12-15-2016

The Influence Of Others' Goals On Young Children's Sharing Decisions

Melissa L. Glasser

THE INFUENCE OF OTHERS' GOALS ON YOUNG CHIDLREN'S SHARING DECISIONS

by

MELISSA GLASSER

Under the Direction of Rebecca A. Williamson, Ph.D.

ABSTRACT

Prosociality encompasses a variety of actions aimed at benefitting another person, (e.g., Brownell, 2013; Martin & Olson, 2015; Thompson & Newton, 2013). One category of prosocial behaviors is sharing, which uniquely requires relinquishing an object to alleviate another person's need (Pettygrove, Hammond, Karahuta, Waugh, & Brownell, 2013). While past research has shown that children may have some innate predisposition towards prosociality (e.g., Killen & de Waal, 2000; Warneken & Tomasello, 2009b), there are also situational influences that may encourage such behaviors (e.g., Martin & Olson, 2015). The current three studies investigate preschoolers' and early elementary school children's ability to consider another person's goal when distributing resources in a sharing scenario for others and themselves. In

Study 1, participants were presented with either a concrete or non-specific goal and asked to distribute resources between two characters. By age 5, children varied their sharing behaviors based on the goal presented to them, while 3- and 4-year-olds prioritized equity across conditions. Study 2 expanded on these findings, asking children to distribute their own resources with another character. Children of all ages showed a preference for equity in this study, choosing to treat themselves and a partner equally. Finally, Study 3 investigated children's sensitivity to another's proximity to a goal. By age 5, children varied their distribution behaviors dependent upon the goal completion presented to them, preferring to donate more to someone whose goal was nearer completion. Taken together, these studies provide a first step towards a better understanding of one potential motivation behind children's distribution and sharing behaviors.

INDEX WORDS: Sharing, Distributions, Goals, Equity, Goal proximity, Prosociality

THE INFUENCE OF OTHERS' GOALS ON YOUNG CHIDLREN'S SHARING DECISIONS

by

MELISSA GLASSER

A Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree of

Doctor of Philosophy

in the College of Arts and Sciences

Georgia State University

2016

THE INFUENCE OF OTHERS' GOALS ON YOUNG CHIDLREN'S SHARING DECISIONS

by

MELISSA GLASSER

Committee Chair: Rebecca Williamson

Committee: Michael Beran

Sarah Brosnan

Ann Kruger

Electronic Version Approved:

Office of Graduate Studies

College of Arts and Sciences

Georgia State University

December 2016

DEDICATION

I dedicate this dissertation to my family and friends. Nathan, I am especially grateful to you. I could never thank you enough for supporting me through the ups and downs of graduate school, and I would not have finished this without your unwavering love or encouragement. Thank you for never giving up on me, even when I'm ready to give up on myself. To my parents, David and Jeanette Hrabic, thank you for always believing in me, and being my biggest fans; it only took 20 years, but I'm done with school! Finally, to the friends that were there before this journey began, and those I've met along the way: thank you all. I couldn't have done this without all the laughs along the way! Cheers!

ACKNOWLEDGEMENTS

I would like to thank my advisor, Dr. Rebecca Williamson, for her invaluable guidance and support throughout not only this dissertation, but my entire graduate career. I would also like to thank my committee members, Drs. Michael Beran, Sarah Brosnan, and Ann Kruger, for their insightful comments. This research was supported by the Georgia State University Second-Century Initiative in Primate Social Cognition, Evolution, and Behavior. Special thanks to the children and families who participated in this research.

TABLE OF CONTENTS

LIST OF FIGURES

1 INTRODUCTION

Prosocial behaviors are defined as a broad range of actions intended to benefit a person other than oneself, and include instrumentally helping, sharing, and comforting (e.g., Brownell, 2013; Martin & Olson, 2015; Thompson & Newton, 2013). Importantly, each of these categories of prosociality necessitates its own physical, cognitive, and emotional capacities (Dunfield, Kuhlmeier, O'Connell, & Kelley, 2011; Thompson & Newton, 2013) that may influence when children are able to perform different prosocial behaviors and leave them open to other influential factors. From infancy, children prefer characters that help others, rather than those who hinder (e.g., Hamlin, Wynn, & Bloom, 2007). Additionally, they begin to exhibit their own desire to help others shortly after their first birthdays (e.g., Svetlova, Nichols, & Brownell, 2010; Warneken & Tomasello, 2006), becoming more refined in their prosocial abilities over time. This refinement includes taking into account aspects of both the person in-need and the helping situation itself. The current project seeks to examine one potential influence on children's sharing behaviors, namely whether children will adjust their distribution behaviors in light of another's rationale for desiring a particular resource, and, if so, if they are able to make the same decisions when their own resources are involved. By investigating children's sensitivity to such goal understanding and its potential impact on sharing, the current research will provide more information on how the setting of a potential prosocial encounter influences the outcome. Indeed, past research has identified situational influences on children's propensity for helpfulness. Specifically, people, including children in early stages of development, take into account factors such as external rewards (e.g., Frey & Oberholzer-Gee, 1997; Warneken & Tomasello, 2014), presence and awareness of the potential recipient (Buhrmester, Goldfarb, & Cantrell, 1992; Leimgruber, Shaw, Santos, & Olson, 2012), and presence of a third party (Engelmann, Hermann,

& Tomasello, 2012; Engelmann, Over, Herrman, & Tomasello, 2013) when deciding whether or not to help. By adding to our understanding of the factors that contribute to prosocial decisions, the research in this dissertation may inform on a potential to enhance life quality, such as by increasing charitable donations.

1.1 The Origins of Prosociality

1.1.1 An evolutionary perspective.

Historically, researchers have puzzled over the existence of prosocial behaviors. These behaviors are particularly troublesome for traditional evolutionary theories that focus on the individual and emphasize surviving long enough to reproduce. Specifically, Darwin's (1859) theory of evolution requires self-preservation as a mechanism to aid in reproduction. Helping others seemingly contradicts this theory, as sacrificing one's own resources or putting oneself at-risk may jeopardize the likelihood of reproduction. Darwin (1871) acknowledged that altruistic tendencies were problematic for his theory of natural selection, as they seemed to counter what he thought necessary to survive and reproduce.

Since then, subsequent researchers have considered the larger context, rather than focusing on the individual alone, and have revealed potential benefits of prosociality. For one, Hamilton (1964) posited a theory of inclusive fitness, called kin selection. According to this theory, if the individual is unable to increase their own chance at reproductive success, then they should focus on the reproductive successes of their kin members. As these kin members share genes, focusing instead on the reproductive opportunities of their kin ensures that some of their own genes are passed on to future generations. Later, Trivers (1971) expanded on this work, seeking to explain potential benefits of prosociality directed towards non-kin members. He theorized that help may have been selectively provided to those group members who were likely

to reciprocate and return the help in the future when needed. Thus, long-term mutually beneficial relationships could be forged, wherein both partners sought to enhance their reproductive chances.

