

Preschoolers' Desire Understanding and its Relation to Prosocial Behavior

Nicole Martinez
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Abstract

Theory of mind in humans allows for communication, interaction and socialization. Through the development of a theory of mind children understand first that others have desires, and after this an understanding of belief develops, resulting in a complete theory of mind. The present study investigates the desire portion of theory of mind and its relationship to the amount and quality of prosocial behaviors preschool children engage in, as measured by teachers and parents. Prosocial behavior and desire understanding were significantly correlated, when prosocial actions were rated by teachers, while parent ratings of prosocial behavior were not related to levels of desire understanding. The effects of age, gender and classroom designation on prosocial behavior and desire understanding are examined and implications for future research are discussed.

The extent to which an individual is able to understand the perspective of another person affects the quality of interactions that individual is capable of experiencing. A person with a “theory of mind” is able to understand that other people are capable of having desires and beliefs and that those desires or beliefs may be different from their own. Acknowledging the beliefs and desires of others allows for the prediction of behavior (Wellman & Bartsch, 1994). Belief understanding in children is developed after an understanding of desire and is often measured as the definitive characteristic of theory of mind (Wellman, 1988). While research suggests a general time frame in which both belief and desire understanding develop, considerable individual variability does exist. It is the aim of this research to investigate the way in which preschoolers’ level of desire understanding is related to their ability to interact with others. More specifically, it is thought that prosocial behavior, intended to promote positive social interactions between agents, will be related to a child’s level of desire understanding.

An individual possessing a “theory of mind” is able to attribute internal states to themselves and others (Premack & Woodruff, 1978). Theory of mind is thought to be a strictly human capacity which allows for the prediction of the actions and reactions of others through an understanding of the internal motivations of that other. Desires and beliefs are understood to act as the internal motivators which dictate the behaviors of the self and others and may work alone or in tandem to motivate behaviors. Desiring an object, an action, or a state of being may be enough of a motivation to act, while at other times a belief about an object, action or state of being is sufficient to cause action. The ability to acknowledge the desires and beliefs of others allows for a predictable living environment and makes human communication possible. (Mitchell, 1991)

Baldwin (1884 & 1906) claimed that young infants quickly come to have an understanding that other individuals, such as their caretakers, have subjective mental states. Children as young as nine months are thought to operate on an implicit theory of mind which allows them to guide an adult's attention through well-timed and direct gestures, thus implying an understanding that their own desires may differ from the desires of others (Bretherton, 1991). At nine months old, children can interact with others and sustain attention on a shared topic or reference implying they understand that the individual with whom they are interacting has a point of view, different from themselves and one that can be shared (Scaife & Bruner, 1975). Also at this age infants begin to be able to engage in joint play and will offer a toy to others, engaging in turn taking behaviors (Trevarthen & Hubley, 1979). An early understanding of desires leads to a later understanding of beliefs, both of which allow children to reason about the meaning and significance of social action (Bartsch & Wellman, 1989). A "rudimentary" theory of mind allows for perspective taking and is necessary for children to understand social action (Bruner, 1975). It is through the understanding of the social context that children become able to coordinate their behaviors with others to successfully interact with their peers (Baron-Cohen, 1994).

Many theories exist which propose or try to account for the mechanism(s) through which children come to understand and are able to predict the actions of others. Modularity account of theory of mind development, such as that of Fodor (1992), maintain that theory of mind is a specialized and specific module of the brain, innate nature. Fodor (1992) claims that no development concerning theory of mind occurs within this module, but instead, with time and cognitive development, individuals are

able to better utilize the preexisting module. The theory of mind module Fodor proposes is an encapsulated system that is impenetrable to other forms of information, therefore the experiences of individuals have little effect upon the module and the information the innate mechanism produces.

Another modular theory of mind is the Theory of Mind Mechanism theory (ToMM), proposed by Leslie (1994). Leslie claims that an innate structure in the brain is necessary and fundamentally responsible for a theory of mind in children. This theory, however, supposes that the innate mechanisms of the brain may be affected by individual experience and are developmentally triggered in early infancy, a time in which a Theory of Body mechanism (ToBY) is present and at work. ToBY allows children, less than one year old, to recognize that individuals other than themselves have internal sources with which they can move on their own. As children continue to develop and start engaging in play behavior the primary Theory of Mind mechanism (ToMM) is activated to interpret and make judgments about the intentionality of others (Flavell, 1999).

While acknowledging the experiences of the child, ToMM does not give primacy to these experiences as do other theories of theory of mind development, such as simulation theory (Harris, 1989). Simulation theory holds that children come to a knowledge of the mental states of others through “simulation” of those feelings in a process of conscious or unconscious role-taking. Harris assumes that this process begins at birth, noting the detailed and realistic types of play behaviors children engage in as young 2-years old. It is assumed that young children make decisions about the internal states of others by first deciding how they would feel were they in a particular situation and then attributing their own feelings or beliefs to others. In this way children come to

an understanding of the mental states of others through a system of psychological inputs and outputs concerning beliefs and desires. With increased experience simulating the emotions, beliefs and desires of others, children come to a fully developed understanding of beliefs and desires which allows them to infer and predict the reactions of others.

One final theory pertaining to the mechanism behind theory of mind development is theory-theory (Gopnik & Meltzoff, 1997). While claiming that theory of mind begins at birth, as Harris (1989) claims, theory-theory is very much at odds with simulation theory, in maintaining that young children do not see themselves as experiencing representational mental states but instead rely on an innate understanding of theoretical knowledge with which they come to be able to predict the mental states of others. Theory-theory supposes that children are born as “little scientists” with an innate ability to test and modify theories, regarding the mental states of themselves and others, to figure out how the world works. Through this scientific-like process, children develop and perfect an ability to understand the beliefs and desires of others.

The present study presumes that theory of mind is a developmental process and the particular mechanism(s) of theory of mind are not investigated. The work of H.M. Wellman (1990 & 1991) supports a position that theory of mind in children is a developmental process, an idea which theory-theory also allows for. Wellman maintains that, while adults possess an “everyday” or “folk” psychology which allows them to see others as psychological beings, in young children these understandings are not well established and must go through a developmental growth process (Wellman, 2001). It is primarily through the understanding of the desires and beliefs of others that adult everyday psychology allows for the prediction of actions and behaviors of others. As a

child grows, his understanding of others as intentional beings sharpens and a radical shift in understanding is seen between the ages of 2 and 5 (Bartsch & Wellman, 1995).

These developmental changes in the understanding of others, while related to cognitive development, are not simply a result of increased cognitive abilities as children age. Autistic children, commonly thought not to possess a theory of mind, may develop cognitively yet still lack a complete and causal understanding of the internal states of others (Wimmer & Perner, 1983). This suggests that theory of mind is not merely a function of a child's cognitive abilities but a distinct process that undergoes different and specific stages of development.

According to Wellman (1988), for an individual to possess a theory of mind he must have basic categories to define reality and be able to organize such categorizations into a system of interrelationships so that a causal-attributional framework to understand the behaviors of others is formed. The process of developing such a framework begins roughly around 18 months of age, progressing to an adult-like understanding by the age of 5 or 6. Wellman defines this fundamental change in understanding as having three developmental phases, first the early desire psychology phase, then the transitional phase, and finally, a desire-belief psychology which the children will retain as adults.

During the first stage of theory of mind development an infant is said to be an early "desire psychologist" (Wellman 1991). At this time, children begin to attend to their environments in new, non-egotistical manners. Around the age of 18 months children begin to talk about the desires of themselves and others using terms such as "want" and "like" to explain the actions or emotions of themselves and others (Bartsch & Wellman, 1995). Children's understanding of the simple desires, emotions, and perceptions during

this phase results in a basic understanding of a shared reality in which individuals may desire different objects, actions or states of being. By the age of 30 months children should understand that different people may have different desires towards the same object (Bartsch & Wellman, 1995).

According to Wellman, around the time of a child's third birthday a second transitional shift in the development of theory of mind occurs. In the transitional phase, in addition to talk of desires, 3-year old children will begin to reference beliefs when explaining their actions and the actions of others, using words such as "think" and "know" (Bartsch & Wellman, 1995). The presence of beliefs, is acknowledged by 3-year old children but it is not usually until a child is nearly 4-years old that beliefs begin to be seen as affecting the actions and behaviors of others. Children in the transitional phase are only beginning to come to an understanding of belief as a motivator of action and rely almost exclusively on their developed understanding of desire when asked to explain the actions of others and often misunderstand or misconstrue the beliefs of others (Bartsch & Wellman, 1995).

By 4- to 5-years of age a child should understand and acknowledge that individuals' behaviors can be predicted and explained in terms of desires and beliefs which the individual possesses (Wellman 1990). In the emerging belief-desire phase, beyond the age of 4 years, the representational nature of the minds of others should be fully comprehended and children will rely appropriately upon their understanding of both desires and beliefs in explaining the actions of themselves and others (Bartsch & Wellman, 1995). By the age of five a child is said to have a theory of mind that is akin, in structure, to that of an adult. At the end of the developmental process the child possesses

the framework of interrelated categorizations Wellman (1988) deems necessary for making the correct causal attributions of theory of mind.

The phases of theory of mind development, outlined by Wellman, have been shown to be uniform and universal (Wellman, Cross & Watson, 2001). In a cross cultural survey, Tardiff and Wellman (2000) found that Chinese children begin to reference desires at roughly the same age as Western children, suggesting that 2-years of age is a universal age at which all normally developing children enter the early desire psychology phase of theory of mind development. Providing support of an age at which the development of theory of mind is complete in all children, Avis and Harris (1991) found that children in Cameroon were consistently accurate in their judgment of action and emotion based upon the belief of the agent in question by the age of 5.

Belief Understanding

A great deal of work has been done investigating the understanding of beliefs in preschool aged children (See Wellman, Cross & Watson, 2001 for meta-analysis). The most widely used and definitive measure of a child's level of theory of mind development is the false belief task. False belief tasks are aimed at determining whether a child has the ability to understand that individuals, including themselves, may hold beliefs that are in reality false and different from the beliefs of others. (Wimmer and Perner, 1983). If a child has a developed theory of mind he will be able to attribute false beliefs to himself or others and predict an agent's action and/or emotion based upon the agent's false belief. Acknowledging that humans fundamentally act upon their beliefs about the world, the

false belief task is currently the best measure psychologists have to ensure that the predictions children make are, in fact, the results of their attributions of beliefs.

The false belief test which Perner et al. (1987) devised is now known as an unexpected contents false belief task. Perner presented preschool aged children with a Smarties tube (a British candy, similar to M&Ms) and asked the children what they thought was inside the container. When the child responded that Smarties were in the tube, the container was opened to reveal pencils inside. Perner's subjects were then asked, when shown the Smarties tube, what someone else would think was in the container. Perner et al. (1987) found that most children above 4-years old could correctly predict another person's false belief while most 3-year old children falsely claimed another person would say that the container held pencils and not Smarties. Gopnick and Astington (1988), performed the same procedure and asked subjects what they themselves had originally thought was in the container. Gopnick and Astington found that children at 4-years old were able to correctly admit their own false belief at a rate better than chance, indicating that they were at a stage of development in which beliefs were beginning to be considered in judgment making. Children under the age of 4 were unable to acknowledge their own false belief that the container held Smarties, showing that they did not possess a fully developed theory of mind.

Theory of mind may be tested using variations of the false belief task proposed by Perner et al. (1987). In addition to the unexpected contents false belief task, false belief understanding can be determined using an unexpected identity false belief task or a change of location or unexpected transfer false belief task. Flavell et al (1983) used an unexpected identity task to investigate false belief and showed preschool age children a

sponge made to look convincingly like a rock. After the “rock” was revealed to be a sponge in reality, the subjects were asked about their original beliefs. Just as Gopnick and Astington (1988) found in their unexpected contents task, Flavell found that children under age 4 were unable to attribute false belief to themselves while older children could do so.

A change of location or unexpected transfer false belief task most directly tests a child's ability to predict the actions or behaviors of others based upon the knowledge of a false belief. In a classic study by Wimmer and Perner (1983) children were introduced to a character named “Maxi” who was observed putting chocolate into a green drawer in his kitchen before leaving the room. While the character was out of the room the child was told that Maxi's chocolate was moved to a blue drawer in the kitchen. The children were then asked where Maxi would look for his chocolate upon returning. Like the other measures of false belief, older children were able to attribute false beliefs to an agent while children age 4 and under were unable to do so.

