A Longitudinal Study of Children's Theory of Mind, Self-Concept, and Gender-Role Orientation[1]

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Abstract

This study investigated the longitudinal relations between theory of mind (ToM) understanding, self-perceptions, and perceptions of gender-role orientation in 28 school-aged children, (16 girls, 12 boys, aged 8-12 years). Theory of mind and perceptions of self were assessed at Time 1 (T1, M = 8 y 5 m) and two years later at Time 2 (T2, M = 10 y 4 m). Negative correlation was found between T1 ToM and T2 Perceptions of Moral Self (r = -.55, p = .004). Positive correlations were found between T1 Perceived Masculinity and T1 ToM (r = .682, p = .015). No relations were found between ToM T1 and T2 (r = .281, *ns*), as well as between T1 and T2 Self-Understanding scores (r = .244, *ns*). Positive relations were found between self--understanding and ToM at T1 only (r = .394, p = .038). Implications for children's socioemotional development are discussed.

Keywords: Middle Childhood, Theory of Mind, Self-Concept, Gender-Role Orientation

Introduction

Evidence over the past decade suggests understanding of mind may grow from a foundation of understanding of emotions and self (Bartsch & Wellman, 1995), and develops in part through social relationships and attachment relations (Dunn, 2008; Hughes, 2011; Meins et al., 2002). Few studies, however, have examined such a link past middle childhood (Meins et al., 2006; Watson et al., 1999), and thus, there is a need to understand how the child's mind and emotion connect (Dunn, 2008). Given the important role that interactions play in children's later success in understanding other's mind and behaviour (Amsterlaw et al., 2009; de Rosnay & Hughes, 2006), there

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remains a lack of research on how social experiences foster the growth of children's understanding mind and self including gendered aspects of one's identity.

Although Theory of Mind (ToM) development or the ability to understand thoughts and emotions in self and other is an active area of research (Dunn, 2008), empirical evidence gleaned from the later childhood and early adolescent years remains sparse (Hughes, 2011). In addition, there remains a dearth of longitudinal studies that explore whether or not reasoning about self (intrapersonal) and other (interpersonal) are reciprocal and interdependent, or remain isolated and independent from one another (Lucariello, 2005). To address this gap in the research, the purpose of the present study is to explore connections over time between children's theory of mind (ToM), or the ability to understand thoughts and emotions in self and other and their perceptions of self-worth and gender-role orientation. Our main research question is: Do links exist over time (2 years), between children's ToM understanding and their perceptions of self and gender-role orientation?

Children's Understanding of Mind and Emotion

The development of the ability to represent and reason from second-order beliefs (two or more mental states) has received relatively little attention in the literature particularly during the transition from middle to late childhood (e.g., 8 – 12 years) (Carpendale & Chandler, 1996; Carpendale & Lewis, 2004). This is surprising, given that social communication depends mainly on what people believe about other people's beliefs and emotions (Astington, 1993). Past research shows that second-order or interpretive reasoning may influence children's ability to understand speech acts such as lies, jokes, sarcasm, and irony (Filoppova & Astington, 2008, 2010; Leekam, 1993), and in their ability to understand self-representational display rules (Banerjee & Yuill, 1999; Banerjee & Watling, 2007). Given that advanced or higher order social reasoning may also help adolescents understand the ambiguous nature of personal and social silences (Bosacki, 2008), some researchers suggest such advanced reasoning is also fundamental to adolescents' understanding of social moral emotions (e.g, embarrassed, proud, etc.), their sense of self and other persons, and social interactions (Hughes, 2011).

Recent evidence suggests that ToM understanding continues to develop during middle childhood to late childhood (approximately during the ages 8-12 years), particularly regarding the understanding of complex and ambiguous emotions (Pons, et al. 2003, 2004; Yuill & Coutlas, 2007). In contrast to the simple or basic emotions (e.g., happy, sad), to understand complex or socio-moral emotions (e.g., pride, embarrassment), children must hold in mind two separate pieces of information: other people's and societal norms (Saarni, 1999). That is, children must imagine what others think of their behaviour and self-evaluate their behaviour against internalized behavioural standards. Although complex emotion understanding hinges on cognitive abilities such as second-order ToM reasoning and perceptions of self including gender-role orientation, to date, no studies have investigated the links among these concepts during middle to late childhood. Given this gap in the literature, this study will investigate individual differences in social cognition within the school context during middle childhood.