Some evidence that prosocial behaviors may have an evolutionary basis comes from comparative work conducted with non-human primates. Chimpanzees have been found able and willing to help others, retrieving out-of-reach objects for humans (Warneken & Tomasello, 2006), or opening a door for a conspecific who cannot do it themselves (Warneken, Hare, Melis, Hanus, & Tomasello, 2007). Similar to humans (Warneken & Tomasello, 2014), chimpanzees even perform these prosocial acts in the absence of rewards (Warneken et al., 2007). Finally, there has also been some evidence of chimpanzees sharing with others. In one study, Horner, Carter, Suchak, and de Waal (2011) presented chimpanzees with two tokens representing selfish and prosocial rewards. Chimpanzees were permitted to choose only one token, and showed a significant preference for the prosocial option. However, sharing in the wild has been observed less often, and typically consists only of sharing food with others, particularly between mothers and their offspring or desired sexual partners (Muller & Mitani, 2005; Ueno & Matsuzawa, 2004). Overall, that similar prosocial behaviors are shown by human's closest evolutionary relatives provides evidence that prosociality may stem from a common origin.

1.1.2 An ontogenetic perspective.

In addition to comparative researchers examining the phylogenetic roots of prosociality, developmental researchers also consider the ontogenetic origins of prosociality. An early emerging preference for prosociality provides further evidence that it may be an innate tendency. Beginning before young infants are physically able to help others, they show an emerging preference for helpful behaviors from others (Hamlin & Wynn, 2011; Hamlin et al., 2007;

Schmidt & Sommerville, 2011; Sommerville, Schmidt, Yun, & Burns, 2013). For example, in a violation of expectations paradigm, 3-month-olds looked longer at an event in which a protagonist character sat next to an unhelpful character than when it sat next to a helpful character, suggesting surprise at this outcome (Hamlin, Wynn, & Bloom, 2010). Additionally, by 6 months, infants in a forced-choice measure chose a character that had previously been helpful, rather than unhelpful (Hamlin et al., 2007), and by 19 months, they reliably moved in proximity towards a fair, rather than unfair, actor (Burns & Sommerville, 2014).

Children not only prefer others to behave prosocially, but begin early on to exhibit such helpful behaviors. These early helpful behaviors include participating in household chores (Rheingold, 1982), retrieving out-of-reach objects (Warneken & Tomasello, 2006), or attempting to comfort someone who is crying (Eisenberg, Fabes, Carlo, & Karbon, 1998). One characteristic of such early prosociality is that children are intrinsically motivated. That is, they do not act prosocially in hopes of obtaining some external reward; rather, giving 20-month-olds a material reward (e.g., a toy cube) decreases their likelihood of prosociality after the reward is removed (Warneken & Tomasello, 2014). This intrinsic motivation seems to persist throughout the lifespan. Specifically, adults are more likely to share their resources when making charitable donations when another donor will match their contributions, substantiating their contributions (Karlan & List, 2007); however, this may result in an over-justification effect, undermining future charitable donations after matching is removed (Meier, 2007).

Individual differences also seem to contribute to how inclined people may be to act prosocially. One potential origin is genetic, as evidence has been found linking prosociality to temperament (Farver & Branstetter, 1994), a construct that is widely agreed to have an innate basis (Lewis, 1989). Specifically, 18- and 30-month-olds whose temperaments were classified as

easy were significantly more likely to act prosocially towards a distressed peer than those whose temperaments were classified as slow-to-warm-up or difficult. Additional studies have also found relationships between prosociality and specific characteristics of temperament. For one, there is a negative relationship between children's reactivity and affect and their likelihood to relieve someone's distress (Young, Fox, & Zahn-Waxler, 1999). That is, children who reacted less strongly to someone's distress and showed little affect after experiencing such distress were unlikely to aid the person in-need. Furthermore, low fearfulness has been found to be predictive of later comforting behaviors (Liew et al., 2011).

In addition to internal characteristics that may affect children's prosociality, there may also be external influences that encourage children to uphold these standards. For example, House et al. (2013) compared children from six different societies on two games in which they had the opportunity to act in a prosocial manner. They found distinct differences in the way that these children responded to the tasks across cultures; by middle childhood, the nature of children's prosocial behaviors began to mirror those of adults in their respective societies. Similarly, Köster, Schuhmacher, and Kärtner (2015) found differences in children's prosociality across collectivist and individualistic cultures, further highlighting the impact of socialization on children's prosociality. In addition to cultural socialization on a macrosystemic level, it is likely that children are also influenced by their parents' socialization. Specifically, Newton, Laible, Steele and McGinley (2014) found that more sensitive parents fostered higher levels of prosociality in their children, while Hay and Cook (2007) established parental influence on children's prosociality through attachment, discipline, and parent mental health issues. Overall, these individual and societal differences result in a widely variable expression of prosociality across people and time.

These tendencies towards prosociality prove beneficial at both the individual and the societal level. In childhood, a higher propensity for prosocial behaviors is associated with more social sophistication and success (Bear & Rys, 1994; Dunn, Cutting, & Fisher, 2002; Farver & Branstetter, 1994), higher self-regulatory abilities (Rothbart, Ahadi, & Hershey, 1994), and lower externalizing problems (Bandura, Caprara, Barbaranelli, Pastorelli, & Regalia, 2001). Similar benefits are seen in adulthood, with prosociality fostering higher self-esteem (Newman, Vasudev, & Onawola, 1986) and greater life satisfaction in general (Wheeler, Gorey, & Greenblatt, 1998). Furthermore, acting more prosocially leads to better relationship quality (Weinstein & Ryan, 2010) and acts as a buffer against depression (Wilson & Musick, 1999).

A preference for prosociality may also aid in cultural sustainment, as it may sometimes be necessary for group members to work together (Warneken & Tomasello, 2009b). If people are indeed predisposed towards helping others, then everyone initiates cooperation and continues on in a tit-for-tat manner, doing what others do (Alexrod & Hamilton, 1981). This also allows for uncooperative members' behaviors to be extinguished by the group (Tooby & Cosmides, 1989). However, others argue that while a biological predisposition towards prosociality may exist, it does not necessarily fuel prosociality (Killen & de Waal, 2000). In this case, a predisposition towards prosociality acts only as a foundation on which prosocial acts can occur, but does not act as a drive for them.

1.2 Development of Prosocial Behaviors

Current views conceptualize prosociality as a range of behaviors, including helping, sharing, and comforting (e.g., Brownell, 2013; Dunfield et al., 2011; Martin & Olson, 2015; Paulus, 2014; Thompson & Newton, 2013). However, each of these individual prosocial categories may necessitate different requirements on the part of the helper, including varying

degrees of cognitive competence, or other-person orientation (e.g., Thompson & Newton, 2013; Zahn-Waxler, Radke-Yarrow, Wagner, & Chapman, 1992). Because of these differentially required cognitive competencies, the same physical action can be an example of different forms of prosociality (Svetlova et al., 2010). For example, handing someone a toy because it was dropped would be classified as instrumental helping, while handing someone a toy as a means to resolve an unequal distribution would constitute sharing. Thus, conceptualizing any form of prosocial behavior comes first through the identification of the cue or situation to which the child is responding (Dunfield, 2014; Dunfield et al., 2011; Kuhlmeier, Dunfield, & O'Neill, 2014).

