesting that expertise, vulnerability of high expectation with greater investment, and separate contexts are plausible explanations for gender differences in friendship quality and experiences. For example, boys have been found to handle friendship transgressions better than girls (Rose & Asher, 2017), which may be explained through theory of mind development, recognizing that their friend's beliefs are different and produced a behavior consistent with their different belief. These social cognitive gender specific norms provide a basis for differences between the importance of theory of mind on friendship quality for boys and girls. For example, if girls find caring and validation a top priority for their friendship, then ToM plays a large part in friendship quality due to the necessity of understanding how one friend feels and responding empathetically. Divergently, if boys find strong friendships through mutually preferred activities, then ToM is less paramount in their quality of friendship.

Hypotheses

This research explores the association of ToM development with friendship quality in middle childhood using hierarchical linear regressions. I had two primary hypotheses. First, I hypothesize a positive association between ToM development and ratings of the quality of a child's best friendship. Specifically, ratings of friendship

quality are expected to be positively correlated with *best friend's* ToM performance. Second, I hypothesize that gender plays a role in predicting friendship quality through varying advances in theory of mind development. Rose and Asher (2017) suggest gender-specific skills, higher expectations of friends and their involvement, or context seeking as gender differences in situations youth need to excel in to have friends and high-quality friendships. Based on the subscales of the Friendship Qualities Questionnaire, I expect that boys with stronger theory of mind will have friendship quality particularly high in help and guidance and companionship and recreation compared to girls. I expect that girls whose best friends have stronger theory of mind skills will report friendship quality high in validation and caring and intimate exchange compared to boys.

As a secondary analysis, I investigated associations between ToM and loneliness and social dissatisfaction, as well as other correlational analyses of variables that could influence ToM development or friendship quality (i.e. verbal scores, length of friendship, hours of non-school play).

Method

Participants

The participants were 64 children (35 girls) enrolled in Kindergarten through second grade (mean age 6.5-years-old). Because I was interested in the association of Theory of Mind with friendship quality at the level of the dyad, participants were enrolled in the study in pairs. Parents who respond to our recruitment efforts were informed that their child would need to participate with a close friend. All children were recruited from local public and private elementary schools in a medium-sized

Midwestern community. Researchers contacted local schools, museums, summer camps, after school programs, and placed information tag sheets around town in a variety of local businesses. Parents then got in contact with the researcher and a study time was organized, either at one of the participant's home or at the Friendship Lab on campus.

Measures

Theory of Mind. Participants first completed a battery of standard Theory of Mind tasks (see Appendix A). Based on Hughes *et al.* (2000), the battery of false belief ToM tasks was administered in the following order: a first order unexpected contents task, a change of location task, two first-order belief-desire tasks, two second-order change of location tasks, and one sarcasm task. According to previous research (Wellman & Liu, 2004), these ToM tasks were scaled in difficulty level. Though this study involved different tasks, I wanted to replicate the escalation in difficulty. This reliable measure of ToM development was utilized to cover a substantial range of ToM scores with variance of success across tasks (Table 1). With the exception of the first-order unexpected contents task, we filmed the tasks to ensure consistency and reliability with uniform presentation and tone. The unexpected contents task involved interaction with the participant and was presented by the researcher.

The first two tasks were an unexpected contents task based on the original Smarties task (Perner, Leekam, & Wimmer, 1987) and a change-of-location task similar to the original Sally-Anne task reported in (Wimmer & Permer, 1983). In the unexpected contents task, the researcher showed the participant a Band-Aid box instead of a Smarties box, and the unexpected contents inside the box were balloons.

All remaining tasks were administered to participants using video recorded puppet shows or photographs. The change-of-location task involved two dolls (Sally and Joe), each with their own box, and a marble. The questions to pass and continue, tested the participant's prediction of an action based on ascribed false belief, and required the participants to answer one reality and one memory control question.

The next two tasks involved belief-desire reasoning. Two stories were presented to the child, one that involved a disappointing surprise and one that involved a nice surprise. The participants were asked two emotional contingency questions to get a basic understanding, then questions of false-belief prediction, and finally a follow-up-emotion-inference question. The participant was then asked to explain their reasoning. A control question was asked in the middle to ensure the children are following the story.