Though the false belief task is thought to be the main determinant of a child's attainment of a theory of mind, it must be noted that a child's performance is affected and can be enhanced by manipulations of the task (Wellman, Cross & Watson, 2001). With the right adaptations children at the age of 3-years old show above chance performance on false belief tasks (Siegal & Beattie, 1991). Manipulations which engage the child in a task may make the concepts being tested more concrete and therefore easier to understand, thus also enhancing test performance. Children are more likely to fail a false belief task if it is simply read to them as opposed to acted out for them (Freeman, Lewis & Doherty, 1991). Two to four year old children also perform better when false belief

tasks involve a degree of deception in which the child is an active participant in fooling an agent (Chandler, Fritz & Hala, 1989). In a meta analysis of the false belief literature Wellman et al. (2001) found that both deception and active participation enhanced a child's performance by 1.9 and 1.96 times respectively. At the age of 44 months 66% of children who were actively involved in the false belief task or were participants of deception passed false belief tasks, as opposed to 50% of children who were not actively involved or did not participate in deception (Wellman, Cross & Watson, 2001). Therefore, the manner in which a false belief task is presented may influence how a child performs.

False belief tasks are important in understanding the way in which children begin to understand that others may hold beliefs that are contrary to another individual's beliefs or contrary to reality. However, Wellman (2001) asserts that only after children come to understand the nature of the *desires* of others, do they then move on to a developmental process in which they begin to consider the beliefs of others.

Desire Understanding

The desire component of theory of mind is often taken for granted, as it begins to develop and is used by a child at such an early age. Children at fourteen months of age, who, it has been proposed possess an implicit and primitive understanding of internal states, generally do not seem fully aware of the desires of others (Gopnik and Metzoff, 1994). However, by 18 months of age infants exhibit an understanding of the desires of others. Repacholi & Gopnik (1997) investigated young children's desire understanding by examining a child's offer of food to an agent. Fourteen and 18 month old children

interacted with an experimenter who made clear her opinions of two different foods, with a strong preference toward one and a strong dislike towards another. The experimenter then tested the child's desire understanding by placing her hand directly between two bowls of food and asking the child to give her "some". It was found that 18 month old, but not fourteen month old, children considered the desires of the agent when determining which food to give to the experimenter, even when these desires conflicted with the child's own. It is the insight into one's own desires and the desires of others, which develops around 18 months of age, that allows children to begin to participate in meaningful communication and interactions with others (Wellman, 1993).

Desire understanding in children is seen before belief understanding, as determined by false belief tasks. As noted above, children as young as 18 months old are thought to understand the desires of others. However, desire understanding seems to develop into more sophisticated understandings with age. In testing the simple desires of an agent Wellman and Woolley (1990) found that children as young as 2-years old were able to pass desire understanding tasks. In the Wellman and Woolley experiment children were presented with a sort of puppet show of cardboard cut-outs depicting a scenario in which an agent wanted to find an object that could be in one of two specific places. The agent then searched for his or her desired object, in some instances finding the object, in some instances not finding the object, and in still other instances finding a different, novel object. The child was then asked to predict the future action of the agent and the current emotion of the agent based upon the agent's search. Wellman and Woolleys' 2-year old subjects were able to correctly identify the action and emotions of the agents significantly above chance.

Children with an understanding of simple desires do not have an adult-like understanding of desire. Like belief understanding, desire understanding seems to progress through levels of development. By the age of two, children have a degree of simple desire understanding (Wellman & Woolley, 1990). Older children are able to make correct predictions based upon the desires of others that younger children, who understand simple desires, are not able to make. Cassidy (under review) tested the understanding of 3-year old children when the desires of an agent conflicted with the desires of the child. Each child was shown an array of stickers and asked to indicate which sticker he preferred. The child was then told a story in which the agent had a strong sticker preference that either conflicted or agreed with the child's. The 3-year old children showed no significant differences in their ability to correctly predict the choice of the protagonist when the protagonist's desire agreed with *or* conflicted with that of the child. The findings of Wellman & Woolley (1990) and Cassidy (under review) suggest that by 3-years of age children possess an understanding of simple desires and conflicting desires.

Young children, by the age of three, seem to be quite good at reasoning about the desires of others when those desires are explicit (Cassidy, under review). However, often the desires of others are not clearly indicated and may be communicated through more subtle and non-verbal means such as facial expression or eye gaze. Information about a person's past experience with an item or situation may also give children subtle clues as to the desires of an agent as related to that past experience. Cassidy (under review) tested 3- and 4-year olds' understanding of explicit and implicit desires and concluded that preschool aged children could use knowledge of an agent's past experience to

significantly predict the preference of an agent when the preferences were either explicit or implicit. Therefore, if a child was told that a character had an experience, the manner in which the experience is presented, implicit or explicit, did not effect the child's predications. Therefore children who were told a story in which it was explicitly stated that a character had an unpleasant time at the beach and children who were told a story which implied that a character went to the beach and was splashed with water in the face, thus having an unpleasant time, performed just as well as one another.

Cassidy (under review) then investigated children's understanding of explicit and implicit desires that either agreed or conflicted with the children's own desires. The preferences of the subject were first determined and the preferences of the agent were manipulated to either agree or conflict with the child's. In the explicit trials each subject was told a story about activities the agent did and did not like to do that either conflicted or agreed with the desires of the child. In the implicit trials each subject was told a story about the past experiences the agent had in regards to specific activities that either conflicted or agreed with the preferences of the child and the child then had to infer the desires of the agent. Each subject was then asked to predict the preferences of the agent regarding activities he would like to engage in. Subject's performance on the explicit no conflict, explicit conflict and implicit no conflict were well above chance. However, only 29% of children sampled passed the implicit conflict task. These results suggest that children, around the age of 3 or 4, can infer other's desires in some situations and make correct predictions about conflicting desires in other situations. However, children under 4-years are unable to reliably combine these skills and predict the actions of others when the desires of an agent must be inferred and also conflict with the child's own desires.

With their, so-called, wicked desire tasks, Yuill et al (1996) investigated a somewhat higher level of desire understanding than Wellman & Wolley (1990) and Cassidy (under review) in which moral judgement and desire based reasoning are involved. While a child develops an understanding of desires, he is also developing an understanding of morality (Nunner- Winkler & Sodian, 1988). Yuill et al. (1996) investigated the ability of 3, 4 and 5-year old children to predict the emotion of an agent and judge the overall morality of the agent based upon actions that may be morally questionable. Children were told stories in which an agent acted with good or ill-willed intentions. In some situations the agent's actions resulted in a morally desirable outcome, such as engaging other children in play. In other situations the outcome of the agent was morally undesirable, such as wishing to cause harm to another person for no particular reason. Yuill et al. (1996) found that only 5-year old children were able to reliably predict the correct emotion and judge the correct morality of the agent. Younger children relied on morality too heavily in their predictions and judgements. 3- and 4-year olds were more likely to judge an agent to be happy when the situation ended in a morally desirable way, even if the agent desires were not satisfied. Likewise, the younger children were more likely to judge the agent morally "good" when the outcome was morally desirable, even if the agents intentions were morally "bad". With this experiment Yuill et al. (1996) indicated yet another level of desire understanding, reached around the age of 5, that children attain during the development of an adult-like system of desire understanding.

The desire understanding which young children possess allows for the understanding of subjective internal states, such as emotion, which leads to an additional understanding of others as intentional agents acting upon the desires which they possess.

Acknowledging the emotions of others and being able to predict their actions is important in socialization with peers. A child who is able to take on the perspective of others may be able to interact with peers more successfully, due to their ability to understand the desires of others, and because of this understanding, be able to more easily make friends and than a child who is unable or less able to understand the emotions and perspectives of others. A child without a refined desire understanding may be handicapped in his ability to engage with his environment in a prosocial manner. One type of social behavior that may be particularly related to desire understanding is prosocial behavior.

Prosocial Behavior

Prosocial behavior is any voluntary behavior intended to benefit another person or promote “harmonious relations with others, even if there is no sacrifice on the actor’s part and even if there is some benefit to the actor” (Hay, 1994, pp 29). Prosocial behaviors include, but are not limited to, responses to people who have incurred negative consequences (helping), the giving of resources to benefit another (sharing) (Tisak & Ford, 1986), taking action to improve the mood of another (comforting) (Jackson & Tisak, 2001), donating and cooperating. Although empathy and sympathy are not necessary for an action to be classified as prosocial (Miller, Bernzweig, Eisenberg & Fabes, 1991) they are often involved in a child’s prosocial actions. Individuals may also engage in prosocial behavior out of a concern for others, feelings of obligation, in order to gain something in return, to impress others or to feel better about themselves (Jackson & Tisak, 2001).

Factors Influencing Prosocial Behavior

Many factors have been shown to influence the amount of prosocial behavior which a child will engage in during his childhood. Not only do these factors influence prosocial actions, they also can predict the quality and success of the interactions (Eisenberg & Fabes, 1998). In addition to these factors, it may be that prosocial behavior produces an enhanced cognitive capability to reason about others, through increased social interaction, affecting the subsequent socially related cognitions of a child. According to a sort of “foot in the door” theory, it may be that engaging successfully in prosocial behavior, even once, may be the biggest factor in inducing greater levels and higher qualities of prosocial interactions (Eisenberg & Fabes, 1998).

Culture - In most cultures around the world prosocial behaviors are valued and expected at some level, of all individuals, though the degrees of expectation vary from country to country. Children raised in Eastern countries such as China and Japan are often taught, and expected, to be prosocial actors within their social communities (Lee & Zhan, 1991) while children raised in Western, countries such as America, are taught that prosocial actions, while desirable, are a matter of personal choice (Eisenberg & Fabes, 1998). However, in some societies prosocial behavior is not valued. In the society of the Ik of Uganda, in contrast to most other civilizations, hostility and even cruelty are promoted as the norm (Turnbull, 1972).

Parental Attachment - The quality of attachment a child shares with his caretaker as an infant is a precursor of expected social competence later in childhood and into adulthood (Bohlin, Hageskull, & Rydell, 2000). Children with insecure parental attachments have been shown to be less socially competent than securely attached

children (Sroufe, 1983). Popular children, with positive social outcomes, are more likely to have a secure attachment with their primary caretaker than unpopular children (Elicker et al, 1992). In addition to this, attachment security has also been shown to be related to theory of mind competence. Attachment security is associated with self reliance and is a predictor of the perspective taking skills needed for a child to possess a fully developed theory of mind (Fonagy, Redfern & Charman, 1997).

Family - As the family is the primary socializing agent of a child, it has a tremendous impact on the prosocial behaviors children later engage in. Eisenberg and Fabes (1998), in their meta-analysis of prosocial behavior, found that a full half of the variance in children's prosocial behaviors could be accounted for by familial factors. Children from large families have been shown to be more prosocial (Floody, 1980) and more generous than children from smaller families (Urgel-Semin 1952). It may be that having multiple siblings enhances perspective taking skills that contribute to prosocial behaviors (Eisenberg & Fabes, 1998). However, this is not to say that children from large families always have better outcomes than children from smaller families. Most likely due to a diffusion of responsibility that may result from socialization in large families, children may be less likely to comfort a peer (Rehberg & Richman, 1989) or help in an emergency situation when in a large family (Straub, 1971).

Parenting styles may also contribute to a child's prosocial orientation. In addition, the gender of the child may have an impact on the effectiveness of a parenting style in instilling prosocial qualities. Over all, directive, controlling and intrusive behaviors associated with an authoritarian parenting style have been linked to poor peer interactions (MacDonald & Parke, 1984) and low peer status (Putallaz, 1987). When gender is

considered however, boys raised in authoritarian families have been shown to be more prosocial than boys in authoritative or permissive families (Miller, Bernzweig, Eisenberg & Fabes, 1991).

Permissive parents may not instill prosocial tendencies in their children, as children raised without a somewhat rigid disciplinary structure may feel little responsibility for others and have little internal motivation to help, share with or comfort peers (Miller, Bernzweig, Eisenberg & Fabes 1991). Children raised in authoritative environments generally display more prosocial behaviors (Miller, Bernzweig, Eisenberg, & Fabes, 1991). Connected yet autonomous support has been linked to “a prosocial-empathic orientation” in children (Emde & Buchsbaum, 1990).