ToM and Self-Perceptions in School Context

Although ToM and self-perceptions are foundational to child's educational experiences (Bruner, 2006), few researchers have studied the relations between ToM understanding, self-perceptions, and school experiences beyond the age of 8 or 9 either within their family or school context (Bosacki, 2003; Hughes, 2011). Similar to the rich family context, the school classroom provides children with a valuable

opportunity to learn social and emotional messages regarding interactions and others' mental states. Regarding academic competence and school success, associations have been found between ToM, emotion understanding and the production of stories and general language ability (Astington & Jenkins, 1995; Denham et al., 2013). Theory of mind understanding has also been claimed to facilitate children's ability to self-monitor and regulate their cognitive process and engage in reflexive thinking (Fiasee, & Nader-Grosbois, 2012; Lagattuta & Wellman, 2002).

Although research shows that knowledge about self and others' thoughts and emotions continues to develop during middle to late childhood (Hughes, 2011), we know little about older children's ToM understanding and self-perceptions. Research studies suggest that psychological understanding is linked to higher-order, metacognitive thought or more advanced reasoning (Pine & Siegler, 2003). That is, children who possess high levels of ToM understanding or provide psychological explanations are more likely to "think about their own and others thinking" and engage in critical philosophical enquiry and shared dialogue during the school day (Haynes, 2002). Thus, given that teaching and learning is crucial to self- and ToM understanding (Bruner, 1996), this study explores how children's ToM understanding plays a role in their perceptions of self within the middle school years (Ladd, Buhs, & Troop, 2002). Also, as Hughes (2011) states, a relatively small number of studies have examined individual differences in social understanding in relation to children's own views of themselves within the context of their middle school experiences.

Children's Perceptions of Self and Gender-Roles

Another aspect of social cognitive development is also the ability to understand oneself as a concept that continues to develop during childhood and into adulthood (Harter, 1999). Past research shows that during childhood, the focus on one's gender identity during development affects children's perceptions of their physical appearance and body-image (Golombok & Hines, 2002). Previous findings show that children's perceptions of physical appearance and how they conform to societal stereotypes of gender-role orientations (e.g., societal stereotypical feminine and masculine behaviour) often serves as a source of self-worth (Aina & Cameron, 2011; Compion et al., 2004; Harter, 1999). Such societal messages may in part be transmitted and reinforced by various social agents including family, peers, and the mass media (e.g., Costarelli et al., 2011; Smolak, Levine, & Schermer, 1999). Past studies suggest that parental comments and modeling regarding gender-role stereotypes may influence children's self-perceptions and attitudes concerning physical appearance (Maccoby, 1998). However, given the possible influence of peers and teachers on children's self-perceptions and gender-role identity (McHale et al., 1999; Sandberg et al. 2006), it is surprising that few studies investigate children's understanding of self, gender-roles, and ToM in childhood within the school context.

In addition, given the notion that young females and males may use a different "metric" when forming self-judgments (Fine, 2011; Maccoby, 1998), and that perceptions of others' social and emotional worlds may be viewed differently for females and males (Bussey & Bandura, 1999; Fine, 2011), this study explored links among children's ToM understanding and understanding of self and gender-role orientation. Given that social-cultural experiences and self-conceptions are inseparable (Bronfenbrenner, 2005), the present study explored how might children's perceptions of self and gender-role relate to one's ToM ability during middle childhood. More specifically, the present study addressed the following questions: 1) Do longitudinal relations exist among children's ToM understanding, self-perceptions, and gender-role orientation at Time 1 and 2 years later at Time 2; and 2) Do individual differences exist

in children's scores and correlational patterns among variables at both time points (8 years and 10 years of age)?

Method

Participants

As part of a larger longitudinal study of children's ToM understanding and its relation to social cognitive and emotional competencies (Bosacki, 2008), this small-scale, longitudinal, correlational study focused on two time points (T1, 2006 and T2, 2008) involving 28 mainly Euro-Canadian children from middle SES, semi-rural neighbourhoods (12 boys, 16 girls, *M* = 10y, 4m).