The earliest appearing prosocial behavior is seen by approximately 14 months of age (Warneken & Tomasello, 2006; Zahn-Waxler et al., 1992). At this point, infants begin *instrumental helping*, in which they provide physical help to fulfill an action-based task (e.g., Svetlova et al., 2010). In home-based naturalistic observations, instrumental helping has been observed as children assist their parents in household tasks, such as sweeping or setting the table (Rheingold, 1982). Interestingly, these earliest attempts at helping may unintentionally cause negative outcomes for the other person, such as a child trying to set the table and, in progress, spilling a drink that they are unable to clean up (Eisenberg & Spinrad, 2014). Similar forms of instrumental helping can also be elicited from toddlers in laboratory settings. In such procedures, children witness an adult attempting to complete a task (e.g., trying to retrieve a dropped item) and are given the opportunity to help the adult (by handing them the item desired item; Warneken & Tomasello, 2009a). Taken together, these studies provide support for children's earliest desire to help others, even when they lack the sophistication to do so successfully.

Providing successful instrumental help necessitates children's understanding of certain foundational aspects. Specifically, they must first identify another person's goal, represent the

solution necessary to fulfill that goal, and finally carry out the steps of the solution (Dunfield et al., 2011). Indeed, past research has shown that children use a third party's goals to influence their own helping behaviors (e.g., Warneken & Tomasello, 2006, 2007). 14-month-olds were able to infer the goal of an experimenter (e.g., trying to open a door while her hands are full) and help her to complete the goal (by opening the door) without ever seeing the intended act completed.

While instrumental helping does require that children can identify another person's goal, it does not require emotional understanding or the ability to contend with competing desires for resources, as do other forms of prosociality (Brownell, Svetlova, & Nichols, 2009; Dunfield et al., 2011; Hay, 2006; Thompson, Barresi, & Moore, 1997). Interestingly, instrumental helping is also the form of prosociality most commonly seen in human's closest relative, the chimpanzee (e.g., Tomasello & Vaish, 2013; Warneken & Tomasello, 2009b). Taken together, its early ontogenetic emergence and phylogenetic presence suggest that instrumental helping may be one of the simplest forms of prosociality.

Later, children show foundational aspects of *comforting*, in which they must accurately interpret another's emotional state and respond appropriately (Dunfield et al., 2011). While children can recognize negative states in others during their first year (Bischof-Köhler, 1991; Vaish, Carpenter, & Tomasello, 2009; Hoffman, 1975; Radke-Yarrow et al., 1976; Zahn-Waxler et al., 1992), comforting also necessitates that they are able to alleviate such negativity. It is not until their second year that children begin to comfort others (Dunfield et al., 2011; Hoffman, 1982, 2000; Radke-Yarrow et al., 1976).

This protracted development may stem from a unique challenge associated with comforting: children may not be afforded the opportunity to see the cause of a negative state. In

contrast to helping scenarios in which the problem is visible, it is possible that comforting may follow an event that the child did not witness. This leaves children unable to understand the cause of the distress, and consequently struggle in knowing how to alleviate it. Furthermore, children may still struggle with egocentrism, leaving them focused only on their own emotions, unable to separate them from another person's emotions (Batson, 1991). In this case, children are likely unable to successfully comfort another, as they are restricted to comforting strategies that relieve their own distress, but may not help another (Hoffman, 2000).

Further support for the complexity of comforting comes from work with non-human primates. Predominantly, non-human primates have not been directly observed comforting conspecifics. However, some species, such as orangutans, have been found to display more prosocial behaviors after witnessing someone be harmed, echoing human sympathy (Liebal, Vaish, Haun, & Tomasello, 2014). On the other hand, other species have not been found to make these same other-regarding behaviors, suggesting that these higher-level cognitive processes do not interact with prosociality as they do in humans (Liebal et al., 2014; Silk et al., 2005). In sum, its later emergence in ontogeny and mixed findings in phylogeny suggests that comforting others may be a more complex form of prosociality, requiring a sophisticated understanding of emotions and self-other differentiation.

By age three, altruism is introduced into children's prosocial repertoire. This is typically the latest appearing form of prosociality, as it mandates the ability to sacrifice something of one's own in order to help another person. In contrast with instrumental helping that requires children only to complete a physical task, and comforting, which involves providing only emotional help, altruism requires the child to give up something of their own to help to alleviate a problem. This mandates that children are able to infer both the goal and emotional state of

another person. This self-sacrificing form of prosociality has been found difficult for young children, as 30-month-olds trend towards possessiveness, rather than prosociality (Svetlova et al., 2010). However, 3-year-olds begin to partake in early altruistic acts, but these behaviors are selectively directed towards people who are socially closer with them (i.e., a friend) rather than those who are more socially distant (i.e., an anonymous other or disliked peer; Kanfer, Stifter, & Morris, 1981).

Work examining chimpanzees' capacity for altruism has provided more mixed results. Some authors have found that chimpanzees are indeed willing to sacrifice on their own behalf in order to help another (Boesch, Bolé, Eckhardt, & Boesch, 2010; Schino & Aureli, 2009; Warneken et al., 2007). However, they may require a direct request to do so, as it is rare that they are able to provide this help entirely on their own with no outside support (Yamamoto, Humle, & Tanaka, 2009). On the other hand, other researchers have not found such evidence of altruism, instead positing that chimpanzees are unlikely to provide help at a sacrifice to themselves when there is no potential benefit, even at a low-cost, or when a conspecific is directly requesting help (Vonk et al., 2008; Warneken & Tomasello, 2009b). Thus, it seems that altruism is a complex form of prosocial behavior, and there is still debate on the extent to which it is present in non-human primates.

Many researchers have considered different potential motivations for children's prosocial behaviors. One possibility is that children's earliest prosocial acts are self-serving, fulfilling the child's desire for some social interaction (e.g., Hay & Cook, 2007; Paulus, 2014; Rheingold, 1982; Tomasello & Vaish, 2013; Warneken & Tomasello, 2009a). In this case, children's earliest prosociality does not exist to provide benefits towards another in any way. This may explain some of the selectivity of children's early prosocial behaviors, preferring to share with caregivers

or close peers (Martin & Olson, 2015), likely the same people with whom they wish to engage. According to these accounts, children's earliest prosocial-appearing acts are not truly prosocial by definition, as the child seeks to help themselves, rather than another person (Thompson & Newton, 2013).

A second potential motivation for early prosociality is goal-alignment (Paulus, 2014). In this model, children need not understand the intentions of another person, but recognize only that there is an unfulfilled goal. Referred to as "goal contagion," Paulus (2014) argues that children become "infected" with another person's goal, and now seek to fulfill it as their own. That is, when children see a person in-need fail to achieve their goal, they take up that goal as their own, and choose to help only as a means to fulfill their own goal, rather than focusing on the desires of the original party.