The show of emotions and emotional communications within the family also impact the prosocial behaviors a child will participate in. The understanding of emotions is thought to enable a child to “read” another individual and coordinate successful interactions accordingly (Astington & Gopnik, 1991). Children raised by parents who are affectionate and highly responsive have been shown to be more prosocial (Miller, Bernzweig, Eisenberg, & Fabes, 1991), better able to deal with and understand their own emotions (Eisenberg & Fabes, 1991), and possess more refined perspective taking skills than children with less responsive parents (Dunn, Brown, Slomkowski, Tesla & Youngblade, 1991). Children whose parents talk openly about emotion may also be better able to consider morality when deciding whether or not to engage in prosocial actions (Zahn-Waxler, Radke-Yarrow & King, 1979).

Gender - Gender differences in prosocial behavior are most likely due to the different ways boys and girls are socialized within society. Girls are expected to help,

comfort and teach more so than boys, who are expected to function independently from others (Eisenberg & Fabes, 1998). Conforming to expectations, children have been found to present themselves in ways consistent with gender stereotypes (Miller, Bernzweig, Eisenberg & Fabes, 1991). Behavior observation has shown that girls are significantly more prosocial than their male counterparts (Ladd & Profilet, 1996) despite the fact that boys and girls have the same capacity for empathy and perspective taking (Iannotti, 1985).

Intelligence - As children grow, new cognitive abilities may enable them to participate in more prosocial interactions. Children who are more intelligent are more likely to engage in more prosocial actions. Correlations between prosocial behavior and intelligence have been found to be between the +.30 to +.40 range (Ma & Leung, 1991; Weidman & Strayhorn, 1992) and academic ability has also been shown to positively correlate with prosocial behavior (Caprara, et al., 1997).

Self Regard - The ways in which a child views himself can affect the way he is able to interact with peers. Feelings of self worth are related to the quantity of prosocial behaviors a child participates in (Elicker et al, 1992). Positive self concepts in children are a predictor of the quantity of prosocial behaviors he will initiate but are not indicative of the success or competence of those interactions (Cauley & Tyler, 1989).

Attractiveness and Popularity - Interesting relationships exist between attractiveness, popularity and prosocial behavior. Children who are judged to be more attractive in relation to their peers have more friends (Dion, 1973) and spend less time by themselves (Dion & Stein, 1978). In girls but not boys, a child's attractiveness was found to elicit more prosocial actions from others (Smith, 1985). The popularity children enjoy

results in more opportunities to engage in prosocial activities, which may be very rewarding. Often children who are not popular, but wish to be viewed as such, will exhibit a need for approval from others and wish to appear to be “nice”. According to Ladd (1983) if the need for approval from others is sufficient to motivate the child to initiate more prosocial behaviors the child may be seen as more popular. However, it may be that the strategy of being seen as “nice” may inhibit the prosocial actions of the child who does not want to risk taking inappropriate prosocial action (Smith, 1985).

As one can see, many factors can contribute to the prosocial orientation of a child and regulate the quantity and quality of the prosocial interactions he participates in. In addition to the factors discussed in detail, individual differences in personality such as introversion or extraversion, (Eisenberg & Fabes, 1998) or how aggressive a child is (Parkhurst & Asher 1992) may also affect prosocial behavior. It is also a concern of the experimenters that the degree to which a child exhibits selfish tendencies, may affect his desire to act in a prosocial manner as well.

Desire Understanding and Prosocial Behavior

As a child develops a theory of mind he comes to better understand the desires and beliefs of others. This understanding allows children to clearly communicate with others and interact in meaningful, productive and prosocial ways. Studies of prosocial behaviors of children and theory of mind have primarily looked at the relationship between children's understanding of belief, as measured by false belief tasks, and prosocial displays and competence. Capage & Watson (2001) investigated the

relationship between theory of mind and social competence, in preschool and kindergarten children. Two false belief tasks and an interpersonal problem solving measure were administered to subjects. Children's level of social competence, as ascertained through interpersonal problem solving performance, was significantly correlated to their understanding of false belief. In addition to this, Watson et al. (1999) found that false belief understanding, as measured by an unexpected content false belief tasks, was a significant predictor of preschool and kindergarten aged children's positive prosocial skills, as rated by their classroom teachers.

Children who can attribute false beliefs to others have been shown to make more play proposals than those of the same age who cannot attribute false beliefs (Astington and Jenkins, 1995). 3-year olds who display higher theory of mind competency, as measured by false belief tasks, are rated by their teachers as more socially competent than children with a lesser ability to understand false belief (Lalonde & Chadler, 1995). Early development of false belief understanding is also associated with "connected communication" in which children understand the desires of others and coordinate their social actions appropriately, resulting in more positive outcomes in peer interactions, (Slomkowski & Dunn, 1996, pp. 443). In addition to this the understanding of emotion and the ability to perspective take are also linked to a fully developed theory of mind and a child's ability to act in a prosocial manner (Karniol, 1995).

While belief understanding is clearly related to prosocial actions of children, it is unclear how desire, as opposed to belief understanding, impacts the prosocial interactions of children. When researchers investigate the relationship between theory of mind and prosocial behavior they are necessarily considering three factors: prosocial behavior,

belief understanding *and desire understanding*. The latter is given rather little mention in explaining prosocial behavior. However, to understand that individuals have beliefs that may be false or different from one's own personal beliefs is not a requirement for engaging in successful prosocial behavior. It is the understanding of the desires of others, which may lead to perspective taking and empathy, which greatly affect the nature and quality of childhood prosocial behavior. It is the goal of this study to investigate the role desire understanding of young children plays in prosocial orientations and behaviors.

According to developmental theories of theory of mind development, an understanding of the *desires* of others comes before an understanding of the *beliefs* of others (Wellman, 2001). The research of Watson et al. (1999) has shown that children's understanding of beliefs is significant predictor of their prosocial skills. However, prior to the ages of 4 to 5 years, when belief understanding comes to full maturity, children already have the capacity to socially interact with one another and build friendships. It is believed by the experimenters, that desire understanding, in place before belief understanding, should be positively related to their ability to both understand and engage in prosocial behaviors.

The present study examined the desire understanding of children through the administration of three different types of desire understanding tasks and prosocial behavior capabilities of preschool aged children, as rated by classroom teachers and parents. As little work with children of lower socioeconomic groups has been done, participants in the experiment were members of a lower to middle-class community. Two groups of students were tested. One group attended a mainstream preschool or kindergarten program while the other group attended a preschool program developed for

children “at risk” for future education related problems (see Appendix v for “at risk” criterion). Based on the developmental theory of Wellman, we believe that a preschoolers’ understanding of the desires of others should be positively correlated with age. We predict that higher levels of desire understanding will be related to greater ratings of displayed prosocial behavior. Due to the fact that theory of mind development is thought to be universal, we predict the relationship between desire understanding and prosocial behavior will not differ between children designated “at risk” and children designated as mainstream. Also, in light of previous research relating to both prosocial behavior (Eisenberg & Fabes, 1998; Rydell, et al. 1997) and desire understanding (Wellman & Woolley, 1990; Cassidy, under review; Yuill et al., 1996) which has failed to find differences in gender, we expect no gender differences to be present.

Methods

Subjects

Fifty children between the ages of 3-years and 5-years old participated in the experiment (M age = 4 years 10 months, range = 3 years 2 months - 5 years 11 months, $SD = 6.12$). Twenty-one subjects were male (42.9%) and twenty-nine subjects were female (57.1%). All of the participants attended a lower to middle class school district in a Midwestern, U.S. suburb. Thirty-one children who participated were enrolled in a preschool program for “at risk” children (see Appendix v for “at risk” criterion). Fifteen of the subjects were enrolled in a mainstream preschool program and four subjects were enrolled in a mainstream kindergarten program. Four subjects were African American, three were Asian American, two were Hispanic and the remaining were Caucasian

American. The data of one Caucasian, female, “at risk” subject was discarded because the parent questionnaire of the subject was largely incomplete.

Stimulus Materials

Simple Desire Understanding Tasks

Children were shown three storyboards with removable, Velcro characters, generated by the experimenters, for the three simple desire understanding tasks which were administered (Wellman & Woolley, 1990). The subjects were shown two sets of four pictures, also generated by the experimenters, in the conflicting-infering desire understanding tasks (Cassidy, under review). Finally, subjects were shown two sets of three pictures depicting stories outlined in the wicked desire understanding tasks (see Appendix iii). Pictures and storyboards for all tasks matched gender of the character in the task to that of the subject to which they were presented.

Prosocial Behavior Measures

The school teacher and one parent of each child were given a short, one page form to complete pertaining to the preschooler's prosocial capacity (as determined by the measure of Rydell et al. 1997) and level of selflessness (See Appendix iv). Parents and teachers were asked to indicate the extent to which the subject in question exhibited prosocial or selfless actions or characteristics, on a scale from one (never) to five (almost always). The measure was composed of three subscales designed to examine the child's level of prosocial orientation, social initiative and selflessness.

Procedure

Prior to the testing sessions involving the child, consent from parents was attained and the one page prosocial measure, (Rydell, et al., 1997; see Appendix iv) completed by both the parents and the child's teacher, were collected. In a single session, subjects then participated in three simple desire understanding tasks (Wellman & Woolley, 1990), two conflicting/infering desire tasks (Cassidy, under review), and two wicked desire tasks (Yuill et al., 1996). Each of the three types of tasks varied in difficulty with the simple desire tasks supposed to serve as the most simple and the wicked desire tasks supposed to serve as the most difficult. The order in which the desire understanding tasks were presented was randomized and questions asked within the tasks were counterbalanced so that the presentation order of questions would not affect subject responses.

Desire Tasks

Subjects were tested in one on one sessions with a female experimenter. Each session was roughly 15 minutes in duration. The desire understanding tasks were presented in random order and the gender of the protagonists in each of the tasks was matched to the gender of the participant.

Wellman Desire Task

Wellman and Woolley (1990) found that 2-year olds can use simple desire understanding to predict the actions and reactions of others. Adapting the tasks of Wellman and Woolley, each subject was presented with three stories which asked the child to make judgments about the behaviors and emotional reactions of characters within the story in three types of situations: Finds-Wanted, Finds-Nothing and Finds-Substitute. In each situation the character in the story desires an object and takes action to find the object which may be in one of two locations. In the Finds-Wanted situation the character

searches for the object and finds the desired object in the first location he looks. In the Finds-Nothing situation the character searches for the desired object but finds nothing in the first location he looks. In the Finds-Substitute situation the character finds, not his original desired object, but an alternative, somewhat attractive object, when he looks in the first location (see Appendix I).

After the experimenter finished each scenario the child was asked to predict the current emotion and the future action of the character in the story. In making action predictions the child is asked whether or not the character will continue to search for his desired object. A child who understands the simple desires of others will be able to correctly predict that the character in the Finds-Nothing and Finds-Substitute situations will continue to search for the desired object, while the character in the Finds-Wanted situation will not continue his search. In making judgments regarding the emotional state of the character the child was asked how the character feels at the end of the scenario. A child who understands the desires of others will judge the character in the Finds-Nothing and Finds-Substitute situations to be sad while the character in the Finds-Wanted situation will be judged to be happy.

Cassidy Conflicting/Inferring Desire Task

Cassidy (under review) found that 3-year old children had difficulty predicting the action of an agent when they had to infer the agent's desire and that desire conflicted with their own desire. Each subject was presented one implicit conflict desire trial and one implicit no-conflict trial. In the implicit conflict trial the participant was shown pictures of four activities. One of the activities (the zoo) was designed to be appealing and the other three activities were designed to be unappealing to the participant (the bank, the

post office and the supermarket). The subject was asked to identify one activity they liked very much and one activity they disliked very much. The participant was then presented with a story in which they were given information regarding which activity the character in the story liked (an activity the participant had disliked) and which activity the character did not like (an activity that the participant liked). The preferences of the character were not explicitly stated and the participant was left to infer the characters preferences based upon knowledge of the characters past experiences. The participant was asked which activity the character would choose to do the next day and then asked a control question about which activities they themselves had liked or disliked.

In the implicit no-conflict trial the participant was again presented with pictures of activities, however, these activities were of similar type and equal appeal to the participant (the playground, the beach, the pool, a picnic). The subject was then asked to choose two activities they especially liked and told a story similar to that in the implicit conflict trial, with the character in the story enjoying one activity and not enjoying the other. Participants, again, had to infer which activities the character in the story liked and disliked based upon their past experiences. The activity which the character was implied to like was one of the activities (chosen at random by the experimenter) that the participant had previously chosen and the activity the character was implied to dislike was the other activity previously chosen by the participant. The subjects were then asked which activity the character in the story would choose to do the next day and a control question asking which activities they themselves had previously picked.