Procedures

Upon obtaining ethical clearance from the universities, school board, principals, teachers, parents, and students, each year children completed standardized pencil and paper measures and participated in individual interviews that involved social stories to assess children's ToM understanding (e.g., how did they interpret mental states in others), and their perceptions of self (physical appearance, behavioural or moral conduct, and global self-worth) and gender-role orientation (perceived femininity and masculinity). Only those children who received written parental permission and agreed verbally participated in the study.

Data collection each year (T1 and T2) consisted of two stages; the first stage consisted of a group, in-class session where three trained female researchers group administered a pencil-and-paper self-report questionnaire regarding self-perceptions and gender-role orientation to the children. To facilitate task completion, researchers provided explicit written (on the blackboard) and verbal task instructions to the children. Following this group instruction session, one researcher read aloud the questionnaire items to the participants and the children completed the task together item by item. The two remaining researchers monitored the class session and addressed any questions that children had as they completed the task. This task was completed within a 30 minute class period.

The second stage involved an individual session in which children were administered two story-interviews to explore TOM (order of stories was counterbalanced), followed by a series of questions to assess their self- understanding. Interviews were conducted in a small room outside of the classroom and all interviews were audiotaped and transcribed. The interview session was approximately 20-30 minutes in length. Demographic information pertaining to family structure was obtained through parent questionnaire. Children also participated in a semi-structured interview regarding self-understanding that focused continuity, distinctiveness, and agency (Damon & Hart, 1988). All tasks were administered by three trained female researchers, and children were reminded that their responses would remain confidential, and that they had the opportunity to ask questions or stop at any time during the research.

This study focuses on tasks conducted during each of two time points (T1 = 2006/7, T2 = 2008/9), the ToM story and self-understanding interviews (February-April T1, T2) and the self-report questionnaire to assess self-perceptions and gender-role orientation (November – April, T1, T2). As noted above, the self-concept questionnaire (SPSSC, Harter, 1985) was group administered within class, whereas the ToM story and self-understanding interviews were conducted within a quiet room outside of the classroom during school time. Interviews were audiotaped for subsequent transcription and analysis.

Measures

Theory of Mind Understanding (Social Ambiguous Stories) (Bosacki, 2000; Bosacki & Astington, 1999)**.** Gleaned from past research, to assess ToM understanding or understanding other's mental states and emotions), adapted versions of two brief vignettes consisting of an ambiguous social situation) that describe an ambiguous social event with three children (one story involves three females, one story involves three male) were read to the child (Bosacki, 2008). Borrowing from theoretical work that views ToM as a vehicle or instrument that is used to co-construct or narrate ones' social reality (Astington, 1993; Bruner, 2006), and studies that investigate an advanced ToM through the use of narratives (Artar, 2007; Charman & Shumeli-Goetx, 2008; Fiasse & Nader-Grosbois, 2012; Happe, 1994), this task aimed to asses the ToM involved in interpreting social meaning from ambiguous stories.

The stories were socially ambiguous because past research has found children's interpretations of ambiguous social situations to be an effective method of eliciting children's representational understanding of mind and emotion (Dodge & Frame, 1982; Levinson, 1995). Thus, this task was developed to strike a balance between projective, open-ended narrative tasks (e.g., Fox, 1991; Selman, 1980), and more forced-choice, experimental tasks (e.g., see Baron-Cohen, 2011). The two stories involved one scenario for girls (an unfamiliar girl approaches two friends already engaged; two boys on a sports team need to choose another boy for their team). However, no reason was given in this story to explain why the actors did not speak to the recipient. Thus, participants had to infer the reason that the actors disregarded the recipient. The following stories are excerpts from the Nancy Margie and Kenny/Mark Social Ambiguous Story Interviews used to assess participants' understanding of emotions and mental states (Bosacki, 2000).

Nancy/Margie

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 swing set. 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 girl 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.