The following two false belief tasks were second-order change of location tasks. In the object relocation script, a boy (Simon) moved pudding from a refrigerator without knowing a girl (Mary) saw him do it. The second task, person relocation, involves a change of destination from tennis practice to the pool. Due to the harder nature of the second-order tasks, participants answered reality control and memory control questions following test questions.

The final task addressed the participant's understanding of sarcasm. With the aid of photographs, participants were told a story in which one of the characters uses sarcasm. Participants' understanding of the character's real meaning was assessed. Without any emphasis or special intonation, the participants were asked a memory

check, followed by three questions addressing the difference between the literal meaning and intended meaning.

Each Theory of Mind task was scored individually by summing the correct answers, and then an overall Tom score was calculated summing the scores for all tasks. The possible range of scores for total ToM varied from 0 to 42, but the minimum score in this sample was 25.

Loneliness and Social Dissatisfaction. Participants' satisfaction with their peer relations at school was measured using Asher and Wheeler's (1985) Loneliness and Social Dissatisfaction Scale. It consists of 23 questions and was presented to the participants in two parts. The primary question was presented in a "some kids, other kids" format based on Harter's Self-Perception Scales for Children (Harter, 1982). For example, "For some kids it is easy to make new friends at school. For other kids it is not easy to make new friends at school. Which kids are you like?" Participants first chose which statement better described them. The second question asked was, "Is that really like you, or sort of like you?" These two questions were used to create a Likert-type scale for each item, with responses ranging from 0 ("Not at all like me") to 4 (Really like me"). The mean of all items was computed and used in all analyses, with reverse scoring where appropriate.

Friendship Qualities Questionnaire. Friendship qualities were assessed with the Friendship Qualities Questionnaire (FQQ) designed by Parker and Asher (1993). Items were presented to the participants utilizing a traditional 5-point Likert scale (ranging from 1, "never" to 5, "always"). The FQQ includes six subscales to measure specific aspects of the friendship: validation and caring, conflict resolution, conflict betrayal,

help and guidance, companionship and reaction, and intimate exchange. For each subscale, the score used in analyses was the mean of all items, with reverse scoring where appropriate. *Validation and caring* consisted of 10 items ($\alpha = .83$) and was measured with statements such as, “my friend makes me feel good about my ideas.” *Conflict resolution* was measured with 3 statements ($\alpha = .71$) such as, “my friend says, ‘I’m sorry’ if s/he hurts my feelings”. *Conflict and betrayal* was measured with 6 statements ($\alpha = .74$), such as “we argue.” One of the 9 examples of *help and guidance* ($\alpha = .85$) was, “my friend helps me so I can get done quicker.” *Companionship and recreation* was measured with 5 statements ($\alpha = .63$) such as, “we pick each other as partners for things.” An example of the 6 *intimate exchange* statements ($\alpha = .70$), was “I can talk to my friend when I’m mad about something.” Participants were instructed to read or listen to each statement and indicate the number that best described their relationship with the close friend that participated in the study with them.

Parental Measures. Parents completed a brief questionnaire that asked how the friends met, how many out of school hours they spent together, how long the children had been friends, whether the parents consider the participants to be close friends, and overall perspective of their child’s friendship to see if there was a difference between child self-report of friendships and parent perspectives of the friendship. Additionally, because ToM development is facilitated by language acquisition and is correlated with verbal IQ (Cutting & Dunn, 1999), parents reported their child’s most recent school grades in Spelling and Language Arts.

Procedure

Friend pairs participated either at the researcher's lab on the University of Oklahoma campus, or at the home of one of the children. Participants were told their participation was voluntary and that they could leave at any time. Each child was tested individually, in separate rooms. Selected at random, one child was assigned to complete the ToM tasks first and the other child was assigned to complete the questionnaires first; the Loneliness and Social Dissatisfaction Scale was always administered before the Friendship Qualities Questionnaire. Before completing the surveys, participants were trained on how to use a Likert scale using three trial items (*I like pizza; I like broccoli; and I like to clean my room*).” Once the practice items were completed and the participants fully understood the procedure, the researcher continued. All survey items were read aloud to participants.