Yuill Wicked Desire Task

Yuill et al. (1996) found that children 4- to 5-years of age could correctly judge the emotions of an character on the basis of a morally objective desired outcome, in cases based upon immoral or “wicked” desires, while children under 4-years old could not. Using the wicked desire task of Yuill et al. (1996) participants were presented with two stories in which they were asked to make emotion judgments about characters. Each wicked desire trial involved a specific context (an activity with a ball or a bike), a bad motive and an outcome which was matched or mismatched to the goal of the character. During the stories, participants were shown a series of three pictures showing the motive, action and outcome depicted in each story. At the end of the story the participant was asked to decide whether the agent in the story was happy or sad.

In the ball context, bad motive, mismatch on desired outcome trial a child (whose sex is matched to that of the subject) was shown playing with a ball. In this situation the character saw a child in a blue sweater who he does not like and wished to throw the ball at the child and hit him in the head. The agent threw the ball and missed the child in the blue sweater and instead hit a different child, making him cry. Participants with desire understanding judged the child who threw the ball in this situation to be sad, as he did not hit the individual he intended to hit.

In the bike context, bad motive, match desired outcome trial a child (whose sex is matched to that of the subject) shown riding a bike on the playground saw a child he does not like and wished to give the other child a “big bump” (an unpleasant action). The agent gave the disliked child a “big bump” and as a result the child got off his bike and stomped his feet in anger. Participants with desire understanding judged the child who administered the “big bump” in this scenario to be happy.

Prosocial Measure
Two Factor Social Competence Measure

Rydell et al. (1997) created a measure to be completed by parents and teachers of young children. The Rydell et al. test of social competence is a short written measure of 29 items, completed by parents and teachers, which asked about social skills and behaviors indicative of perspective taking (empathy), helpfulness, cooperation, altruism, generosity, social participation, initiative taking and conflict handling. Adults were asked to rate the degree to which statements on the measure applied most to the child on a scale of 1 to 5 with higher scores indicating statements which applied to the child. Two factors have been indicated by this measure and can be seen as comprising social competence. Items on the questionnaire such as, "Has capacity for generosity with peers", aim to evaluate one factor called prosocial orientation, or a child's *ability* to engage in prosocial interactions. Other items, such as "Leads play activity", focus on a different factor relating to prosocial behavior, namely, social initiative or a child's *propensity* to engage in prosocial interactions.

The measure was shown to have internal validity of alpha coefficients =.88, and .76 for the prosocial orientation and social initiative factors respectively and a correlation of the two scales of $r = .42$. The measure was stable across gender and test-retest reliability after one year for prosocial orientation was $r = .79$ (parent rating) and $r = .59$, (teacher rating) and for social initiative $r = .79$, $p < .001$ (parent rating) and $r = .81$ (teacher rating). The agreement of the measure between teachers and parents was significant at all levels except in suburban samples where $r = .17$, $p < .05$.

Selflessness measure

Intermingled in the Rydell et al. measure of prosocial behaviors was a measure of six items, generated by the experimenters, to qualify any selfless behaviors or tendencies the participant may display (see Appendix iv). The selflessness measure was pre-tested for clarity before it was administered to the parents and teachers of the subjects. With the data collected the measure was shown to have alpha coefficients = .93 and .71 for the teacher and parent ratings respectively. However, agreement between teacher and parent ratings was not found to be statistically significant ($r = .172$, $p < .05$).

Results

Desire Understanding

Subjects were given a score of one for every question they answered correctly in the simple desire understanding tasks (Wellman and Woolley, 1990), and wicked desire understanding tasks (Yuill et al., 1996). As a result the range of scores for each task was between 0 and 6 for the simple desire task and 0 to 2 for the wicked desire task.

In the conflicting/infering desire understanding tasks (Cassidy, under review) children were asked a total of 2 test questions. In addition to test questions the conflicting/infering task also asked subjects about their own desires before and after the test to check whether they had changed their own preferences to match the preferences of the character in the trial. Children who answered both the test and preference questions correctly earned a score of 2 out of 2, proportionately a score of 1. However, if the subject answered the test question correctly but the latter preference question incorrectly, therefore having changed their preference, responses for the question as a whole, were not considered in the total score and the scores for these subjects were a proportion

correct out of 1. Scoring in this way, overall values for the two conflicting/infering desire tasks administered, range from 0 to 1.

To ascertain a subject's overall desire understanding each subject's simple, conflicting/infering and wicked desire scores were combined to create a composite desire understanding score. To ensure that each type of desire understanding measured in the experiment influenced the composite score equally, each task was scored out of a possible 6 points and the new scores were simply added. The range for composite desire understanding is, therefore, 0 to 18. For a summation of subject performance on desire understanding tasks see Table 1.

Table 1
Desire Understanding Task Scores

Desire Task	Minimum	Maximum	Mean	Percent Correct	Standard Deviation
Simple Desire	1	6	4.8	80%	1.2
Conflict/Infer Desire	0	1	.65	65%	.34
Wicked Desire	0	2	1.1	55%	.55
Composite Desire Score	6	18	12.0	67%	3.2

Prosocial Behavior Measures

Teacher and parent ratings were first broken down to examine prosocial orientation, social initiative and selflessness as separate entities. Negatively valenced items in the measures were reverse scored and subject's total scores for each subscale were calculated by adding scores from all items within the subscale. In the case that an item was not answered by a respondent an average was calculated, for that respondent, for the subscale of the item which was incomplete and this average was used as the score

for the missing item. The possible range of scores for the three scales was 0 to 105 for prosocial orientation, 0 to 40 for social initiative and 0 to 30 for selflessness.

The three subscales of the prosocial behavior measure (Rydell et al. 1997) were examined to determine any relationships between the subscales as answered by teachers or parents. Two out of a possible three correlations between the three subscales in the teacher ratings of prosocial behavior were significant. Teacher prosocial orientation ratings were correlated to teacher social initiation ratings, $r = .509$, $p < .01$. Teacher prosocial orientation ratings were correlated to teacher selflessness ratings $r = .629$, $p < .01$. However, teacher social initiative ratings were not significantly correlated to teacher selflessness ratings. Only one out of a possible three correlations between the three prosocial subscales was significant for the parental ratings. Parent ratings of prosocial orientation and selflessness were significantly correlated, $r = .320$, $p < .05$, while no significant relationships existed between parent ratings of prosocial orientation and social initiative ratings or parent ratings of social initiative and selflessness (see Table 2 for complete correlations).

To assess the agreement between composite teacher and composite parent ratings of prosocial behavior, the individual prosocial behavior subscales were then examined in relation to one another based upon the respondent, teacher or parent. Teacher and parent ratings for prosocial orientation and selflessness were not significantly correlated, while teacher and parent social initiative ratings were significantly correlated, $r = .413$, $p < .01$. As a result of this finding, subsequent analyses were performed with teacher and parent prosocial orientation and selflessness scores separate but the social initiative scores used reflect the average of individual teacher and parent scores. For an overview of teacher

and parent rating of subject prosocial behavior see Table 3 and Table 4. Based upon the notion that prosocial behavior was comprised of a child's *ability* for prosocial behavior, *propensity* for prosocial action and level of selflessness, scores from the three prosocial behavior subscales were summed to create two composite prosocial behavior scores, one for teacher ratings and one for parental ratings. Despite the findings of Rydell et al. (1997) which found the ratings teachers and parents to be related, in the present study, total prosocial behavior as rated by teachers was not significantly related to total prosocial behavior as rated by parents.

Table 2
Prosocial Behavior Subscale Correlations

	Teacher Prosocial Orientation	Teacher Social Initiation	Teacher Selflessness	Parent Prosocial Orientation	Parent Social Initiation	Parent Selflessness
Teacher Prosocial Orientation	---	$r = .509^{**}$	$r = .629^{**}$	$r = .233$	$r = .259$	$r = -.092$
Teacher Social Initiation	$r = .509^{**}$	---	$r = .015$	$r = -.195$	$r = .413^{**}$	$r = -.129$
Teacher Selflessness	$r = .629^{**}$	$r = .015$	---	$r = .334^*$	$r = .069$	$r = .172$
Parent Prosocial Orientation	$r = .233$	$r = -.195$	$r = .334^*$	---	$r = .197$	$r = .320^*$
Parent Social Initiation	$r = .259$	$r = .413^{**}$	$r = .069$	$r = .197$	---	$r = -.045$
Parent Selflessness	$r = -.092$	$r = -.129$	$r = .172$	$r = .320^*$	$r = -.045$	---

* Significant at the .05 level (1-tailed)

** Significant at the .01 level (1-tailed)

Table 3

Prosocial Behavior Measure Scores by Subscale - As Rated by Teacher

Subscale	Minimum	Maximum	Mean	Standard Deviation
Prosocial Orientation	51	101	72.9	12.6
Social Initiative	16	37	27.1	4.7
Selflessness	9	30	21.7	4.8
Composite Prosocial Score	90	164	121.5	19.2

Table 4

Prosocial Behavior Measure Scores by Subscale - As Rated by Parent

Subscale	Minimum	Maximum	Mean	Standard Deviation
Prosocial Orientation	52	96.6	75.8	9.1
Social Initiative	16	37	27.1	4.7
Selflessness	8	26	20.1	3.3
Composite Prosocial Score	82	148.6	123.4	12.6

Age Effects

Age significantly correlated with all three desire tasks as well as the desire understanding composite totals. For a complete summary of significance levels of these correlations see Table 5. Age was correlated to both teacher and parent prosocial orientation scores, $r = .403$ and $r = .266$, $p < .01$, respectively. Age significantly correlated to selflessness as judged by the subject's teacher, $r = .250$, $p < .05$, but was not correlated to the parental measure. The combined teacher and parent social initiative measures were not significantly related to the age of the subject.

Table 5
Age and Desire Understanding Task Correlations

	Age	Simple Desire	Conflict/ Inferring Desire	Wicked Desire	Composite Desire Score	Teacher Prosocial Rating	Parent Prosocial Rating
Age	---	$r = .255^*$	$r = .246^*$	$r = .255^*$	$r = .384^{**}$	$r = .378^{**}$	$r = .203$
Simple Desire	$r = .255^*$	---	$r = .051$	$r = .186$	$r = .509^{**}$	$r = .264$	$r = .067$
Conflict/ Infer Desire	$r = .246^*$	$r = .051$	---	$r = .137$	$r = .727^{**}$	$r = .248$	$r = .063$
Wicked Desire	$r = .255^*$	$r = .186$	$r = .137$	---	$r = .670^{**}$	$r = .060$	$r = .023$
Composite Desire Score	$r = .384^{**}$	$r = .509^{**}$	$r = .727^{**}$	$r = .670^{**}$	---	$r = .289^*$	$r = .078$
Teacher Prosocial Rating	$r = .378^{**}$	$r = .264$	$r = .248$	$r = .060$	$r = .289^*$	---	$r = .244$
Parent Prosocial Rating	$r = .203$	$r = .067$	$r = .063$	$r = .023$	$r = .078$	$r = .244$	---

* Significant at the .05 level (1-tailed)

** Significant at the .01 level (1-tailed)

Gender Effects

No significant gender effects were found, consistent with previous research regarding desire understanding (see Wellman and Woolley, 1990; Cassidy, under review; Yuill et al., 1996). However there results are not consistent with previous research regarding prosocial behavior which found female preschool aged subjects to be more prosocial than male preschool aged subjects (Ladd & Profilet, 1996).

Class Effects

Effects of class designation (“at risk” or mainstream) were found for teacher prosocial behavior composite ratings. Teacher prosocial ratings concerning the subscale of prosocial orientation for students designated as “at risk” (M score = 67.2) were significantly lower than teacher ratings of prosocial orientation for students who were enrolled in mainstream classrooms (M score = 81.9), $t(47) = -4.8$, $p < .0001$. The group mean for teacher ratings of prosocial orientation for “at risk” subjects were not significantly different from the group mean of composite desire understanding.

Teacher ratings of prosocial behavior for mainstream subjects were significantly correlated to composite desire understanding, $r = .447$, $p < .05$. However, no significant correlations were found between parent ratings of prosocial behavior for either mainstream or “at risk” subjects and composite desire understanding. No significant correlations between teacher ratings of prosocial behavior for “at risk” children and composite desire understanding were found.