Kenny/Mark

Kenny and Mark are co-captains of the soccer team. They have one person left to choose for the team. Without saying a word, Mark winks at Kenny and looks at Tom who is one of the last children left to be chosen. Mark looks back at Kenny and smiles. Kenny nods and chooses Tom to be on their team. Tom sees Mark and Kenny winking and smiling at each other. Tom, who is usually one of the last to be picked for team sports, wonders why Kenny wants him to be on his team.

The stories were followed by questions that assessed emotion understanding including emotion word labelling and understanding of situational causes of emotions. In addition, following each narrative, the children were asked to imagine and predict what the characters would do next, what they be thinking and feeling, and whether or not the actions would be considered the 'right' or 'wrong' thing or moral judgements. They were also asked to imagine what would happen next in the story. Based on past research (Bosacki, 2000), responses to each emotion were coded according to their accurateness (mental state and emotional labelling), and their level of conceptual sophistication (understanding of the socially ambiguous situation, or what causes

emotions for both self and peer). For example, a code of 0 was provided for intangential or "I don't know responses,"1 = behavioral/physical responses such as "Tom would walk away and play elselwhere.", 2 = Psychological that would include references to at least 1-2 psychological or emotional state such as "Tom thought that Kenny and Mark were unfair." 3 = Integrated psychological response which would be a sophisticated response involving a complex (3 or more), and/or contradictory combination of psychological emotional terms (e.g., "Tom felt that Kenny and Mark were angry with him and wanted to trick him into thinking they were his friends."). Responses were also coded for emotional valence including positive, negative, and neutral scenarios.

Cronbach's alpha for the 21-item aggregate score for the Nancy/Margie/new girl and Kenny/Mark/Tom story was .67 and 69 respectively. To obtain as sensitive a ToM measure as possible, children's scores on the Nancy?Margie/new girl and Kenny/Mark/Tom (0-21) were summed into a reliable composite (0–42). For the present sample, Cronbach's alpha for the sum of these two scores was α = .69. Consistent with past research (Bosacki), this was deemed to indicate modest, but adequate, internal consistency to use the combined total score as our main index of Time 1 ToM understanding (*M* = 23.34; *SD* = 4.56, range 0-42). Randomly selected 25% of the transcripts were coded by a second independent coder, resulting in an average kappa of (.92) across the two stories. Discrepancies were discussed until consensus was achieved.

Self-concept. To assess children's perceptions of their competencies, three subscales from Harter's (1985) Self-Perception Profile for Children (SPPC) were used. Based on past literature (Cassidy, 1999; Harter, 1999), the present study focused on three aspects that some researchers consider particularly relevant to children including: perceived behavioral conduct (6 items, e.g., "how well-behaved do you think you are," Cronbach's alpha = .81), physical appearance (6 items, e.g., "how good-looking do you think you are," Cronbach's alpha = .79), and global self-worth (6 items, e,g., "how happy are you being who you are?" Cronbach's alpha = .89). Randomly selected 25% of the transcripts were coded by a second independent coder, resulting in an average kappa of (.90) across the two coders. Discrepancies were discussed until consensus was achieved.

Self-understanding. To assess the complexity of the self-system, in addition to assessing the evaluative or objective component of self as measured by the SPPC, children were also asked questions to assess the subjective self. Adapted from questions from past research, these questions addressed topics of continuity, agency, and distinctiveness. (Damon & Hart, 1988). Randomly selected 25% of the transcripts were coded by a second independent coder, resulting in an average kappa of (.88) across the two coders. Discrepancies were discussed until consensus was achieved.

Gender-Role Perceptions. To assess children's self-perceived gender roles, children were administered a self-report questionnaire that contained items gleaned from two standard measures used in research on children's gender role perception. Stereotypical masculine, feminine and neutral items concerning characteristics and activities were gleaned from the Children's Sex Role Inventory (CSRI, Boldizar, 1991), and a recent study on gender roles in middle childhood (McHale et al., 1999). The present study focused on the masculinity items (6 items, e.g., "I am good at sports." Cronbach's alpha = .70) and the femininity items (6 items, e.g., "I like babies and small children a lot." Cronbach's alpha = .72). This scale was presented orally to the children and after each item they were asked to respond to a Likert-type scale of pictures indicating how true it was for them.