A final possibility is that children's earliest prosocial behaviors are driven by an empathic concern for others. Specifically, Batson (1991) argues that, early in development, seeing someone in need causes an infant distress. As young children are unable to differentiate between self and other, this distress manifests itself as "emotion contagion." In contrast to Paulus' (2014) goal contagion model in which children assume someone's goal as their own, emotion contagion models propose that children absorb someone else's emotions as their own. In these models, children choose to help as a means to solve the distress that they have inherited from another person. It is not until later in development that children are driven by sympathy, a concern for another's welfare (Hepach, Vaish, & Tomasello, 2013; Paulus, 2014). For example, 18-month-olds were significantly more likely to share a balloon with someone who had previously been harmed than someone who had experienced no harm (Vaish et al., 2009). Thus, children may

initially act in a prosocial manner to alleviate their own negative states, but become more sophisticated with time, aiming only to help another.

1.3 Development of Sharing

For my dissertation, I focus on one final category of prosocial behavior: sharing. Conceptualized as the relinquishment of objects in response to another's need, children's earliest sharing behaviors typically appear by the end of the second year, such as giving up one's own toys to an experimenter who has none (Pettygrove, Hammond, Karahuta, Waugh, & Brownell, 2013). Sharing appears later in development than other categories of prosociality and has a prolonged development. Notably, sharing can often be considered a subset of altruism, as both require children sacrificing their own resources to help another. However, sharing decisions are not always considered altruistic, such as when children are asked to distribute resources between others, or when they share to benefit themselves in some way, such as to gain access to a new object in return.

Successful sharing involves three basic phases (Brownell, 2013; Dunfield et al., 2011). First, individuals must recognize and represent the problem at-hand. This may come in the form of noticing unfairness (e.g., an unequal distribution of resources) or an unmet need (e.g., a charity that has not yet fulfilled its fundraising goal). Second, individuals must recognize the solution to the problem, such as allocating resources to the other party. Finally, they must possess the necessary motivation and ability to redistribute resources. Importantly, behaviors can only be classified as true sharing if the individual understands the motivation for relinquishing their resources. If they do not, then their help cannot be categorized as successful sharing, as they have not met the basic requirements of recognizing the problem at-hand (Dunfield et al., 2011).

1.3.1 Foundations for sharing.

There are several foundations that may underlie children's capacity to successfully complete each of these necessary phases for sharing. For one, children must distinguish themselves from another and be able to take another's perspective. If they lack these abilities, then it is unlikely that they would notice that a partner has desires that do not align with their own. Specifically, they must understand that while both parties desire a resource, only they have access to it, while their partner does not (Paulus, 2014). In this situation, children must contend with competing desires for resources (their own and another's), something with which they seem to have difficulty. This may shed light on why sharing behaviors are often absent from toddlers' naturalistic interactions (Brownell, Iesue, Nichols, & Svetlova, 2013), but are present in more controlled laboratory settings in which an experimenter more overtly expresses their desires (Brownell et al., 2009).

A second foundation for sharing is the understanding of others' goals (Thompson & Newton, 2013). Past work reveals young infants' ability to comprehend intentionality and goals (Behne, Carpenter, Call, & Tomasello, 2005). For example, in a preferential looking paradigm, 6- and 9-month-old infants first saw an actor's hand reach towards one of two objects; then they saw the hand reach towards the formerly unchosen object (Woodward, 1998). By 6 months of age, infants reliably looked longer when the hand approached the previously unchosen object, indicating surprise with the actor's new object choice after an intention to interact with the other object had been established. Such goal understanding must be in place before children can successfully share. If children are unaware that a person is attempting to fulfill a goal (or cannot decipher what that goal is), it is unlikely that they will be able to provide helpful assistance (Warneken & Tomasello, 2009a; 2009b).

In addition to understanding another person's goal, children must infer the steps necessary for goal completion. The ability to infer the steps needed to complete at least simple physical acts is also in place early in development. For example, after witnessing an actor try to pull a barbell toy into its two separate pieces, 18-month-olds (but not 12-month-olds) pulled the toy apart, rather than just replicating the adult's surface acts of slipping their fingers off at the toy's ends while the toy remained intact (e.g., Bellagamba & Tomasello, 1999; Meltzoff, 1995). This work provides evidence that children can understand how to fulfill others' intended actions, even if they were not granted the opportunity to see the goal fulfilled. This may mean that they are able to implement plans to help others when necessary.

An additional foundation necessary for sharing is relinquishing resources, which often conceptually separates sharing from other forms of prosociality. In experimental settings, children have exhibited sharing behaviors beginning around 18 months of age, but they required a substantial amount of adult scaffolding (Brownell et al., 2009). That is, when children had the opportunity to retrieve crackers for either only themselves or themselves and an experimenter, the experimenter gave the children additional cues to aid in the understanding of their desires (e.g., "I like crackers. I want a cracker."). Children were significantly more likely to reward the partner when they had made clear their desires, and these behaviors occurred infrequently in absence of such cues. However, even when children understand how to remedy a situation, relinquishing resources proves difficult, thus serving as a challenge for children when attempting to provide help (e.g., Brownell et al., 2013). For example, in their spontaneous play repertoires with peers, toddlers are often seen showing objects to other children, but rarely physically sharing them (e.g., Svetlova et al., 2010). Thus, while children may have a foundational

preference to share with others, relinquishing resources may directly inhibit them from following through on this.

A final potential foundation for children's sharing is ownership understanding. Importantly, some authors have even argued that relinquishing an object to another cannot truly be considered sharing until the child has an understanding of ownership (Brownell et al., 2013b; Rochat et al., 2009). Interestingly, there have been mixed findings on the relationship between ownership understanding and sharing. On one hand, a positive relationship was found between toddlers' understanding of ownership and sharing, where those who better understood ownership were more likely to share (Brownell et al., 2013). Thus, if children can sufficiently understand that an object is rightfully their property (even when it is not in their current physical possession), then children may be more likely to share on the understanding the object will be returned to them. Conversely, other studies have found that children who more clearly communicate their ownership over an object (by calling it "mine") were more likely to maintain possession over their toys (Ross, Friedman, & Field, 2014). Furthermore, children from age 2 seem to have some understanding of ownership, acting more willingly to share a jointly owned class object than one that is solely their own (Eisenberg-Berg, Haake, Hand, & Sadalla, 1979). Thus, while it is largely agreed upon that ownership understanding is influential on children's sharing behavior, the direction of this influence remains unclear.

1.3.2 Sharing decisions.

Although each of the foundations above is necessary for children's ability to share, they may also be affected by influences in the moment that they are making a sharing decision. That is, there are many different factors that can influence whether or not children will decide to share

on any particular occasion. In contrast to the rudimentary ability to share, these factors may encourage whether or not sharing is expressed in a given situation.