Parents were given a 10-question survey to complete while the children were participating in the study. When parents completed their survey, and both friends had completed the ToM tasks and the surveys, they and their parents were each given a \$10 gift card and thanked for their participation.

Results

Preliminary Analyses

Preliminary analyses indicated that children's age, parent views on the friendship, where and how the children met, whether they were in the same class, the number of hours spent together outside of school, and length of friendship were not significantly related to friendship quality, friend's theory of mind, or loneliness. Thus, all analyses were conducted without these covariates. Descriptive statistics of all study variables can be found in Table 2.

Multivariate analysis of variance (MANOVA) was conducted to examine possible gender differences in the friendship quality subscales. The overall effect of gender was significant, $F(6,63) = 2.95, p = .014$; Wilks' lambda = .763, partial $\eta^2 = .237$. Significant gender differences were found for validation and caring, $F(1,63) = 13.56; p = .001$, help and guidance, $F(1, 63) = 7.65; p = .007$, companionship and reaction $F(1, 63) = 11.25; p = .001$, and intimate exchange $F(1,63) = 4.83; p = .032$). Girls reported higher means on all significant subscales than boys. Results are shown in Table 3.

Associations of Theory of Mind with Friendship Quality

Table 4 displays the intercorrelations among key variables. There was a positive correlation between a child's ToM score, and the ToM score of their close friend ($r = .26, p = .04$). Additionally, there was a negative correlation between friend's ToM and overall friendship quality ($r = -.29, p = .02$). For the entire sample, there were negative correlations between friend's ToM score and the FQQ subscales for validation and caring ($r = -.32, p = .009$), companionship and recreation ($r = -.26, p = .04$), and intimate exchange ($r = -.29, p = .02$).

Correlational analyses were then conducted separately for boys and girls. For boys, there were negative correlations between friend's ToM score and validation and caring ($r = -.40, p = .03$), as well as between friend's ToM score and intimate exchange ($r = -.48, p = .01$). For girls, however, there was a positive correlation between their ToM score and reports of conflict and betrayal ($r = .36, p = .03$).

Hierarchical Linear Regressions. Six two-step hierarchical linear regressions were run to predict the FQQ subscales from gender, ToM, verbal skill (step 1) and

friend's ToM (step 2). Significant variance was explained for validation and caring, $F(4, 30) = 3.23, p = .03$, with an R^2 of .30. Both gender ($\beta = .40$) and Friend's ToM ($\beta = -.40$) were significant predictors of validation and caring. Significant variance was also explained for conflict and betrayal, $F(4, 30) = 3.97, p = .01$, with an R^2 of .35. Both a child's own ToM score ($\beta = .31$) and their verbal score ($\beta = .40$) significantly predicted conflict and betrayal. For the help and guidance subscale, friend's ToM score was a significant predictor ($\beta = -.43$), but the overall model did not account for significant variance in the outcome variable.

Discussion

This study investigated associations between friendship quality and theory of mind in the early years of primary school. Corroborating previous research finding negative social outcomes to accompany more advanced ToM development, my findings suggest that stronger theory of mind does not facilitate better friendship quality, even after controlling for gender, but may rather impair it. All of the significant findings related to ToM and friendship quality were in a negative direction. Thus, having a friend with strong theory of mind skills appears to have a negative effect on perceived friendship quality, rather than a positive one.

Some previous research has considered theory of mind development in the context of negative social interaction, rather than as a skill that assists friendships. Happé and Frith (1996), testing the same two standard first-order false belief tasks used in this study, found that ToM abilities in children with conduct disorder did not translate into real life scenarios - instead, these children showed social impairments measured by the Vineland Adaptive Behavior Scale (as cited in Sutton et al., 1999). This means that

children with good ToM who had conduct disorder also had social impairments. These results suggest that not all children with high theory of mind apply their understanding of others' thoughts and feelings in real interactions. The inconsistency here is an opportunity for future research to see what underlying variables mediate the relationship between theory of mind and social skill.