Results

Descriptive Statistics and Preliminary Analysis

Data analysis based on a coding scheme developed from previous research was derived from the ToM interview questions to create a composite ToM understanding score (Bosacki, 2000). Thus, higher ToM scores represented a more sophisticated understanding of emotion and mental state concepts. Likewise, a coding scheme was derived from the self-understanding questions to create a total composite subjective self-understanding score as mentioned above. Accordingly, higher scores represented higher perception of self-understanding. High ToM, Self-Perceptions, Self-Understanding, and Gender-Role Orientation scores represented a more sophisticated understanding of both mental states in others and one's own self-theory including perceived femininity and masculinity.

Task Performances and Individual Differences

Table 1. Means and Standard Deviations of Main Variables for Time 1 and Time 2

Variable	Time 1 $(n = 28)^1$	Time 2 $(n = 28)^2$	T	p
	M (SD)	M (SD)		
ToM Total[3]	27.29 (19.17)	39.00 (3.42)	3.35	.00
Femininity	15.00 (4.21)	16.81 (3.72)	1.59	.13
Masculinity[4]	12.30 (3.70)	17.35 (5.21)	4.11	.00
Self-Understanding[5]	4.18 (4.44)	13.09 (8.36)	4.95	.00
Self-Perceptions[6]				
Behavioural Conduct	15.29 (3.3)	15.08 (3.08)	-.38	.71
Physical Appearance	16.61 (3.02)	15.12 (2.35)	-1.48	.15
Global Self-Worth	18.04 (7.27)	15.95 (1.62)	-1.50	.15

Note. 1. Mean Age = 8 y; 5 mos. 2. Mean Age: 10 y; 4 mos 3. Total Theory of Mind Score (Bosacki, 2000); range 0 – 42; higher scores reflect higher ToM understanding. 4. Higher scores reflect higher gender-role orientation perception, T1 *N* = 28, T2 *N* = 23. 5. Total Self-Understanding Score (Bosacki, 2005); range 0 – 10; higher scores reflect higher Self-Understanding. 6. SPSS (Harter, 1985); range 0-24; higher scores reflect higher self-perceptions.

Table 2. Longitudinal Correlations Between Time 1[1] and Time 2[2] for Main Variables

Variable	1.	2.	3.	4.	5.	6.	7.
1. ToM Total[3]	--	-.26	.68*	.39*	-.00	.15	-.34
2. Femininity[4]	⁻34	----	-.38	.16	-.10	-.24	-.14
3. Masculinity[4]	⁻.05	.01	----	-.01	-.03	.14	⁻.18
4. Self-Understanding[5]	-.13	.00	.26	---	-.06	-.39*	.04

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Table 2 (Cont). Longitudinal Correlations Between Time 1[1] and Time 2[2] for Main Variables

Variable	1.	2.	3.	4.	5.	6.	7.
Self-Perceptions[6]							
5. Behavioral Conduct	.18	-.12	-.02	-.06	----	.44[*]	-.04
6. Physical Appearance	.42	-.10	.09	.25	.17	---	.15
7. Global Self-Worth	.37	-.03	.34	.19	.48[*]	.47[*]	------

Note. Time 1 (*n* = 28)[1] above the diagonal, Time 2 (*n* = 28)[2] below the diagonal. 1. Mean Age = 8 y; 5 mos. 2. Mean Age: 10 y; 4 mos 3. Total Theory of Mind Score (Bosacki, 2000); range 0 – 42; higher scores reflect higher ToM understanding. 4. Higher scores reflect higher gender-role orientation perception 5. Total Self-Understanding Score (Bosacki, 2008); range 0 – 10; higher scores reflect higher Self-Understanding. 6. SPSS (Harter, 1985); range 0-24; higher scores reflect higher self-perceptions.

* *M = p* < .10 ; *p* = < .05.

Longitudinal Individual Differences

Examination of the means of the main variables (T1, T2: ToM, SPCC, Gender-Role Orientations) showed significant effects for time for ToM, Self-Understanding and Perceived Masculinity (see Table 1). Paired T-tests showed significant increases between Time 1 and Time 2 ToM Total scores, Self-Understanding Scores and Perceived Masculinity. In contrast, Self-Perception scores did not increase significantly from T1 and T2.