Desire Understanding and Prosocial Behavior

Total desire understanding of the subjects, as determined by composite desire scores, was significantly correlated with composite prosocial behavior of the subjects as rated by their teachers, $r = .289$, $p < .05$. However, composite desire scores were not significantly correlated with composite prosocial behavior as rated by parents of the subjects. Composite desire understanding was significantly correlated to teacher ratings of prosocial orientation, one subscale of the prosocial behavior scale, $r = .347$, $p < .05$. However, no other significant correlations were found between composite desire

understanding and the remaining prosocial behavior subscales. Also no significant correlations were found between composite teacher prosocial behavior ratings and individual desire tasks or composite parent prosocial behavior ratings and individual desire tasks. Due to the worry that that children may possess an understanding of the desires of others but choose to not engage in prosocial behaviors based upon their selfish tendencies analyses were conducted to control for the effects of selfishness, as measured by the selflessness subscale of the prosocial behavior measure. In this analysis no correlations between desire understanding and prosocial behavior were found.

Dividing the entire subject pool based upon their class designation, analyses were performed to investigate the relationships between desire tasks/composite scores and subscales of the prosocial behavior measure/composite scores. No significant relationships between total desire understanding and teacher/parent prosocial ratings were found for either the “at risk” or mainstream group, however, similar non-significant trends were present within the data. For a complete summary of the relationships between prosocial subscales and composite desire understanding see Table 6. For a complete summary of the relationships between individual desire understanding tasks and composite teacher/parent ratings of prosocial behavior see Table 7. One non-significant but interesting finding pertains to composite parent prosocial ratings and wicked desire understanding. For the mainstream group wicked desire understanding was positively related to composite parent prosocial ratings, while the wicked desire understanding of the “at risk” groups was negatively related to composite parent prosocial ratings (see highlighted section of Table 7).

Table 6

Total Desire Understanding as related to Prosocial Behavior Measures for Mainstream and “At Risk” Groups

	Teacher Prosocial Orientation	Teacher Social Initiative	Teacher Selflessness	Composite Teacher Prosocial Ratings	Parent Prosocial Orientation	Parent Social Initiative	Parent Selflessness	Composite Parent Prosocial Rating	Composite Desire Understanding
Teacher Prosocial Orientation	---	MS r =.362 AR r =.685**	MS r =.719** AR r =.540**	MS r =.966* AR r =.957**	MS r =.273 AR r =.259	MS r =.273 AR r =.250	MS r =-.182 AR r =-.065	MS r =.285 AR r =.261	MS r =.447 AR r =.264
Teacher Social Initiative	MS r =.362 AR r =.685**	---	MS r =-.186 AR r =.387*	MS r =.546* AR r =.795**	MS r =-.467* AR r =.267	MS r =.416 AR r =.508**	MS r =-.218 AR r =-.076	MS r =-.278 AR r =.377*	MS r =-.075 AR r =.079
Teacher Selflessness	MS r =.719** AR r =.540**	MS r =-.186 AR r =.387*	---	MS r =.669** AR r =.705**	MS r =.269 AR r =.448*	MS r =.019 AR r =.095	MS r =-.014 AR r =.33*	MS r =.225 AR r =.444*	MS r =.383 AR r =.011
Composite Teacher Prosocial Ratings	MS r =.966** AR r =.957**	MS r =.546* AR r =.795**	MS r =.669** AR r =.705**	---	MS r =.070 AR r =.350	MS r =.331 AR r =.315	MS r =-.198 AR r =.038	MS r =.137 AR r =.379*	MS r =.360 AR r =.193
Parent Prosocial Orientation	MS r =.273 AR r =.259	MS r =.467* AR r =.267	MS r =.269 AR r =.448*	MS r =.070 AR r =.350	---	MS r =.086 AR r =.279	MS r =.165 AR r =.436*	MS r =.892** AR r =.902	MS r =.241 AR r =-.051
Parent Social Initiative	MS r =.273 AR r =.250	MS r =.416 AR r =.508**	MS r =.019 AR r =.095	MS r =.331 AR r =.315	MS r =.086 AR r =.279	---	MS r =.121 AR r =.117	MS r =.471* AR r =.591**	MS r =.136 AR r =.140
Parent Selflessness	MS r =-.182 AR r =-.065	MS r =-.218 AR r =-.076	MS r =-.014 AR r =.383*	MS r =-.198 AR r =.842	MS r =.165 AR r =.436*	MS r =.121 AR r =.117	---	MS r =.406 AR r =.521**	MS r =-.253 AR r =-.185
Composite Parent Prosocial Rating	MS r =.285 AR r =.261	MS r =-.278 AR r =.377	MS r =.225 AR r =.444*	MS r =.137 AR r =.379*	MS r =.892** AR r =.902**	MS r =.471 AR r =.591**	MS r =.406 AR r =.521**	---	MS r =.192 AR r =-.024
Composite Desire Understanding	MS r =.447 AR r =.264	MS r =-.075 AR r =.079	MS r =.383 AR r =.011	MS r =.360 AR r =.193	MS r =.241 AR r =-.051	MS r =.136 AR r =.140	MS r =.253 AR r =.185	MS r =.192 AR r =-.024	---

MS – Mainstream r-values
AR – “At Risk” r-values

* Significant at the .05 level (1-tailed)
** Significant at the .01 level (1-tailed)

Table 7

Total Teacher/Parent Prosocial Behavior Ratings as related to Individual Desire Understanding Tasks

	Composite Teacher Prosocial Ratings	Composite Parent Prosocial Ratings	Simple Desire	Conflicting/ Inferring Desire	Wicked Desire	Composite Desire Score
Composite Teacher Prosocial Ratings	---	MS r =.137 AR r =.379*	MS r =.314 AR r =.231	MS r =.244 AR r =.334	MS r =.299 AR r =-.291	MS r =.360 AR r =.193
Composite Parent Prosocial Ratings	MS r =.137 AR r =.379*	---	MS r =-.033 AR r =.110	MS r =.069 AR r =.059	MS r =.339 AR r =-.219	MS r =.192 AR r =-.024
Simple Desire	MS r =.314 AR r =.231	MS r =-.033 AR r =.110	---	MS r =.348 AR r =-.084	MS r =.284 AR r =.128	MS r =.601** AR r =.472**
Conflicting/ Inferring Desire	MS r =.244 AR r =.334	MS r =.069 AR r =.059	MS r =.348 AR r =-.084	---	MS r =.420 AR r =-.057	MS r =.839** AR r =.658**
Wicked Desire	MS r =.292 AR r =-.291	MS r =.339 AR r =-.219	MS r =.284 AR r =.128	MS r =.420 AR r =-.057	---	MS r =.789** AR r =.558**
Composite Desire Score	MS r =.360 AR r =.193	MS r =.192 AR r =-.024	MS r =.601** AR r =.472**	MS r =.839** AR r =.658**	MS r =.789** AR r =.558**	---

MS – Mainstream r-values
AR – “At Risk” r-values

* Significant at the .05 level (1-tailed)
** Significant at the .01 level (1-tailed)

Discussion

The present study found data to support claims that desire understanding progresses in stages. The tasks selected by the experimenters looked to measure increasingly complicated levels of desire understanding. On the average children were able to display simple desire understanding (Wellman and Woolley, 1990) on 80% (4.8/6) of the trials given to them. Conflicting/infering (Cassidy, under review) understanding seems to be a slightly harder type of desire understanding with an average of 65% (.65/1) of subjects' responses correct. Wicked desire understanding seems to be the most difficult of the desire understandings tested with children passing 55% of these tasks (see Table 1 for a complete summary of these findings).

One confound, noticed after the experimental trials may have contributed to the high achievement of subjects who passed the simple desire tasks with the most ease. The storyboards used in this task may have made the task more concrete than the conflicting/infering tasks or the wicked desire tasks which used only pictures. The use of real life objects in false belief tasks has been shown to make tasks more concrete for subjects and easier to comprehend (Freeman, Lewis, & Doherty, 1991). This may also apply to desire understanding tasks, thus enhancing subject performance on the task. However, it was predicted that subjects would achieve higher scores on this task and even accounting for the effects of enhanced performance, subjects most likely would still have scored higher without the enhancement. As all desire task scores and composite desire task scores were all positively correlated to age, it may be concluded that understanding of desire increases as children age, thus suggesting a developmental process (Wellman 1990, 1991).

A significant relationship between composite teacher prosocial behavior ratings and age was also found, indicating that teachers perceived older students as engaging in more prosocial behaviors than younger students. This finding also may suggest that with age children begin to engage in more and higher quality prosocial behaviors. This may be due to the fact that older children have had more opportunities to engage in prosocial behaviors, as they have been in a classroom setting longer than younger children and within the classroom setting children's play may become more social and interactive. With this added opportunity and experience it may be that an increased confidence in social ability results. It could also be argued that as a child grows older increased cognitive abilities, such as a more developed theory of mind and ability to empathize and understand the desires of others, contributes to more successful prosocial behavior. Teacher prosocial ratings of selflessness were significantly correlated to age. This finding suggests, as a child matures, he may develop an increased ability to engage in prosocial activity, due in part to lower levels of selfish behaviors he displays when interacting with others.

It was thought that children may possess an understanding of the desires of others but might simply choose to not engage in prosocial behaviors due to selfish tendencies. Controlling for the degree of selflessness displayed no significant correlation between desire understanding and prosocial behaviors was found. However, selflessness was related to the prosocial orientation of subjects indicating that children who are more prosocial are likely to be less selfish.

It was correctly hypothesized that gender would have no significant effects upon the level of desire understanding subjects would display and the prosocial behavior

ratings obtained from teachers and parents. It is interesting to note that gender differences pertaining to prosocial behavior have been found in previous research. When prosocial behaviors were observed in the classroom girls were more prosocial than boys (Ladd and Profilet, 1996). The fact that classroom observations of subjects were not conducted may account for the lack of gender differences in prosocial behavior in the present study. However, no gender differences have been found in previous theory of mind research and desire understanding (Wellman & Woolley, 1990; Cassidy, under review; Yuill et al., 1996). Therefore the present findings are consistent with the idea that the development of theory of mind is not affected by gender.

The primary goal of this study was to determine the extent to which desire understanding and prosocial behavior in preschool aged children are related. The present study found that, as hypothesized, prosocial behavior, when rated by teachers, was significantly correlated with desire understanding. However, contrary to the experimenter's hypothesis, prosocial behavior as rated by parents of the subjects was not significantly related to subject desire understanding. Spilt correlations of the data performed found that the relationship between prosocial behavior and desire understanding did not differ for mainstream and "at risk" designated students.

Though naturalistic observations were not performed to ascertain the prosocial behaviors of subjects, based on previous research, the teacher ratings of prosocial behavior may be more reliable than those of parents. Winsler & Wallance (2002) examined the relationship between classroom observation of social skills and behavior problems and teacher and parent ratings of preschool subjects of these two factors. The study found generally that teacher, but not parent, ratings of the social behaviors of

subjects were correlated to the observations performed by the experimenters. The same trend may be seen in the present study. Parent ratings may be less accurate than teacher ratings for many reasons. Parents often have fewer opportunities than teachers to see their children in a social settings and interacting with peers, and therefore may make inaccurate judgments of prosocial behavior. Parents may not have an accurate idea of their own child's prosocial capabilities in relation to other children. Also, the prosocial interactions parents do witness most often may be with young siblings or the children of close family friends, with whom there is an expectation of harmonious and prosocial relations.

In addition to these findings the interesting yet non-significant finding that mainstream group wicked desire understanding was positively related to composite parent prosocial ratings, while the wicked desire understanding of the "at risk" groups was negatively related to composite parent prosocial ratings suggest that parents may view their children's prosocial behaviors differently (see Table 7). It may be that the parents of "at risk" students would classify an understanding of the wicked desires of others as hindering prosocial interactions with others by encouraging behavior with "wicked" or ill-willed intentions. These results suggest that parents of "at risk" children may expect their children to conform more to social norms concerning prosocial behavior than parents of mainstream children whose ratings indicate that a more sophisticated understanding of wicked desire may seen as helpful in peer relations.

In the classroom setting children have many more opportunities to engage in prosocial activity which the classroom teacher is more likely to see and report. Due to the fact that teacher and parent ratings of prosocial behavior were related to desire

understanding in different ways, it is likely that prosocial behavior is largely context dependent. Therefore this study can only draw conclusions between desire understanding and prosocial behaviors of preschoolers in a classroom setting. Furthermore, two strong correlations between teacher prosocial orientation ratings/teacher selflessness ratings and teacher prosocial orientation ratings/teacher social initiative ratings within composite teacher prosocial ratings were found in the present study. When compared to one, somewhat weak correlation of parent ratings of prosocial orientation and selflessness within composite parent prosocial ratings, these findings suggest that teachers may be more consistent in their prosocial ratings, thus making them more reliable. This is also consistent with the fact that, in the present study parents of some the subjects tested confessed to little knowledge of their child's social skills, making them an unreliable judge of their child's prosocial behavior.