Additionally, in a debate by Sutton and colleagues (1999), the authors argue that social cognition skills, in the context of bullying, will need to be superior to manipulate others. Children who have high theory of mind and are better equipped in reading social situations and nonverbal cues could potentially use their precocious abilities to exert dominance over their friends (Smith & LaFreniere, 2009). Smith and Sharp (1994), defined bullying as 'the systematic abuse of power,' which can be interpreted in many different social contexts and varying levels of dominance. For example, in the context of friendship dyads, a child with a stronger theory of mind may be using their superior social cognitive skills to manipulate friends with weaker theory of mind skills. If the child with lower ToM is conscious of these attempts, it might influence how they interpret the overall friendship quality. Help and guidance may appear condescending, when it used to be welcomed, or it may take forms that are controlling or insensitive. Validation may seem like a pat on the back, rather than a friendly compliment. Alternatively, the child with lower theory of mind may recognize the difference in social cognitive skills and assume lower friendship quality, becoming aware of their inabilities and shortcomings within the friendship. Friendship interactions involving intimate exchange may become intimidating to the child with lower theory of mind, because they are not as adept at interpreting nonverbal cues and responding

accordingly. They may feel at a disadvantage in comparison to their more socially aware counterpart and not understand how to reciprocate due to their lower theory of mind.

Kyratzis (2001) found that children as early as preschool are good at interpreting social situations and recognizing peers' dominance ranking in the friendship. Often it is the children that show expertise and social competence that are higher-ranking. Therefore, it may be that discrepancies in theory of mind levels within a friendship will ensure that one friend assumes a more dominant role and the other a more submissive one. This may be reflected in perceptions of friendship quality.

In a study of pre-school children, children who deceived others successfully were also rated as dominant by trained observers during peer group interaction (Keating & Heltman, 1994). However, Pellegrini (2011) suggests greater social skills of dominance and reconciliation in early childhood play a predictive role in theory of mind/false belief development. Therefore, although some children with strong ToM may be more dominant in friendships, their close friendships may endure due to their reconciliation abilities. Perhaps this imbalance of power in the context of close friendships explains the negative correlation between a friend's higher ToM and low ratings of friendship quality found in this study, but still account for the fact the pair are best friends.

Veniegas and Peplau (1997) found an imbalance of power in friendships in over 60% of their participants of undergraduate same-sex friendship pairs. When there is a strong difference in social cognitive development between children and young adults, the same friendship dynamic may be true of friendships among children. In the current

sample, the greatest difference in ToM scores between friends was 11 points. While not an enormous difference, perhaps children are picking up on the imbalances in their friendship and therefore could feel taken advantage of if they are the less cognitively developed friend. For example, the child might recognize unfair patterns in their friendship, but is incapable of explaining how or why these patterns exist (i.e. “we always do what my friend wants to do”). Moreover, the child with higher ToM might be frustrated by the lack of social cognitive skill in their friend, and the frustration may be palpable to the friend in ways that translate into lower perceived friendship closeness.

These results suggest that friends with stronger ToM may act in ways that are consistent with gendered social norms.” These results parallel research explaining that a more sophisticated theory of mind assists in the development of adaptive social functioning (Watson, Nixon, Wilson, & Capage, 1999). Boys with a friend who had a stronger theory of mind reported lower intimate exchange and lower validation and caring, than boys with a friend who had weaker theory of mind. Past research has also emphasized differences in how boys and girls communicate (Leman, Ahmed, & Ozarow, 2005). For example, Leaper (1991) claims that boys communicate with their same-sex peers through greater independence, competitiveness, and dominance, while girls’ conversations were more interpersonal, cooperative, and characterized by closeness (as cited in Leman, Ahmed, & Ozarow, 2005). Therefore, boys with stronger ToM skills may also be more aware of gender norms related to interpersonal communication, and may recognize that intimate exchanges of personal information are not the normative interpersonal strategies boys use. They may avoid behaviors and

conversations that imply validation and caring as a way of conforming to those gender norms.