Cross-sectional and Longitudinal Correlational analysis

Correlational analysis was conducted between aggregate ToM scores, self-perceptions and understanding and gender-role orientation variables cross-sectionally at T1 and T2, as well as longitudinally between T1 and T2 scores.

Table 2 shows cross-sectional correlations, for ToM, self-perceptions and understanding, and gender-role orientation correlations at T1 and T2. Results showed significant positive correlations between T1 ToM scores and T1 perceived Masculinity (*r*(27) = .68, *p* = .015), but not at Time 2. Self-Understanding and ToM were related at T1 only (*r*(27) = .39, *p* = .038). A negative correlation was found between self-understanding and perceived physical self-concept at T1 only (*r*(27) = -.39, *p* = .039).

Regarding longitudinal relations between T1 and T2, children's T1 Total ToM scores and their perceptions of self at T2 showed significant negative correlations between T1 Total ToM scores and T2 children's perceptions of behavioral conduct or a moral sense of self: *r*(24) = -.55, *p* = .004; and perceptions of global self-worth: *r*(22) = -43, *p* < .05). These results support previous research that found negative relations between ToM and self-perceptions (Bosacki, 2000). Regarding connections between Time 1 and Time 2 ToM and self-concept scores, no correlations were found between Time 1 and Time 2 ToM scores (*r*(26) = .28, *p* = *ns*). Similarly, no relations were found between children's T1 and T2 self-perceptions were found, nor T1 and T2 self-understanding total scores.

Regarding longitudinal relations between T1 and T2 among perceptions of gender-role self, ToM, a marginally significant negative correlation was found between perceptions of global self worth at Time 1 and self-understanding at Time 2 (*r*(27) -

.413 *p* =.056). This result suggests that children who were happy with who they were and had a positive view of self-worth reported less self-understanding at 10 years of age. Alternatively, children at 8 years who reported a negative feeling of self-worth were more likely to report a great sense of self-understanding at 10 years of age.

Regarding longitudinal relations between self-understanding and gender-role perceptions, a significant relation was found between perceived masculinity at T1 and self-understanding at T2 (r(22) = .502, *p* =.017, whereas a marginally significant positive correlation was found between perceived T1 femininity T2 self-understanding (r(22) = .384, *p* =.08. The positive relation between perceived masculinity and self-understanding two years later suggests that children who were more likely to perceive themselves as stereotypically masculine or relating to stereotypic masculine characteristics (e.g., I am good at sports) were more likely to report a greater sense of self-understanding two years later at 10 years of age. No correlations were found between self-understanding at Time 1 or 2 and Gender-Role at T2.

In sum, associations between children's ToM understanding and their perception of self and gender-role orientation across time holds many educational and clinical implications that will be discussed in the next section.

Discussion

This small-scale longitudinal study examined the links between children's ToM understanding, perceptions of self and gender-role orientation at 8 years of age, and then 2 years later at 10 years of age. One of the main strengths of this study is that it follows a research design of a relatively small-scale, longitudinal study that combines both qualitative and quantitative analyses (Creswell, 2012). Given that the present findings expand children's perspectives regarding ToM, self-perceptions and gender-role orientation, this study offers a unique contribution to the existing literature regarding ToM in later childhood. Accordingly, the main findings are discussed in terms of the following research questions 1) Do longitudinal relations exist among children's ToM understanding and their perceptions of self and gender-role orientation at 8 years of age and two years later at 10 years of age, and 2) Do individual differences in children's scores and correlational patterns among variables exist? Findings will be then be discussed in terms of the extant literature on ToM, self-concept, and gender-role orientation.