One potential influence on children's sharing may stem from their past decisions to share (Chernyak & Kushnir, 2013). As children's past helpfulness may promote a view of themselves as prosocial beings, their prosocial decisions may be driven by a desire to remain consistent with this established view. For example, after preschoolers had made a costly sharing choice, they were more likely to share on a second trial compared to children who had made a non-costly choice. This suggests that children's sharing decisions are influenced by past choices, fueling a desire to remain consistent in their prosociality.

In addition to maintaining consistency with their own views, children may be interested in upholding their prosocial reputation to others. 5-year-olds share more when a peer is in the room observing their choices (Engelmann et al., 2012), especially if the peer is aware of all possible donation options (Leimgruber et al., 2012). However, when children and their peers were both able to provide help to someone, 5-year-olds showed evidence of the bystander effect, in which they were significantly less likely to help than when no peer was present (Plötner, Over, Carpenter, & Tomasello, 2015). Taken together, these data suggest that children take into account their own prosocial reputations when making decisions, but are selectively prosocial, showing an understanding that they do not always need to be the ones who provide needed help.

1.3.3 Deciding how much to share.

While there has been some developmental research investigating the influences on whether children will make a decision to share, to date, limited work has investigated their understanding of *how much* they will share. One exception to this has revealed that children may exhibit some sensitivity towards the reward itself in sharing distributions. Infants already begin

to show an early emerging sensitivity to fairness and equal distributions (Sommerville et al., 2013). In a violation of expectations paradigm, 15-month-olds, but not 12-month-olds, looked longer at a situation in which objects were distributed unequally amongst two actors, rather than when they were distributed equally. Furthermore, infants who looked longer at these unequal distributions were more likely to share a toy than those who showed no difference in looking time across equal and unequal distributions. This suggests that children are sensitive to equitable distributions from early on, and may even base their rudimentary sharing decisions to align with this principle.

Despite this seemingly early preference for equity, children's own distribution behaviors show a different pattern. Specifically, when asked to distribute resources between themselves and a partner, children's behaviors no longer prioritized equity (Dunfield, 2014; Fehr, Bernhard, & Rockenbach, 2008). Primarily, 3-year-olds sought to maximize their own reward, only choosing to share equally when they were placed in a condition where an unequal distribution would favor their partner. Thus, while infant looking-time studies suggest that children prefer others to make equitable distributions, they seem to lack the inhibition necessary to make these equitable decisions themselves, instead choosing to maximize their own rewards.

However, a different pattern emerges by 7 years, as children begin to emphasize egalitarianism in their own distributions, providing themselves and an anonymous partner with equal rewards, even when such equality requires sacrificing a larger reward for themselves (Dunfield, 2014; Fehr et al., 2008; Malti, Gummerum, Keller, Chaparro, & Buchmann, 2012). Later in adolescence, individuals show increasingly nuanced distribution decisions, as they are no longer ruled by equity. Rather, adolescents emphasize efficiency, preferring to reward

partners unequally rather than waste resources because of an unequal total amount (Meuwese, Crone, de Rooij, & Güroğlu, 2015).

In contrast with this work conducted with children, research with adults has looked more closely at how people distribute resources, moving beyond investigations simply focusing on whether individuals behave equitably. Rather, they have begun examining additional factors that may guide people's distribution decisions, particularly in charitable donation scenarios. Such work is important for promoting and maximizing donations made to charities.

Specifically, one factor that has been identified as influential on adults' donation behaviors is what the potential recipient is trying to accomplish. Thus, the goal of the charity may fuel donation decisions, where donors are driven to make the highest impact possible (Fetherstonhaugh, Slovic, Johnson, & Friedrich, 1997). Cryder, Loewenstein, and Scheines (2013) found that providing potential donors with tangible information about a charity's need increased donations. This may provide donors the opportunity to better understand the potential impact of their donation, and on what their money would be spent. That is, donors may be fueled to support a charity when they have a rationale for why their donation is needed, feeling motivated to help the charity reach a specific goal.

Finally, in addition to considering an end goal, adults also consider how close charities are to meeting a particular goal. Cryder, Loewenstein, and Seltman (2013) examined how goal-gradation influences charitable decisions. They defined goal-gradation as the drive to work harder to complete a goal as it nears completion. They found that people were more willing to donate when the charity was presented as farther along in its goal (85% or 65% completed) rather than in the beginning of its solicitation efforts (10% completed). However, Kuppuswamy and Bayus (2015) analyzed Kickstarter data and found the opposite pattern, where donors

contributed less to projects that were already highly funded. They explained their finding in terms of diffusion of responsibility, where potential donors assumed someone else would provide the remainder of the support necessary. Taken together, it is clear that goal-gradation has an influence on adults' likelihood of making charitable donations, but the direction of this influence remains unclear.

However, it remains an open question of whether children will also tailor their distributions to reflect the specific needs of others. As reviewed above, there is evidence that children do indeed understand others' goals. However, it is unknown if they will use this information as a guide for not only whether or not they should share, but also how much they give, and if they adjust their distributions based on the proximity to the final goal.

Notably, if children are able to consider goals when distributing resources, it may lead them to be more generous. However, it is worth noting that it could in fact have the opposite effect. That is, it is possible they could tailor their sharing to be less generous, given the goal at-hand. Such a result has been observed in studies of anchoring, where potential donors have been informed about what others have contributed. Martin and Randal (2008) utilized a naturalistic setting and manipulated the contents of a charity's donation box. Across four groups, participants saw a box filled with 1) few bills of large denominations, 2) many bills of small denominations, 3) a large amount of coins, or 4) nothing. Primarily, they found that, compared to the baseline group who saw the empty box, seeing any monetary content increased donations. Furthermore, the likelihood of donating was highest in the coin condition, as it may have fueled a norm that only a small donation was necessary. On the other hand, people made the highest donations when the box was filled with bills, although their donations did not differ based on the bill denominations. Taken together, this study shows that while people were more likely to give

when a small donation was the social norm, some anchor points may actually decrease the amount that people would have otherwise donated. It is possible that understanding someone's goal may have this same influence.

Finally, it is unknown whether children will vary their distribution decisions based on the proximity of the goal at-hand. As there have been conflicting findings in the adult literature of how donation decisions are affected by the proximity to the goal (e.g., Cryder et al., 2013; Kuppuswamy & Bayus, 2015), an investigation into children's distributions will inform on this influence. Specifically, children may feel increasingly motivated to share as someone nears their goal, in which case their donation has a larger proportional impact. Alternately, children may experience a diffusion of responsibility, preferring to donate to someone whose goal has just begun, leaving later stage donations to others.

1.4 Current Studies

In the current dissertation, I consider two factors that have been identified as impactful on adults' donation behaviors and may also influence children's early emerging sharing. First, adults base their donation behaviors on a charity's end goal, preferring to donate to organizations that make clear the purpose of donations. However, this same influence has not been examined in children, leaving it unknown whether having a reason for another's request will influence children's propensity to share, or how much they are willing to give. In addition, it is unknown whether a goal would always promote children's sharing, or if it is possible that it could lead to less generous distributions. As children are capable of understanding others' goals, this will inform on one potential influence on their sharing behaviors, with a possibility to promote these behaviors early on.