Girls with a friend strong in theory of mind skills reported higher conflict and betrayal in their friendship. Conflict in friendships is common at this age, and instead of creating smoother, less conflicted interactions, good theory of mind skills might actually create opportunities for even more conflict or betrayal. Betraying someone's trust can be an intentional behavior, meant to advance a particular social agenda or put a friend in her place. This kind of intentional betrayal involves knowing what personal information your friend wants you to keep a secret, and what kind of information will be hurtful to her if others find out about it. Strong theory of mind skills may be crucial to children's accuracy in determining how to hurt one another (Sutton, Smith, & Swettenham, 1999).

A final possibility to consider is simply that the friendship is out of sync in terms of social cognitive skills. If the friends are on dissimilar cognitive or social-cognitive levels, they may regularly face situations in which they perceive a mismatch in needs, communication, or support. This does not necessarily indicate a poor friendship, but perhaps children experience less satisfaction with a peer who is out of sync with them cognitively than with a peer who is more similar to them.

Limitations and Future Directions

Despite some interesting findings regarding theory of mind, friend's theory of mind, and subscales of friendship quality, several study limitations must be considered. For example, the sample size restricted the types of analyses I was able to use on these data and resulted in lower power to detect significant effects. Second, the results show

that participants generally scored close to ceiling on the theory of mind tasks, limiting variability in ToM scores. A broader test battery that includes more difficult social cognitive tasks should be used in future research with children of this age. Finally, I did not collect information about children's IQ or another standardized assessment of cognitive functioning. Though information about verbal skill was obtained via school grades and was not found to relate to ToM, future research should include a measure of cognitive functioning that is more comparable to those used in prior studies.

In conclusion, strong theory of mind skills alone do not make for a good-quality friendship. Although stronger social cognition may allow children to pick up on gender communication norms in friend dyads, the heightened awareness that accompanies a higher theory of mind can be used to the detriment of the overall friendship.

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Table 1.
Means and Standard Deviations for All Theory of Mind Tasks

Order	ToM Task	Mean	SD	% perfect	Minimum	Maximum
1st	Unexpected Contents	5.46	.78	59%	3	6
	Change of Location	2.78	.45	80%	1	3
	Belief-Desire 1	7.48	1.75	52%	4	9
	Belief-Desire 2	7.35	1.83	42%	3	9
2nd	Change of Location 1	5.23	1.06	58%	2	6
	Change of Location 2	3.98	1.29	14%	0	6
	Sarcasm	2.71	.75	9%	1	4
1 st and 2nd	Total	34.42	4.39	2%	25	42

Table 2.
Descriptive Statistics of ToM, Friend's ToM, Friendship Quality Subscales, and Loneliness

Variable	N	Range	Minimum	Maximum	Mean	Standard Deviation
TomTotal	64	17.00	25.00	42.00	34.42	4.39
FriendToM	64	17.00	25.00	42.00	34.42	4.39
Validation/Caring	64	3.70	1.30	5.00	4.10	.80
Conflict Resolution	64	4.00	1.00	5.00	3.81	1.13
Conflict/ Betrayal	64	2.33	2.67	5.00	4.37	.65
Help/Guidance	64	3.89	1.11	5.00	3.62	.98
Companionship/Recreation	64	3.00	2.00	5.00	3.90	.84
Intimate Exchange	64	4.00	1.00	5.00	3.18	.98
Loneliness	64	53.00	11.00	64.00	48.41	7.64

Table 3
Friendship Quality Subscales by Gender

Friendship subscale	Gender	Mean	Std. Deviation
Validation and Caring	M	3.73	.89
	F	4.41	.56
Conflict Resolution	M	3.57	1.26
	F	4.0	.99
Conflict and Betrayal	M	4.24	.69
	F	4.48	.61
Help and Guidance	M	3.26	1.00
	F	3.91	.88
Companionship and Recreation	M	3.5	.81
	F	4.2	.75
Intimate Exchange	M	2.89	.89
	F	3.41	.99

Table 4
Correlations between ToM, Friend's ToM, Verbal Score, Friendship Quality and Friendship Quality Subscales