Regarding the first research question, examination of the means showed significant age effects for ToM understanding, self-understanding, and perceived masculinity. That is the older the children, the higher the ToM understanding, self-understanding, and perceived masculinity scores. From a psychocultural and social cognitive perspective, (e.g., Bussey & Bandura, 2004; Bronfenbrenner, 2005; Maccoby, 1998), such findings can be explained in terms of the interplay among self-understanding, stereotypic societal gender-role expectations and their link to Theory of Mind. Given past research that suggests children develop their ToM and self-concept through an interaction of cognitive development and social interactions (de Rosnay et al., 2006), perhaps the increase in scores over the two years is partly due to an interaction of individual and environmental factors. That is, the increase in ToM and self-perceptions may be due in part to the combination of increased cognitive ability to think about the self-concept in a more coherent sense including a more comprehensive gender identity. In addition, increased social exposure to others, particularly one's peer group and conversations regarding others' mental states may help to develop one self's concept.

Guided by the second research question that asked: "Do individual differences in children's scores and correlational patterns among variables exist?," for both Time 1 and 2, self-understanding was unrelated to perceived self-competence regarding

behavioral conduct, physical appearance, and global self-worth. The one exception was a significant negative relation between T1 self-understanding and T1 physical self-concept, suggesting that for 8-year-olds only, the higher children scored on self-understanding or understood themselves in terms of continuity, agency and distinctiveness, they more likely they were to report negative comments about their physical sense of self. Alternatively, the lower children scored on self-understanding, the more positive they rated their physical appearance. That is, participants who experienced difficulty in understanding themselves as psychological beings, in a more conceptual, cognitively complex way were also more likely to evaluate their physical appearance in a positive way.

Such findings support claims that the self-concept is a multidimensional and dynamic process that continues to develop with age, and may contain either inter-related or independent dimensions (e.g., Bruner, 1996; Gergen, 2001). Furthermore, such findings support past developmental research that suggests that younger children tend to focus more on the physical aspect of the self and as they age, they begin to include further psychological aspects of their self-concept (Harter, 1999). As many researchers claim (Bussey & Bandura, 2004; Harter 1999; Harre, 1986), we need to learn what kind of role self-mechanisms such as self-regulatory functions play in ToM understanding and how this may differ according to gender, ethnicity, socioeconomic status, etc. Future research needs to explore the possible influences on, and connections between children's developing ability to judge or evaluate themselves as well as understand themselves as conceptual beings.

Regarding findings concerning ToM and perceptions of self and gender-role, how do we explain the finding that at 8 years of age only, children who scored higher in ToM also viewed themselves as more stereotypically masculine? Relatedly, perceived masculinity at 8 years old was also correlated positively with self-understanding at 10 years. Given that only the younger children showed a positive link between ToM and perceived masculinity, perhaps at 8 years of age children who are more likely to understand mental states in self and others may also be more likely to understand the complexity of gender-stereotypic characteristics of masculinity such as "I like to play sports." that this kind of statement can be applied to both males and females. Given the development of the conceptual self, the positive relation between perceived masculinity at 8 years of age and self-understand at 10 years of age supports research that shows that children's concept of self may expand and become more complex and multidimensional in that one's perception of gender-roles may also become integrated into one's larger conceptual sense of self (Harter, 1999). Thus, perhaps at 8 years of age, children who thought of themselves in more stereotypical masculine ways were also more likely to have a more coherent sense of conceptual self at 10 years.

Regarding the connections between ToM and self-concept, we found two significant relations, one positive relation between ToM and self-understanding at 8 years and not at 10 years. The second ToM and self correlation was the negative relation between ToM at T1 and a perceptions of behavioural conduct or a moral sense of self – that is, how well children perceived themselves to be well behaved according to social conventions. Both findings will be discussed in turn.

We first need to explain why children who scored high on ToM also scored high on self-understanding at 8 years old but not 10 years of age. Given that a sense of self and other's mental states may develop through initial child-caregiver interactions (attachment theory perspective, see Meins et al., 2002), perhaps children's sense of self and other are more connected in younger childhood and becomes more differentiated. That is, from an attachment-theory perspective, the internal working model (IWM) of the self and other becomes more multidimensional and complex as it

may grow and expand with new relationships beyond the initial caregiver-child relationship.