Differences in teacher and parent ability to correctly rate the social behaviors of preschoolers in the classroom setting suggests that prosocial behaviors, such as those examined in the present study, are largely context based. Prosocial behavior may differ in the classroom from the behavior displayed at home. To avoid the problem of unreliable teacher and parent prosocial ratings, future research should observe the prosocial behaviors of subjects in the classroom setting. To be able to make claims about the overall prosocial behavior of children as related to desire understanding in future studies, naturalistic observations need to be performed of both the home and classroom environment.

Little work has been done in the area of theory of mind development with children who are of a low to middle class socioeconomic group. No desire understanding

research, to the experimenters' knowledge, has examined children who have been given an "at risk" label. Children designated as "at risk" were enrolled in a program called Ready Early And Climb High (REACH), developed to cater to the needs of children with disadvantaged personal or family backgrounds.

The program supposes that children from impoverished backgrounds may have fewer educational opportunities than other, mainstream, children. REACH seeks to expose "at risk" children, enrolled in the program, to a broad range of educational experiences and provides special services such as occupational therapy, physical therapy and psychological counseling for students in need. Based upon certain criteria for enrollment, such as "developmentally immature", "family history of delinquency", and "incarcerated parent," (see Appendix v) it may be that the "at risk" children are at a disadvantage in their ability to understand the desires of others and/or their ability to engage in successful prosocial behavior. The current study found no differences between subject classroom designation and subject desire understanding. These findings suggest that theory of mind development is similar for all children regardless of any risk factors thought to hinder development. However, it is also possible that children enrolled in the "at risk" program have been remediated through the efforts of REACH.

It is important to note that, though desire understanding was found to not differ between groups, one significant difference was found in teacher ratings of prosocial behavior between the "at risk" and mainstream groups. Teacher prosocial ratings of prosocial orientation (one subscale of the prosocial behavior measure) for "at risk" children were significantly lower than teacher ratings of prosocial orientation for mainstream children. These results may suggest that teachers of children given the label

of “at risk” expect their students to be different and less able than mainstream students based solely upon that label when no actual differences were present. It may also be that the children labeled “at risk” were disadvantaged upon entering the program and this is when teachers formed opinions of their social abilities. This may also indicate that the REACH program, designed to benefit “at risk” students and provide them with resources to function in ways equivalent to mainstream children has been successful. If this is the case, perhaps being in the classroom with the children everyday it is harder for classroom teachers to notice the positive changes their students have made and rely heavily on their prior opinions of students. It is, however, important to keep in mind that significant group difference for prosocial behavior for “at risk” and mainstream students were only indicated by one prosocial behavior subscale. Future replication of this study needs to be performed to demonstrate whether or not this finding is reliable.

Furthermore, the teacher prosocial orientation ratings for mainstream children were found to be significantly correlated to composite desire measures while the same ratings for the lower rated “at risk” children were not. This interesting finding has two important, possible implications for the present study. It may be that a significant teacher bias is associated with children who have been given an “at risk” label, as discussed above. However, because no naturalistic observations of prosocial behavior of subjects were performed, this study allows no way to determine whether a teacher bias actually exists. It may be, rather, that teacher ratings of the prosocial behaviors of their students are not in fact bias. Due to the fact that “at risk” and mainstream subjects did not perform differently on desire understanding tasks, if teacher bias does not exist, desire understanding can not be said to be a predictor of prosocial behavior in children. This is a

possibility contrary to the hypotheses of the experimenters. Due to the fact that composite desire understanding and composite teacher ratings of prosocial behavior were significantly correlated, future research should incorporate observation of “at risk” and mainstream subjects’ prosocial behavior to determine whether or not desire understanding of preschool aged children is in fact a reliable predictor of prosocial behavior.

If desire understanding is a developmental process, as the current study suggests, that all children undergo regardless of gender or class designation, and is linked to displays of prosocial behavior, it is important to consider and investigate the implications of these findings in future research. It may be that an early development of desire understanding may allow for higher qualities of prosocial behaviors and better long term social outcomes. Longitudinal studies may be considered to examine the outcomes of children with differing levels of desire understanding at a particular age. Overall, the present study suggests that preschool age childrens’ level of desire understanding is related to the level of prosocial behavior displayed within a classroom setting, but it is unclear whether these prosocial behaviors transfer outside the classroom.

References

- Astington, J.W & Jenkins, J.M (1995). Theory of mind development and social understanding. *Cognition and Emotion*, 9, 151-165.
- Avis, J. & Harris, P.L. (1991) Belief-desire reasoning among Baka children: Evidence for a universal conception of mind. *Child Development*, 62(3), 460-467. Cited in Mitchell, P. (1997) *Introduction to Theory of Mind: Children, Autism and Apes*. New York, St. Martin's Press.
- Baldwin, J.M. (1884) *Mental development of the child and the race: Methods and processes*. New York: Macmillian. Cited in Bretherton, I. (1991) Intentional Communication and the Development of an Understanding of Mind. In D. Frye & C. Moore (Ed.), *Children's theories of mind: mental states and social understanding*. (pp 47-75). Hillsdale, NJ: L. Erlbaum Associates.
- Baldwin, J.M. (1906) *Social and ethical interpretations in mental development* (4th ed.). London: The Macmillan. Cited in Bretherton, I. (1991) Intentional Communication and the Development of an Understanding of Mind. In D. Frye & C. Moore (Ed.), *Children's theories of mind : mental states and social understanding*. (pp 47-75). Hillsdale, NJ: L. Erlbaum Associates.
- Baron –Cohen, S. (1994) Development of a theory of mind: Where would we be with the intentional stance? In M. Rutter & D. Hay (Eds.), *Development through life: A handbook for clinicians* (pp. 303-318). Oxford, England: Blackwell Scientific. Cited in Slomkowski, C. & Dunn, J. (1996) Young Children's Understanding of Other People's Beliefs and Feelings and Their Connected Communications with Others. *Developmental Psychology*, 32 (3), 442-447.
- Bartsch, K. & Wellman, H.M. (1995) *Children talk about the Mind*. Oxford. Oxford University Press.
- Birch, S.H. & Ladd, G.W. (1998) Children's Interpersonal Behaviors and the Teacher-Child Relationship. *Developmental Psychology*, 34 (5), 934-946.
- Bohlin, G., Hageskull, B. & Rydell, A. (2000) Attachment and Social Functioning: A Longitudinal Study form Infancy to Middle Childhood. *Social Development*, 9 (1), 24-39
- Bretherton, I. (1991) Intentional Communication and the Development of an Understanding of Mind. In D. Frye & C. Moore (Ed.), *Children's theories of mind : mental states and social understanding*. (pp 47-75). Hillsdale, NJ: L. Erlbaum Associates.
- Brinton, B., & Fujiki, M. (1993) Language, social skills and socioemotional behavior. *Language, Speech, and Hearing Services in Schools*, 24(4), 194-198. Cited in Capage, L. & Watson, A.C. (2001) Individual Differences in Theory of Mind, Aggressive Behavior and Social Skills In young Children. *Journal Early Education and Development*, 12(4): 613-628.
- Bruner, J. (1975) The ontogenesis of speech acts. *Journal of child Language*, 2, 1-19. Cited in Bretherton, I. (1991) Intentional Communication and the Development of an Understanding of Mind. In D. Frye & C. Moore (Ed.), *Children's theories of mind : mental states and social understanding*. (pp 47-75). Hillsdale, NJ: L. Erlbaum Associates.
- Capage, L. & Watson, A.C. (2001) Individual Differences in Theory of Mind, Aggressive Behavior and Social Skills In young Children. *Journal Early Education and Development*, 12(4): 613-628.
- Caprara, G.V., Barbaranelli, C., Incatasciato, M., Pastorelli, C. and Rabasca, A. (1997) Emotional instability, physical and verbal aggression, and prosocial behaviors as precursors of school achievement and social adjustment. In S. Feshbach & J. Zagrodzka (Eds.), *Aggression: Biological, developmental and social perspectives* (pp. 111-120). New York: Plenum Press. Cited in Jackson, M. & Tisak, M.S (2001) Is Prosocial behaviour a good thing? Developmental changes on

- children's evaluations of helping, sharing cooperating and comforting. *British Journal of Developmental Psychology*, 19, 349-367.
- Cassidy, K.W. (1998) Three and four year-old children's ability to use desire and belief based reasoning. *Cognition*, 66, B1-B11.
- Cassidy, K.W. (1998) Preschoolers' Use of Desire to Solve Theory of Mind Problems in a Pretense Context. *Developmental Psychology*, 34 (3), 503-511.
- Cassidy, K.W., Adamek-Griggs, R., Cossetti, M., Meier, V., Kelton, E., Richman, L. & Stanhaus, H. (Under Review) Preschool Children's Understanding of Conflicting Desires.
- Cauley, K. & Tyler, B. (1989) The Relationship of self Concept to Prosocial Behavior in Children. *Early Childhood Research Quarterly*, 4, 51-60 .
- Chandler, M., Fritz, A.S. & Hala, S. (1989) Small scale deceit: Deception as a marker of 2-, 3-, and 4-year olds early theories of mind. *Child Development*, 60, 1263-1277. Cited in Wellman, H.M., Cross, D. & Watson, J. (2001) Meta-analysis of theory-of-mind development: The truth about false belief. *Child Development*, 72, 655-684.
- Clark, K.E. & Ladd, G.W. (2000) Connectedness and Autonomy Support in Parent-Child Relationships: Links To Children's Socioemotional Orientation and Peer Relationships. *Developmental Psychology*, 36 (4), 485-498.
- Dion, D.K. (1973) Young children's stereotyping of facial attractiveness. *Developmental Psychology*, 9, 183-188. Cited in Smith, G.J. (1985) Facial and Full-length Ratings of Attractiveness Related to the Social Interactions of Young Children. *Sex Roles*, 12 (3/4), 287-293.
- Dion, D.K. & Stein, S. (1978) Physical attractiveness and interpersonal influence. *Journal of Experimental and Social Psychology*, 14, 97-108. Cited in Smith, G.J. (1985) Facial and Full-length Ratings of Attractiveness Related to the Social Interactions of Young Children. *Sex Roles*, 12 (3/4), 287-293.
- Dunn, A.L. & Dunn, A.L. (1997) Peabody Picture Vocabulary Test third Edition (PPVT – III) Form III – A.
- Dunn, J., Brown, J., Slomkowski, C., Tesla, C. & Youngblade, L. (1991) Young Children's Understanding of other People's Feelings and Beliefs: Individual Differences and Their Antecedents. *Child Development*, 62, 1352-1366.
- Eisenberg, N. & Fabes, R.A. (1991) Prosocial Behavior and Empathy – A multimethod developmental perspective. In M.S. Clark (Ed.), *Prosocial Behavior*. (pp 34-59). London, Sage Publications.
- Eisenberg, N & Fabes, R.A (1998) Prosocial Development. In W. Damon, (Ed.), *Handbook of Child Psychology (5th ed.)*, Vol. 3. (pp. 701-778). New York: John Wiley & Sons, Inc.
- Elicker, J., Englund, M., & Sroufe, L.A (1992) Predicting peer confidence and peer relationships in childhood fro early parent-child relationships. In R. Parke & G.W. Ladd (Eds.), *Family and Peer Relationships: Modes of Linkages* (pp 77-106). Hillsdale, NJ: Lawrence Erlbaum. Cited in Bohlin, G., Hageskull, B. & Rydell, A. (2000) Attachment and Social Functioning: A Longitudinal Study form Infancy to Middle Childhood. *Social Development*, 9 (1), 24-39
- Emde, H.K. & Buchsbaum, R.N. (1990) Play narratives in 36-month-old children: Early moral development and family relationships. *Psychoanalytic Study of the Child*, 45, 129-155. Cited in Miller, P.A., Bernzweig, J., Eisenberg, N. & Fabes R.A. (1991) The Development and socialization of prosocial behavior. In R.A.Hinde, & J.Groebel (Ed.), *Cooperation and Prosocial Behaviour*. (pp 54-77) New York, NY: Cambridge University Press.