	ToM	FToM	VS	V/C	CR	CB	HG	C&R	IE
ToM	1	.26*	.33	.01	.17	.23	-.15	-.19	-.08
FToM		1	-.02	-.32**	-.15	-.05	-.24	-.26*	-.29*
VS			1	.12	.18	.51**	.04	-.04	-.01
VC				1	.72**	.46**	.76**	.60**	.74**
CR					1	.51**	.59**	.30*	.62*
CB						1	.40**	.17	.29*
HG							1	.70**	.75**
C&R								1	.61**
IE									1

ToM = Theory of Mind. FToM =Friend's Theory of Mind. VS = Verbal Score. V/C = Validation and Caring. CR = Conflict Resolution. CB = Conflict and Betrayal. HG = Help and Guidance. C&R = Companionship and Recreation. IE = Intimate Exchange.
 *. Correlation is significant at the 0.05 level (2-tailed).
 **. Correlation is significant at the 0.01 level (2-tailed).

Appendix A

Script 1 - Unexpected Contents First-Order False-Belief

(Show the child the band aid box)

ASK (question 1) – “What do you think is inside?”

(Show the child the actual contents)

ASK (question 2) – “What is inside the box?”

ASK (question 3) – “Before you looked inside, what did you think was in the box?”

ASK (*reality control* question 4) – “What is in the box really?”

(Show the child a puppet)

ASK (question 5) – “What does Charlie think is in the box?”

ASK (*reality control* question 6) – “What is in the box really?”

To pass the child had to correctly answer all the questions.

Script 2 - Change of Location First-Order False-Belief

(Show: Introduce dolls)

ASK (question 1) – “Where will Sally look for her marble?”

IF the child doesn't respond, PROMPT them with “in the yellow box or in the red box?”

ASK (*reality control* question 2) – “Where is the marble really?”

ASK (*memory control* question 3) – “Where was the marble first of all?”

To pass the child had to correctly answer all the questions.

Script 3 - Belief-desire Reasoning: Disappointing Surprise

(Show: puppets Pip the Chipmunk and Leon the Lion, miniature Sprite can, a miniature milk carton)

READ “This is a story about two friends, Pip the Chipmunk and Leon the Lion. Pip is a very naughty chipmunk, and likes to play tricks on his friend Leon. Now, Leon really likes Sprite, mmm. In fact, it's his very favorite drink. Look! Here is Leon's can of Sprite.

ASK (question 1) – “How does Leon feel when he gets a can of Sprite?”

READ “Leon doesn't like any other drinks though and he really doesn't like milk, yuck, yuck. Look here's some milk.

ASK (question 2) – “How does Leon feel when he gets some milk?”

READ “One day, Leon went out for a walk, and naughty Pip decided to play a trick on his friend Leon. He poured out the Sprite, pssssh! and instead he poured in some milk glug, glug, glug. Then he put the milk away, and went outside to watch Leon through the window. Now when Leon comes back from his walk, he’s really thirsty. He can see the can on the table, but he can’t see what’s inside the can.

ASK (question 3) – “When Leon comes back from his walk, how does he feel – happy or not?”

ASK (question 4) – “Why does he feel that way?”

ASK to JUSTIFY their response – “Why do you think he feels that way?”

ASK (question 5) – “What does Leon think is in the can?”

ASK (reality *control* question 6) – “What is in the can really?”

ASK (question 7) – “How does Leon feel after he’s had a drink – happy or not?”

ASK (question 8) – “Why does he feel that way?”

To pass the child had to correctly answer all the questions.

Script 4 - Belief-desire Reasoning – Nice Surprise

(Show: puppets Harriet the Rabbit and Baloo the Bear, pencil box, markers)

READ “This is a story about two friends, Harriet the Rabbit and Baloo the Bear. Harriet is a very kind Rabbit, and likes to give her friend, Baloo, gifts. Now, Baloo really likes to color with markers. In fact, it’s his favorite way to draw. Here is box of pencils.

ASK (question 1) – “How does Baloo feel when he sees the pencil box?”

READ “Baloo doesn’t like to draw with anything else. Look, on the top of the shelf, there are markers out of reach!”

ASK (question 2) – “How does Baloo feel when he sees the markers out of reach?”

READ “Baloo left the room to go to the bathroom and Harriet decided to sneak her markers into Baloo’s pencil box. Harriet then quietly left the room and peeked through the door window to watch Baloo. Baloo comes back from the bathroom and sees the pencil box on his desk, but can’t see what’s inside the box.”