Second, I examined whether children can consider the degree of help needed to complete a goal when sharing. While adults have been found sensitive to such goal-gradation, the direction of this relationship remains unclear, and no research to date has examined whether children's distribution decisions are sensitive to these same goal-gradations. These findings will provide evidence on whether or not children are able to understand such subtleties in others' goals, and whether these different degrees of goal completion have an influence on their sharing behaviors.

For this investigation, I focus on preschoolers and young children. There is reason to believe that they, like adults, may also be influenced by these factors, as they have been shown to be sensitive to others' goals (e.g., Woodward, 2009). However, still developing at this time are the ability to understand the perspective of others (e.g., Flavell, 2000) and the ability to relinquish resources (Brownell et al., 2013). Historically, Piaget (1932) proposed that children first expect morality from others before they exhibit such morality themselves, and it is possible that sharing takes on this same prolonged development. Thus, an important consideration for this age range is whether children's own involvement in the situation impacts their sharing decisions.

Across these studies, I asked children to distribute resources and manipulated the descriptions of a requesting character. In Study 1, children heard either concrete or vague information about why a character desired a particular resource. They were then asked to distribute resources to two other characters, not involving themselves in the distribution. This was compared to a baseline condition in which one character was absent at the time of the resource distribution. If children, like adults, take others' goals into consideration when distributing resources, then they should have varied their donation behaviors across these conditions. In Study 2, children were asked to distribute their own resources between themselves and another character, providing a contrast to Study 1 in which children needed only to distribute

resources for two other characters. This provided a test of whether children's distributions were similar when their own resources were involved. Finally, Study 3 tested whether children can consider not only what the person means to accomplish, but also how close they are to accomplishing the goal. Here, I varied how close a character was to achieving a goal and tested whether this influenced how generous the children were. Taken together, these studies act as a first step towards a systematic investigation of the influence of goals on children's sharing behaviors.

2 STUDY 1

In the first of a series of three studies, I tested whether children would take into account another individual's rationale for desiring a resource, and if this would alter their sharing distributions. To do this, children were presented with a third-person scenario in which they were asked to distribute resources between two animal characters. Across conditions, I compared children's responses when one character had either a concrete goal (of trying to build a tower of blocks taller than themselves), or a non-specific goal (of just wanting some blocks). If children can indeed consider another person's goals when distributing resources, then they may share more in a condition in which they are presented with a concrete goal, rather than a non-specific goal. However, if children instead placed greater value on another principle, such as equity, and give no regard to goals, then their distributions will look similar across these two conditions.

These conditions will be compared to a baseline group in which only one character will be present, thus providing no one else with whom to share resources. This will allow for an examination of children's responses to a simple distribution scenario versus a sharing scenario. If children understand a sharing scenario as potentially beneficial to more than one person, then they may divide the resources in the experimental groups, but distribute all resources in the

baseline group. However, if children are not sensitive to this distinction, then they may only give some of the resources in the baseline condition, allowing the others to go unclaimed.

Across all conditions, children will complete two trials in which they are asked to distribute two different numbers of resources: five and 11 blocks. This was done in an effort to reveal whether young children prioritize goal fulfillment or equity, and whether such potential goal fulfillment could actually lead children to be less generous. As only three blocks are required to complete the animal's goal of making the tower taller than it, the proportion of what is necessary to fulfill the goal is different across these two resource allocations. That is, if children prioritize fulfilling someone's goal at-hand, then they should share only what is necessary to fulfill a goal, and sharing any more than three blocks may be unnecessary. Thus, when presented with five blocks, children will be required to share more than half of the blocks; however, when presented with 11 blocks, children may be less generous, as distributing half of the blocks are unnecessary to accomplish the goal at-hand. On the other hand, if children prioritize equity, then they may distribute the blocks equally regardless of the number of resources given, ignoring the rationale behind a character's desire for resources.

2.1 Methods

2.1.1 Participants.

Participants were recruited and tested at the Fernbank Museum of Natural History. Families were approached by a researcher and asked if they had interest in participating in a brief research study. All children recruited were between 3- and 6-years-old, and data were only used from children whose parent was present to give oral consent for their participation. Verbal assent from children age 6 years was also required. Participants received a small prize (valued at less

than $1) for their participation independent of performance. All research was approved and overseen by Georgia State University's Institutional Review Board.

A total of 72 children were tested, with 24 in each of three between-subjects' conditions (G-Power, effect size = .35, alpha = .05, and power = .95). An additional five children were tested, but their data were not used due to inattention or parental interference. Half of the participants in each condition were 3- and 4-years-old (M = 3.53, SD = .51), while the other half were 5- and 6-years-old (M = 5.61, SD = .49). Approximately half of the participants (n = 35) were male (one family elected not to disclose gender information), and 76% identified as Caucasian, 8% as other/multiple races, 7% as African American, and 3% as Hispanic (3 families chose not to identify a race).

2.1.2 Materials.

Two stuffed animals (an 11.5" dog and cat) were shown to each participant. Across conditions, children completed two trials. In one trial, they interacted with five blocks, while another trial presented them with 11 blocks. Children assigned to the concrete goal condition also saw three stacked blocks next to an animal. All blocks (2" x 2") were transparent and contained a small toy or activity (e.g., a soccer ball and net; see Figure 2.1.2).

Panel A. Presentation for the concrete goal condition, where Dog is the owner of the five blocks in the center of the table and Cat is requesting additional blocks to add to her tower (of three blocks) to make it taller than she is	
Panel B. Presentation for the non-specific goal condition, where Dog is the owner of the blocks and Cat is requesting some blocks	

Figure 2.1.1 Images of the materials used in Studies 1 and 2.

2.1.3 Procedure.

All participants were first introduced by the researcher to the two stuffed animal characters, whose presentation varied by condition. The children then saw blocks placed on the table, and the experimenter outlined the details of the scenario for the condition to which the child had been randomly assigned. After the description was complete, children were asked how they would like to distribute the blocks. The number of blocks (5 or 11) first given to the child to distribute were counterbalanced across participants.

2.1.3.1 Vignette period.

Children were introduced to two stuffed animals (Cat and Dog). In two experimental conditions, children had the opportunity to distribute five and eleven blocks between the two animals. These numbers were chosen for several reasons. Primarily, two different quantities were chosen to explore how children would distribute the blocks when fulfilling the goal required more or less than an equitable distribution. Both numbers chosen were odd, forcing children to prioritize one character. Additionally, three blocks were always required to make the tower taller than the character. This decision was made because pilot testing revealed a carryover effect in the number of blocks children distributed to a character in-need when the number of blocks needed to complete the tower varied. Thus, five was chosen as a smaller number that required children to distribute more than half of the blocks to fulfill the goal and 11 was chosen as it required children to share less than half of the blocks to fulfill the goal.