- Flavell, J.H., Flavell, E.R. & Green, F. L. (1983) Development of the appearance-reality distinction. *Cognitive Psychology*, 15(1), 95-120. Cited in Mitchell, P. (1997) *Introduction to Theory of Mind: Children, Autism and Apes*. New York, St. Martin's Press.
- Flavell, J.H. (1999) Cognitive development: Children's Knowledge About the Mind. *Annual Review of Psychology*, 50, 21-45.
- Floody, D. (1980) An early educator's guide to prosocial development. ERIC Document No. ED 192 882. Cited in Cauley, K. & Tyler, B. (1989) The Relationship of self Concept to Prosocial Behavior in Children. *Early Childhood Research Quarterly*, 4, 51-60 .
- Fonagy, P., Redfern, S. & Charman, T. (1997) The relationship between belief-desire reasoning and a projective measure of attachment security (SAT). *British Journal of Developmental Psychology*, 15(1), 51-61.
- Freeman, N.H., Lewis, C., & Doherty, M.J. (1991) Preschoolers' grasp of a desire for knowledge in false-belief prediction: Practical intelligence and verbal report. *British Journal of Developmental Psychology*, 9, 139-157.
- Gopnik, A & Astington, J.W. (1988) Knowing you've changed your mind: Children's understanding of representational change. In J.W. Astington, P.L. Harris, (Eds.), *Developing theories of mind*. (pp. 193-206). New York: Cambridge University Press. Cited in Mitchell, P. (1997) *Introduction to Theory of Mind: Children, Autism and Apes*. New York, St. Martin's Press.
- Gopnik, A. & Metzoff, A.N. (1994) Minds, bodies and persons. Young children's understanding if the self and others as reflected in imagination and "theory of mind" research. In S. Parker & R. Mitchell (Eds.), *Self-awareness in animals and humans* (pp. 166-186). New York: Cambridge University Press. Cited in Repacholi, B. M., & Gopnik, A. (1997) Early Reasoning About Desire: Evidence From 14- and 18- Month-Olds. *Developmental Psychology*, 33, 12-21.
- Gopnik, A. and Meltzoff, A. 1997. *Words, Thoughts and Theories*. Cambridge, MA: MIT Press. In Stich, S. & Nichols, S. (1998) Theory Theory To The Max *Mind & Language* 13, 421-449. Available at http://ruccs.rutgers.edu/ArchiveFolder/Research%20Group/Publications/g&m/G&M.html#N_3_#N_3_
- Harris PL. 1992. From simulation to folk psychology: the case for development. *Mind Lang.* 7:120-44
 Flavell, J.H. (1999) Cognitive development: Children's Knowledge About the Mind. *Annual Review of Psychology*, 50, 21-45.
- Hay, D. (1994) Cooperative interactions and sharing between very young children and their parents. *Developmental Psychology*, 15, 647-653. Cited in Jackson, M. & Tisak, M.S (2001) Is Prosocial behaviour a good thing? Developmental changes on children's evaluations of helping, sharing cooperating and comforting. *British Journal of Developmental Psychology*, 19, 349-367.
- Hughes, C., White, A., Sharpen, J. & Dunn, J. (2000) Antisocial, Angry, and Unsympathetic: "Hard-to-manage" Preschoolers' Peer Problems and Possible Cognitive Influences. *Journal of Child Psychology and Psychiatry and Allied Discipline.*, 41(2),169-179.
- Iannotti, R.J.(1985) Naturalistic and Structured Assessments of Prosocial Behavior in Preschool children: The influence of empathy and perspective taking. *Developmental Psychology*, 21, 46-55.
- Jackson, M. & Tisak, M.S (2001) Is Prosocial behaviour a good thing? Developmental changes on children's evaluations of helping, sharing cooperating and comforting. *British Journal of Developmental Psychology*, 19, 349-367.

- Jensen, L., Huber, C., Cundick, B. & Caelson, J. (1991) Development of a Self-Theory and Measurement Scale. *Journal of Personality Assessment*, 57(3), 521-530.
- Karniol, R. (1995) Developmental and individual differences in predicting other's thoughts and feelings: Applying the transformational rule model. In N. Eisenberg (Ed.) *Review of personality and social psychology: Vol 15, Social Development* (pp. 27-48). Thousand Oaks, CA, Sage. Cited in Eisenberg, N & Fabes, R.A (1998) Prosocial Development. In W. Damon, (Ed.), *Handbook of Child Psychology (5th ed.)*, Vol. 3. (pp. 701-778). New York: John Wiley & Sons, Inc.
- Kim Y.O. & Stevens J.H.Jr. (1987) The Socialization of Prosocial Behavior In Children. *Childhood Education*, 63(3) , 200 – 206.
- Ladd, G.W. (1983) Social networks of popular, average, and rejected children in school settings. *Merrill-Palmer Quarterly*, 29, 283-307. Cited in Ladd, G.W. & Profilet, S.M. (1996) The Child Behavior Scale: A Teacher-Report Measure of Young Children's Aggressive, Withdrawn, and Prosocial Behaviors. *Developmental Psychology*, 32 (6), 1008-1024.
- Ladd, G.W. & Profilet, S.M. (1996) The Child Behavior Scale: A Teacher-Report Measure of Young Children's Aggressive, Withdrawn, and Prosocial Behaviors. *Developmental Psychology*, 32 (6), 1008-1024.
- Lee, L.C. & Zhan, G, Q. (1991) Political socialization and parental values in the People's Republic of China. *International Journal of Behavioral Development*, 14, 337-373. Cited in Eisenberg, N & Fabes, R.A (1998) Prosocial Development. In W. Damon, (Ed.), *Handbook of Child Psychology (5th ed.)*, Vol. 3. (pp. 701-778). New York: John Wiley & Sons, Inc.
- Leslie A. 1994. ToMM, ToBY and agency: core architecture and domain specificity. In Mapping the Mind: Domain Specificity in Cognition and Culture, ed. LA Hirschfeld, SA Gelman, pp. 119-48. Cambridge, UK: Cambridge Univ. In Flavell, J.H. (1999) Cognitive development: Children's Knowledge About the Mind. *Annual Review of Psychology*, 50, 21-45.
- Luckett, T., Powell, S.D., Messer, D.J., Thornton, M.E. & Schulz, J. (2002) Do Children with Autism Who Pass False Belief Tasks Understand the Mind as Active Interpreter? *Journal of Autism and Developmental Disorders*, 32(2), 127-140.
- Ma, H.K. & Leung, M.C. (1991) Altruistic orientation in children: Construction and validation of the Child Altruism Inventory. *International Journal Psychology*, 26, 745-759. Cited in Eisenberg, N & Fabes, R.A (1998) Prosocial Development. In W. Damon, (Ed.), *Handbook of Child Psychology (5th ed.)*, Vol. 3. (pp. 701-778). New York: John Wiley & Sons, Inc.
- MacDonald, K. & Parke, R.D. (1984) Bridging the gap: Parent-child play interaction and peer interactive competence. *Child Development*, 55, 1265-1277. Cited in Clark, K.E. & Ladd, G.W. (2000) Connectedness and Autonomy Support in Parent-Child Relationships: Links To Children's Socioemotional Orientation and Peer Relationships. *Developmental Psychology*, 36 (4), 485-498.
- Mitchell, P. (1997) Introduction to Theory of Mind: Children, Autism and Apes. New York, St. Martin's Press.
- Miller, P.A., Bernzweig, J., Eisenberg, N. & Fabes R.A. (1991) The Development and socialization of prosocial behavior. In R.A.Hinde, & J.Groebel (Ed.), *Cooperation and Prosocial Behaviour*. (pp 54-77) New York, NY: Cambridge University Press.
- Mize, J & Ladd, G.W. (1989) Predicating Preschoolers' Peer Behavior and Status From Their Interpersonal Strategies: A Comparison of Verbal and Enactive Responses to hypothetical Social Dilemmas. *Developmental Psychology*, 24 (6), 782-788.

- Moore, C., Jarrold, C., Russell, J., Lumb, A., Sapp, & MacCallum, F. (1995) Conflicting Desire and the Child's Theory of Mind. *Cognitive Development, 10*, 467-482.
- Moses, L.J., Coon, J.A., & Wusinich, N. (2000) Young Children's Understanding of Desire Formation. *Developmental Psychology, 36* (1), 77-90.
- Nunner- Winkler, G & Sodian, B (1988) Children's understanding of moral emotions. *Child Development, 59*, 1323-1338.
- Orlando, L. (1993) Towards a Piagetian explanation of the development of prosocial behaviour in children: The force of Negational thinking. *British Journal of Developmental Psychology, 11*, 91-106.
- Parkhurst, J., & Asher, S.R. (1992) Peer rejection in middleschool: Subgroup differences in behavior, loneliness and interpersonal concerns. *Developmental Psychology, 28*, 231-241. Cited in Birch, S.H. & Ladd, G.W. (1998) Children's Interpersonal Behaviors and the Teacher-Child Relationship. *Developmental Psychology, 34* (5), 934-946.
- Perner, J. (1991) On Representing That: The asymmetry Between Belief and Desire in Children's Theory of Mind. In Frye, D. & Moore, C (Ed.), *Children's theories of mind : mental states and social understanding*. (pp. 139-155) Hillsdale, N.J. : L. Erlbaum Associates.
- Premack, D., and Woodruff, G. (1978) Does the chimpanzee have a theory of mind? *The Behavioral and Brain Sciences, 4*, 515- 526. Cited in Bretherton, I. (1991) Intentional Communication and the Development of an Understanding of Mind. In D. Frye & C. Moore (Ed.), *Children's theories of mind : mental states and social understanding*. (pp 47-75). Hillsdale, NJ: L. Erlbaum Associates.
- Putallaz, M. (1987) Maternal behavior and children's social status. *Child Development, 58*, 324-340. Cited in Clark, K.E. & Ladd, G.W. (2000) Connectedness and Autonomy Support in Parent-Child Relationships: Links To Children's Socioemotional Orientation and Peer Relationships. *Developmental Psychology, 36* (4), 485-498.
- Rehberg, H.R. & Richman, C.L. (1989) Prosocial behaviour in preschool children: A look at the interaction of race, gender and family composition. *International Journal of Behavioral Development, 12*, 385-401. Cited in Eisenberg, N & Fabes, R.A (1998) Prosocial Development. In W. Damon, (Ed.), *Handbook of Child Psychology (5th ed.)*, Vol. 3. (pp. 701-778). New York: John Wiley & Sons, Inc.
- Repacholi, B. M., & Gopnik, A. (1997) Early Reasoning About Desire: Evidence From 14- and 18- Month-Olds. *Developmental Psychology, 33*, 12-21.
- Rieffe, C., Terwogt, M.M., Kroops, W., Stegge, H. & Oomen, A. (2001) Preschoolers' appreciation of uncommon desires and subsequent emotions. *British Journal of Developmental Psychology, 19*, 259-274.
- Rydell, A., Hageskull, B. & Bohlin, G. (1997) Measurement of Two Social Competence Aspects in Middle Childhood. *Developmental Psychology, 33* (5), 824-833.
- Scaife, M. & Bruner, J. (1975) The capacity for joint attention in the infant. *Nature, 253*, 265-266. Cited in Bretherton, I. (1991) Intentional Communication and the Development of an Understanding of Mind. In D. Frye & C. Moore (Ed.), *Children's theories of mind : mental states and social understanding*. (pp 47-75). Hillsdale, NJ: L. Erlbaum Associates.
- Schwitzgebel, Eric (Under Review). A Difficulty for Simulation Theory Due to the Close Connection of Pretence and Action in Early Childhood. Available at <http://www.faculty.ucr.edu/~eschwitz/SchwitzPapers/Sim000803.pdf>.