We also need to explain the negative correlation between ToM at T1 and perceptions of behavioural conduct or a moral sense of self at T2. Perhaps this finding could be explained that if children were more likely to understand mental states of self and other at 8 years old they were also less likely to see themselves as 'following the rules' or social conventions at school when they are 10 years old. Perhaps having the ability to see other peoples' perspectives at 8 years helps to develop the ability to see various ways that 'rules' are created by society and as children grow older, they are more likely to question the rules, or find other ways to follow the rules – or learn about how rules are created based on others' perspectives within society. Alternatively, children who scored low on ToM at 8 years may have been less likely to understand the perspectives of others which in turn may have led them to perceive themselves as more well-behaved and likely to follow social conventions at 10 years old. As both explanations are complex and researchers need to continue to explore the longitudinal connections between ToM and moral development and behaviour (Lagattuta, Nucci, & Bosacki, 2010; Nucci, 2009).

The present findings regarding the links between ToM and self-perceptions could also be explained within the context of gendered parent-child and/or teacher-child emotion talk (Meins et al., 2002). That is, perhaps the parents of the participants in the present study engaged in gender-differentiated behaviours and mental state talk with their daughters and sons. In addition to parents, Denham and colleagues (2013) assert teachers also play a crucial role in shaping their children's social and emotional competence. Thus, teachers may play a crucial role in children's developing ToM and perceptions of self as thus may act serve as emotion or psychosocial "coaches" in that they could promote the development of social cognitive competencies.

The present findings support past research that suggests that children's higher ToM abilities may lead them to imagine what their friends think about them either in a positive or negative way. That is, the present findings support past studies that found some children with a sophisticated ToM ability may be more sensitive to teacher criticism and more likely to interpret hidden social messages among peers including negative experiences with peers (Caravita, Di Biasio, & Salmivalli, 2010; Dunn, 2008; Hughes, 2011). Perhaps a more developed ToM ability may serve as a double-edged sword and may help some children to decipher ambiguous social messages which may include both positive and negative messages. Researchers need to continue to explore how children's ToM and perceptions of self and gender-role may have an influence on their school adjustment and well being in school (Zambo & Brem, 2004).

Implications

The results of this study may help to remind educators and researchers of the importance of children' developing ability to think about oneself and others as psychological beings. Those who work with children also need to be cognizant that middle to late-childhood is a time when females and males develop an increasing awareness of increased social consciousness and social pressures to conform to gender-stereotypic norms (Fine, 2011; Maccoby, 1999). This study may help to increase researchers' and educators' awareness of how gender-stereotypic beliefs may affect children' socioemotional development. Accordingly, the current findings may encourage youth workers to minimize the extent to which they use gender-stereotypic language and behaviour around gradeschool-aged children. Moreover, adults should be encouraged to emphasize emotion vocabulary and to articulate often how they are feeling and thinking. As noted by Kitayama et al. (1995), to provide a "thicker"

description of children's emotional understanding, researchers need to examine the "emotional culture" of the home by exploring the possible influences of all family members - mothers, fathers, siblings and extended family.

Given the limitations of the present study (e.g., small-scale, longitudinal correlational study, lack of general intelligence measure, ethnically homogeneous sample), interpretations of the present findings are to be made with caution. Given the complex process of the co-construction of ToM and perceptions of self and gender-roles, semi-structured interviews with story narratives and self-report questionnaires may not have been able to capture a complete reflection of such a dynamic process. Moreover, given the complex process of self-socialization (Maccoby, 1998), future research needs to investigate additional socialization agents who may influence the development of ToM and perceptions of self and gender-role, including peers, teachers, family members, as well as the influence of media experiences with text (paper, electronic), Internet, television, film, etc. (Bosacki, 2008).

In sum, findings from this study suggest that longitudinal associations exist between children's ToM understanding, and how they think and feel about themselves and their gender-roles in the middle school grades Such findings support previous research (e.g, Cutting & Dunn, 1999' Jenkins & Astington, 1996), and theorists' claims that self-perceptions and gender-role perception may play significant roles in children' ToM understanding (Hughes, 2011). Thus, this research makes two significant contributions to the current discourse on the nature of social cognition in middle childhood. Theoretically, it highlights the complex connection between children's ToM and perceptions of self and gender-role orientation. Practically, beyond contributing to theories of social cognition, these results have practical significance in that changes in ToM and perceptions of self and gender-role orientation play an integral part in children's everyday experience in the middle school setting.

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