In the *concrete goal* condition, children interacted with two stuffed animals, Cat and Dog, and a pile of blocks. The researcher explained that all of the blocks in the pile belonged to one of the two animals (in this example, Cat), counterbalanced across participant. However, she then told children that Dog would like some blocks, too, explaining that he had been working on

building a tower (as he stood next to three stacked blocks) and wanted to make the tower even taller than he was. Thus, in this condition children were presented with a rationale for Dog's desire for more blocks, and insight on how many blocks he desired (three more blocks, as six blocks are actually required to make Dog's tower taller than him).

In the *nonspecific goal* condition, children were told that Dog would like some blocks, but they were provided with no concrete rationale of why he wanted blocks, or how many he wanted. Cat was again standing next to a scattered pile of five building blocks. Dog stood alone next to her. The researcher explained to the children that Dog wanted some blocks. In this condition, children were not provided with a clear goal, thus they had neither the rationale for Dog's wanting blocks nor how many blocks he wanted.

Finally, in the *baseline* condition, the experimenter introduced Dog and Cat. She then explained that all of the blocks on the table were Cat's, but that Cat has decided to play with something else for the time being. Cat was then removed from the table, leaving Dog alone with the blocks. Children were asked how many blocks Dog should play with. As there was no one else available to share resources with, children should have instead treated this condition as a distribution paradigm, and been more likely to choose to give all of the resources to Dog, the only character available.

2.1.3.2 Response period.

In response to the vignette, children in both experimental conditions were asked how many blocks they thought Cat should share with Dog. In contrast, children in the baseline condition were asked how many blocks Dog should play with, as Cat was not present. Children indicated their distribution preferences by relinquishing blocks to Dog, by either placing them in front of or on top of Dog's tower. Once they made their distribution, all blocks were returned to

the center of the table, and the experimenter repeated this demonstration for Trial 2, varying only the number of blocks that children were asked to distribute (either 5 or 11 blocks).

2.1.3.3 Manipulation check.

Finally, at the end of the concrete goal condition only, children were asked how many blocks Dog would really need to make his tower taller than him. This question allowed for an investigation into whether children understood how many blocks were necessary to fulfill the goal at-hand, and whether they accommodated this necessity when distributing the blocks between animals. This manipulation check was included only in this condition, as this was the only condition with a clear goal that had an answer, unlike the non-specific goal and baseline conditions that gave children no information on how many blocks a character was requesting.

2.2 Scoring and dependent measures

The primary dependent measure of interest was the number of blocks that children distributed to the requesting animal. Possible responses included zero through five blocks shared in the five block trial and zero through 11 blocks shared in the 11 block trial. Additionally, children's responses to the manipulation check question were recorded on the same scale. Children's performance was scored in real-time by the experimenter conducting the study, as the experimenter counted the number of blocks relinquished to the animal. For a random 25% of the children in the study, a second researcher was present to code the interaction, also recording how many blocks were relinquished by the child. Inter-rater reliability was 100% between the two raters.

2.3 Results

As the data were non-normally distributed, non-parametric tests were used throughout. Preliminary analyses revealed no significant effects of gender (Mann-Whitney *U* tests, 5 blocks

U = 629, p =.83; 11 blocks U = 506, p = .11), presentation order of the number of blocks, (5 blocks, U = 523, p = .17; 11 blocks, U = 547, p = .27), or requesting animal (5 blocks, U = 567, p = .36; 11 blocks, U = 637, p = .9). Therefore, I collapsed across these variables in all subsequent analyses. On the other hand, there was a significant age difference in children's distribution behaviors. While there was no significant difference in the number of blocks distributed to a character in-need in the baseline (5 blocks, U = 68.5, p = .87; 11 blocks, U = 52, p = .26) or concrete goal groups (5 blocks, U = 55, p = .34; 11 blocks, U = 54, p = .31) there was a difference in the non-specific goal condition. In this condition, older children shared significantly more blocks than younger children (see Figure 2.3.2) when they distributed 11 blocks, but there was no difference between these age groups when they were asked to distribute five blocks (see Figure 2.1.2; 5 blocks, U = 59.5, p = .49; 11 blocks, U = 29, p < .05).

To examine whether children's distribution behaviors were impacted by the animal's goal, I performed a series of Friedman's tests for each age group by condition as a function of the number of possible blocks to share (see Figures 2.1.2 and 2.3.2). For younger children, there was no effect of condition on their distribution behavior (5 blocks, χ^2 = .5, p = .78; 11 blocks, χ^2 = 1.79, p = .41). On the other hand, older children's distribution performance did vary as an effect of condition. There was a significant difference between conditions when the 5- and 6-year-olds distributed 5 blocks (χ^2 = 9.78, p < .01), and post-hoc Wilcoxon signed-rank tests revealed that children in the baseline condition shared significantly more than those children in the non-specific goal condition (z = -2.5, p < .05). There were no other significant differences between any group comparisons. These older children's distribution behavior was also significantly influenced by condition differences when they were asked to distribute 11 blocks (χ^2 = 35 , p < .001). Post-hoc Wilcoxon signed-rank tests indicated that children in the concrete

goal condition shared significantly fewer blocks than did children in the baseline or non-specific goal conditions (z = -2.37, $p < .05$; z = -2.69, $p < .01$, respectively). There was no difference found in the number of blocks shared between the baseline and non-specific goal conditions.

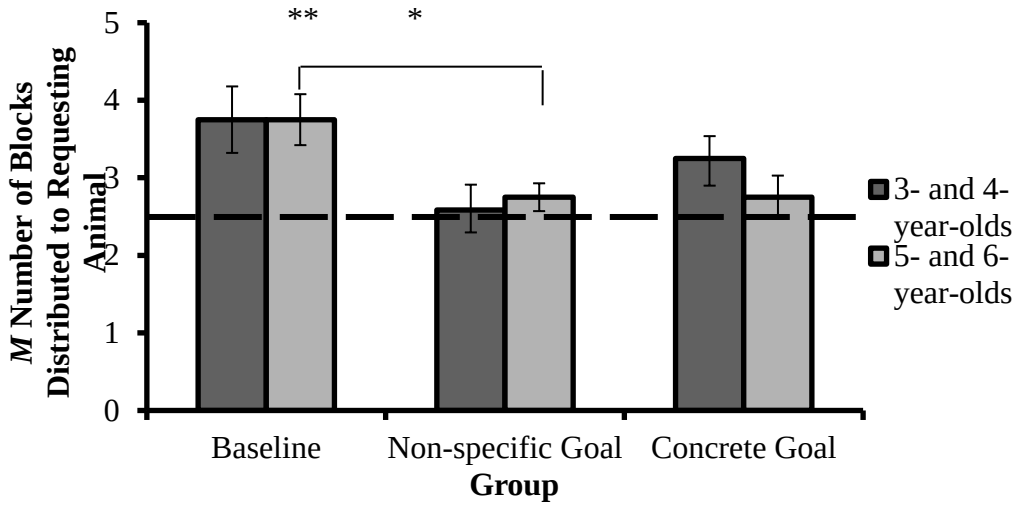

Figure 2.3.1. The mean number blocks (of 5) distributed in Study 1 to the animal requesting additional resources by condition and age. Error bars represent standard error. Dashed line represents an equitable amount distributed.