ASK (question 3) – “When Baloo first comes back from the bathroom, how does he feel – happy or not happy?”

ASK (question 4) – “Why does he feel that way?”

ASK to JUSTIFY their response – “Why do you think he feels that way?”

ASK (question 5) – “What does Baloo think is in the box?”

ASK (*reality control* question 6) – “What is really in the box?”

ASK (question 7) – “How does Baloo feel after he open’s up the box – happy or not happy?”

ASK (question 8) – “Why does he feel that way?”

To pass the child had to correctly answer all the questions.

Script 5 - Unexpected Location Second-order False Belief

(Show pictures)

(Show picture 1) READ “Aunt Cathy has given Mary and Simon some pudding to share, ‘Go and put it in the refrigerator children,’ says Aunt Cathy, ‘you can have some when your mom says so.’”

(Show picture 2) READ “The children run into the kitchen and put the pudding in the fridge, then they go out to play.”

(Show picture 3) READ “A little later, Simon comes in for a glass of water. He goes to the fridge and he sees the pudding. He wants to keep the pudding all for himself, so he takes the puddings out of the fridge and puts the puddings in his bag.”

ASK (question 1) – “Where does Mary think the pudding is?”

ASK (question 2) – “Where has Simon put the pudding really?”

(Show picture 4) READ “Oh look, Mary was playing by the counter; she can see everything that Simon is doing! She sees him put the puddings in his bag! Simon is so busy hiding the pudding he doesn’t see Mary watching him! Later Mom calls Simon and Mary in for dinner. She says they can have some pudding. So, Simon and Mary come running into the kitchen.”

ASK (question 3) – “Where does Simon think Mary will look for the pudding?”

ASK (*justification* question 4) – “Why does Simon think that?”

ASK (*reality control* question 5) – “Where is the pudding really?”

ASK (*memory control* question 6) – “Where was the pudding first of all?”

To pass the child had to correctly answer all the questions.

Script 6 - Unexpected Location Second-order False Belief

(Show: pictures, Emily, Sarah, Mom, and Dad)

(Show picture 1) READ “One sunny day, Mom told Emily, “I am taking Sarah to tennis practice, do you want to come with us?” Emily replied “No, thank you. I’ll stay home and play.” Mom and Sarah left for tennis practice.

(Show picture 2) READ “Not long after the two of them left, Dad got a phone call from

Mom saying ‘tennis practice is cancelled, we are going to the pool down the street instead.’”

(Show picture 3) READ “Dad hung up the phone and went into his office to work.”

(Show picture 4) READ “Emily was sitting at the kitchen counter when mom runs in to grab the sunscreen, gives Emily a kiss on the head while saying ‘Sarah and I are going to the pool down the street’, and rushes out the door.”

ASK (question 1) – “Does dad know that Mom has talked to Emily?”

ASK (*control* question 2) – “Where are Mom and Sarah, really?”

(Show picture 5) READ “A little later, Emily decided to go and find Mom and Sarah. She ran down the hallway and told her dad, ‘I’m going to go play with Mom and Sarah.’”

ASK (question 3) – “Where does Dad think Emily will go?”

ASK (question 4) – “Why does Dad think Emily will go there?”

ASK (*control* question 5) – “Where are Mom and Sarah?”

ASK (*control* question 6) – “Where did Mom and Sarah go first?”

To pass the child had to correctly answer all the questions.

Script 7 – Sarcasm

(Show pictures) READ “These two girls are going on a picnic. It is the girl with the brown hair’s idea. She says it will be a lovely sunny day. But when they get the food out, big storm clouds come. It rains and the food gets all wet. The blonde girl says: “It’s a lovely day for a picnic.”

ASK (*memory control* question 1) – “What did the blonde girl say?”

ASK (question 2) – “Is what the blonde girl said true?”

ASK (question 3) – “What did the blonde girl say, ‘it’s a lovely day for a picnic’?”

ASK (question 4) – “Was the blonde girl happy about the rain?”

To pass the child had to correctly answer all the questions.