- Siegal, M. & Beattie, K. (1991) Where to look first for children's understanding of false beliefs. *Cognition*, 38, 1-12. Cited in Wellman, H.M., Cross, D. & Watson, J. (2001) Meta-analysis of theory-of-mind development: The truth about false belief. *Child Development*, 72, 655-684.
- Slomkowski, C. & Dunn, J. (1996) Young Children's Understanding of Other People's Beliefs and Feelings and Their Connected Communications with Others. *Developmental Psychology*, 32 (3), 442-447.
- Smith, G.J. (1985) Facial and Full-length Ratings of Attractiveness Related to the Social Interactions of Young Children. *Sex Roles*, 12 (3/4), 287-293.
- Sroufe, L.A. (1983) Infant-caregiver attachment and patterns of adaptation in school: The roots of maladaptation and competence. In M. Perlmutter (Ed.), *Minnesota Symposium in Child Psychology* (Vol. 16, pp 41-81). Cited in Bohlin, G., Hageskull, B. & Rydell, A. (2000) Attachment and Social Functioning: A Longitudinal Study from Infancy to Middle Childhood. *Social Development*, 9 (1), 24-39
- Staub, E. & Sherk, L. (1970) Need for approval, children's sharing behavior, and reciprocity in sharing. *Child Development*, 41(1), 243-252.
- Stich, S. & Nichols, S. (1998) Theory Theory To The Max *Mind & Language* 13, 421-449. Available at http://ruccs.rutgers.edu/ArchiveFolder/Research%20Group/Publications/g&m/G&M.html#N_3_#N_3_.
- Tardif, T. & Wellman, H.M. (2000) Acquisition of Mental State Language in Mandarin and Cantonese Speaking Children. *Developmental Psychology*, 36(1), 25-43.
- Tisak, M.S. & Ford M. (1986) Children's conceptions of interpersonal events. *Merrill Palmer Quarterly*, 32, 291-306. Cited in Jackson, M. & Tisak, M.S (2001) Is Prosocial behaviour a good thing? Developmental changes on children's evaluations of helping, sharing cooperating and comforting. *British Journal of Developmental Psychology*, 19, 349-367.
- Trevarthen, C. & Hubley, P. (1979) Secondary Intersubjectivity: Confidence, confiding, and acts of meaning in the first year. I A. Lock (Ed.), *Action, gesture and symbol* (pp. 183-229). New York.: Academic Press. Cited in Bohlin, G., Hageskull, B. & Rydell, A. (2000) Attachment and Social Functioning: A Longitudinal Study from Infancy to Middle Childhood. *Social Development*, 9 (1), 24-39
- Turnbull, C.M. (1972) *The Mountain People*. New York: Simon and Schuster. Cited in Eisenberg, N & Fabes, R.A (1998) Prosocial Development. In W. Damon, (Ed.), *Handbook of Child Psychology* (5th ed.), Vol. 3. (pp. 701-778). New York: John Wiley & Sons, Inc.
- Urgel-Semin, R. (1952) Moral behavior and moral judgment of children. *Journal of Abnormal and Social Psychology*, 47, 463-474. Cited in Eisenberg, N & Fabes, R.A (1998) Prosocial Development. In W. Damon, (Ed.), *Handbook of Child Psychology* (5th ed.), Vol. 3. (pp. 701-778). New York: John Wiley & Sons, Inc.
- Watson, A.C., Nixon, C.L., Wilson, A. & Capage, L. (1999) Social Interaction and Theory of Mind in Young Children. *Developmental Psychology*, 35 (2), 386-391.
- Winsler, A & Wallace, G.L. (2002) Behavior problems and social skills in preschool children: Parent – teacher agreement and relations with classroom observations. *Early Education and Development*, 13 (1), 41-58.

- Weidman, C.S. & Strayhorn, J.M. (1992) Relations between children's prosocial behaviors and choices in story dilemmas. *Journal of Psychoeducational Assessment*, 10, 330-341. Cited in Eisenberg, N & Fabes, R.A (1998) Prosocial Development. In W. Damon, (Ed.), *Handbook of Child Psychology (5th ed.)*, Vol. 3. (pp. 701-778). New York: John Wiley & Sons, Inc.
- Wellman, H.M. (1988) First steps in child's theorizing about the mind. In J. Astington, P. Harris & D. Olsen (Eds.), *Developing theories of mind* (pp 64-92). New York: Cambridge University Press. Cited in Bretherton, I. (1991) Intentional Communication and the Development of an Understanding of Mind. In D. Frye & C. Moore (Ed.), *Children's theories of mind : mental states and social understanding*. (pp 47-75). Hillsdale, NJ: L. Erlbaum Associates.
- Wellman, H.M. (1991) From Desire to belief: Acquisition of a theory of Mind. In A. Whiten, (Ed.), *Natural theories of mind: Evolution, development and simulation of everyday mindreading*. (pp. 19-38). Cambridge, MA: Basil Blackwell, Inc.
- Wellman, H.M. (1993) Early understanding of the mind; The normal case. In S. Baron-Cohen, H. Tager-Flusberh & D.J. Cohen (Eds.), *Understanding other minds: Perspectives from autism* (pp. 10-39). Oxford, England: Oxford University Press. Cited in Repacholi, B. M., & Gopnik, A. (1997) Early Reasoning About Desire: Evidence From 14- and 18- Month-Olds. *Developmental Psychology*, 33, 12-21.
- Wellman, H.M. & Banerjee, M. (1991) Mind and Emotion: Children's understanding of emotional consequences of beliefs and desires. *British Journal of Developmental Psychology*, 9, 191-214.
- Wellman, H.M. & Bartsch, K. (1994) Before belief: Children's early psychological theory. In C. Lewis & P. Mitchell (Eds.), *Children's early understanding of mind: Origins and development* (pp. 331-354). Hillsdale, NJ; Erlbaum. Cited in Repacholi, B. M., & Gopnik, A. (1997) Early Reasoning About Desire: Evidence From 14- and 18- Month-Olds. *Developmental Psychology*, 33, 12-21.
- Wellman, H.M., Cross,D. & Watson, J. (2001) Meta-analysis of theory-of-mind development: The truth about false belief. *Child Development*, 72, 655-684.
- Wellman, H.M., Phillips, A.T. & Rodriguez,T. (2000) Young Children's Understanding of Perception, Desire and Emotion. *Child Development*, 71 (4), 895-912.
- Wellman, H.M. & Woolley, J.D. (1990) From simple desires to ordinary beliefs: The early development of everyday psychology. *Cognition*, 35, 245-275.
- White, B.L. & Watts, J.C. (1973) *Experience and environment. Major influences of the development of the young child. Vol. 1*. Englewood Cliffs, NJ: prentice Hall. Cited in Rydell, A., Hageskull, B. & Bohlin, G. (1997) Measurement of Two Social Competence Aspects in Middle Childhood. *Developmental Psychology*, 33 (5), 824-833.
- Williams, K.T. & Wang, J.J. (1997) Technical References to the Peabody Picture Vocabulary Test – Third Edition (PPVT –III). Circle Pines, MN: American Guidance Service Inc.
- Wimmer, H. & Perner, J. (1983) Beliefs about beliefs: Representation and constraining function of wrong beliefs in young children's understanding of deception. *Cognition*, 13(1), 103-128. Cited in Bartsch, K. & Wellman, H.M. (1995) *Children talk about the Mind*. Oxford. Oxford University Press.
- Wolf, D. F. (1998) Why Granny Should Have Read French Philosophers: The Phenomenology of Fodor or the Modularity of Merleau-Ponty. Paper presented at the Twentieth World Congress of Philosophy, in Boston, Massachusetts from August 10-15, 1998. Available at <http://www.bu.edu/wcp/Papers/Mind/MindWolf.htm>

- Yuill, N., Perner, J., Pearson, A., Peerbhoy, D., van den Emde, J. (1996) Children's changing understanding of wicked desires: From objective to subjective and moral. *British Journal of Developmental Psychology*, 14, 457-475.
- Zahn-Waxler, C., Radke-Yarrow, M. & King, R.A. (1979) Child rearing and children's prosocial initiations toward victims of distress. *Child Development*, 50, 319-330. Cited in Eisenberg, N & Fabes, R.A (1998) Prosocial Development. In W. Damon, (Ed.), *Handbook of Child Psychology (5th ed.)*, Vol. 3. (pp. 701-778). New York: John Wiley & Sons, Inc.

Desire Understanding Stories Used by Wellman & Woolley (1990)

Finds-Wanted Stories

Here's Johnny*. He wants to find his dog. His dog might be in the house, or it might be in the garage. So, he is looking for his dog. Watch, he is looking for his dog in the garage. Look. He finds his dog.

Finds-Nothing Stories

Here's Betsy*. She wants to find her horse. Her horse might be in the red barn or it might be in the green barn. So, she's going to look for her horse. Watch, she's looking for her horse in the green barn. Look. She doesn't find her horse.

Finds-Substitute Stories

Here's Annie*. She wants to find her crayons. Her crayons might be in the desk, or they might be in the toy box. So, she's going to look for her crayons. Watch, she's looking in the toy box. Look. She finds some mittens.

*The gender of the protagonist in the stories were matched to that of the participant.

Conflicting/Inferring Desire Sample Story – Cassidy (under review)*Implicit Conflict Trial*

“Let’s look at these four things to do (Present pictures indicative of the zoo, the post office, the bank and the supermarket). Show me one that you like to do the best, the one you REALLY, REALLY like to do. (Child chooses go to the zoo.) Now point to the one that you hate to do, the one that you don’t like to do. (Child chooses go to the post office.) Now I am going to read you a story and ask you some questions.

“This is Jillian, One day Mommy takes Jillian to the post office. Jillian smiled when Mommy let her put money into the stamp machine. The mailperson gave Jillian her favorite color balloon. Next, Mommy took Jillian to the zoo. The zoo smelled yucky. Jillian got hot and tired from all of the walking and she cried. The next day Mommy asked Jillian what she would like to do.”

(Test Question) “Will Jillian choose to go to the post office or the zoo?”

(Participant Preference Question) “Which thing do you like to do the best? Which thing do you really hate to do the most?”

Implicit No-Conflict Trial

“Let’s look at these four things to go. (Present pictures indicative of the beach, the playground, a picnic and a pool.) Show me two that you like to do the best, the ones you REALLY, REALLY like to do. Okay. So you REALLY like to do these two (Child chooses “go to the beach” and “go to the playground”). Now I am going to read you a story and ask you some questions.

“This is Becky. One day Mommy took Becky to the beach. Becky got to splash in the cool water. Becky also laughed when she jumped over the big waves. Next Becky and Mommy went to the playground. First, Becky fell off the swing. Then, there was a long line for the slide and Becky didn’t get to go down. The next day Mommy asks Becky what she would like to do.”

(Test Question) “Will Becky choose to go to the playground or the beach?”

(Participant Preference Question) “Which two things do you like the best?”

Wicked Desire Understanding Tasks - Yuill et al. (1996)

Present the subject with pictures of the context, action and outcome of each scenario.

Bike context, bad motive, match. These children are cycling on the playground. The big boy in the green does not like the little boy in the yellow. He is going to make him mad. He is going to give him a big bump. The boy in the green gives the boy in the yellow a big bump. The little boy in the yellow shirt gets so mad that he gets off his bike and he stomps his feet.

Ball context, bad motive, mismatch. This boy was playing ball. He did not like the boy in the blue shirt. He wanted to throw the ball at him and hit him in the head. He threw the ball. But it didn't hit the boy in the blue shirt. It hit the little boy in the red shirt on the head and made him cry.

After each story the child is asked –

(Emotion Question) Is the boy who threw the ball/gave a big/fun bump happy or sad?

APPENDIX -iv

Rydell et al. (1997) Two Factor Social Competence Measure Items and selfishness measure. (*Selfishness Measures)

Please rate your child on these items following the scale provided.

1 - never 2 - seldom 3 - sometimes 4 - often 5 - almost always

ITEM	1	2	3	4	5
1. Has capacity for generosity with peers					
2. Has capacity to be helping					
3. Has capacity to be altruistic					
4. Shares toys with others when asked by peer*					
5. Has capacity to sympathize with peers					
6. Criticizes peers					
7. Helpful with adults					
8. Helps peers tidy up					
9. Initiates sharing without prompting*					
10. Helps peers search for lost items					
11. Shares his/her feelings					
12. Good at preventing conflicts					
13. Comforts peer who is upset					
14. Behaves selfishly*					
15. Comforts peer who is sick					
16. Includes shy children in play					
17. Has ability to decode peers' feelings					
18. Tries to intervene in peer conflicts					
19. Gives compliments to peers					
20. Finds solution when in conflict					
21. Has the capacity to play well with others					
22. Takes things from others without asking					
23. Has the capacity to work well with others					
24. Can give and take in interactions*					
25. Shares peers' joy					
26. Leads play activities					
27. Thinks world revolves around them*					
28. Socially withdrawn with peers					
29. Makes contact easily with unfamiliar children					
30. Hesitant with peers					
31. Spectator while others play					
32. Shy/hesitant with unfamiliar adults					
33. Is patient when his/her needs cannot be met first*					
34. Suggests activities to peers					
35. Dominated by peers					