Note.

* 5- and 6-year-olds distributed more in the baseline than non-specific goal condition

** Represents distributions significantly above half to the requesting character

In order to compare children's distributions to an equitable one, the number of blocks that children gave to a requesting animal was compared to half of the blocks using a series of one-sample sign tests. When asked to distribute five blocks, younger children's sharing distributions did not differ from half (2.5 blocks) in any condition (baseline p = .15, non-specific p = 1.0, concrete p = .39). On the other hand, 5- and 6-year-olds distributed significantly more than half of the blocks to the animal requesting more resources in the baseline condition ($p < .05$), but their distributions did not differ from half in the concrete goal (p = .6, Bonferroni corrected) or non-specific goal conditions (p = .39).

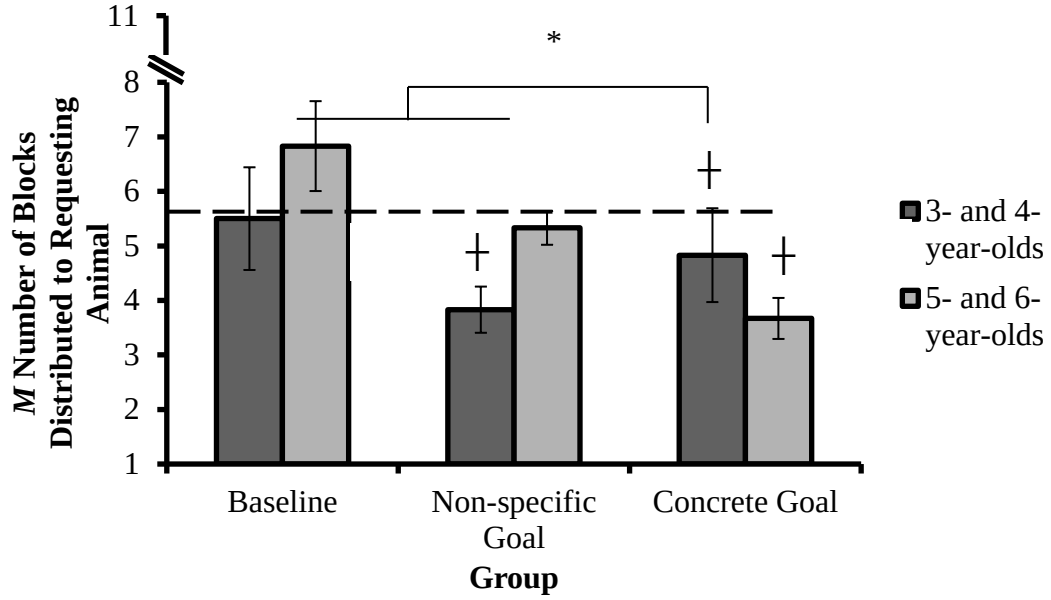

Figure 2.3.2. The mean number blocks (of 11) distributed in Study 1 to the animal requesting additional resources by condition and age. Error bars represent standard error. Dashed line represents an equitable amount distributed.

Note.

* 5- and 6-year-olds distributed less in the concrete goal than the non-specific goal and baseline conditions

┼ Represents distributions significantly less than half to the requesting character

In contrast, when children were asked to distribute 11 blocks, 3- and 4-year-olds' distributions did not differ from half (5.5 blocks) in the baseline condition (p = .39), but they did distribute significantly less than half of the blocks in both the concrete and non-specific goal conditions (both ps < .05). On the other hand, 5- and 6-year-olds' distributions did not differ from half in the baseline (p = .6, Bonferroni corrected) or non-specific goal conditions (p = .39), but they also distributed significantly less than half in the concrete goal condition (p < .05).

Finally, to gauge children's understanding of the number of blocks necessary to fulfill the goal in the concrete goal condition, I analyzed children's responses to the manipulation check question. Younger children answered that the tower required an average of an additional 5 blocks to make the tower taller than the animal, while older children thought that it needed an average of 4.08 more blocks. Neither age groups' hypothesized number of blocks needed differed from

the actual number of blocks required to complete the tower (3- and 4-year-olds, one-sample sign test, $p = .6$; 5- and 6-year-olds, $p = .39$). The hypothesized number of blocks needed was then compared to the actual number of blocks that children distributed to the animal requesting help. For both age groups, children distributed significantly less than what they thought was required to complete the tower when they were asked to distribute only five blocks (3-4-year-olds $p < .05$, 5-6-year-olds $p < .01$). However, children's distributions did not differ from what they thought was required to complete the tower when they had 11 blocks (both *p*s = .15).

2.4 Discussion

In the present study, 3- and 4-year-olds did not show sensitivity to someone's goal when forming distribution decisions. That is, their distributions did not vary when presented with a character's rationale for desiring blocks, even when they could share less than half of the blocks and still fulfill the goal at-hand. In fact, these younger children's distributions did not even vary in the baseline condition, in which there was only one animal present to utilize the resources. Thus, there is evidence that young children are unable to take into account another's goal while forming distribution decisions.

On the other hand, 5- and 6-year-olds did take into account the rationale for the animal requesting additional blocks. When asked to distribute five blocks between the two animals, older children distributed more in the baseline condition than either experimental condition, indicating an understanding of differences between a potential sharing situation and a simple distribution in which only one potential recipient is present. However, when they were asked to distribute 11 blocks, they gave significantly less in the concrete goal condition than either the baseline or non-specific goal conditions, suggesting that they were able to consider the goal of the animal requesting help, and gave them only what was necessary to fulfill that goal, even

when that led them to be less generous than they were when provided with no rationale for a character's resource desire.

In order to determine whether children showed a prioritization of equity or goal fulfillment, the number of blocks that they gave to the requesting character was compared to an equitable distribution. When tasked with distributing 5 blocks, the younger children behaved rather fairly, as their distributions did not differ from an equitable one in any condition, even when only one animal was present to utilize the resources. However, it is possible that the number of blocks was a limitation for these children; specifically, the three blocks necessary to fulfill an animal's tower may not have been different enough from half (2.5 blocks) to reveal a difference in their behavior.

Yet, even with this potential limitation, by age 5, children showed increased sensitivity to someone's rationale for desiring more resources. When asked to distribute five blocks, older children distributed significantly more blocks to the requesting character in the baseline condition than in the non-specific goal condition, serving as evidence of their respect for a sharing situation compared to a simple distribution paradigm. Additionally, when their distributions were compared to an equitable one, children only distributed more than half of the blocks in the baseline condition, otherwise reverting to an equitable distribution when both partners were present. That is, children showed evidence of understanding the difference between a sharing and distribution scenario, giving significantly more blocks to the animal when no other character was present.

Additionally, when children were tasked with distributing 11 blocks, 3- and 4-year-olds' sharing still did not differ from half in the baseline condition, but they shared significantly less than half in the concrete and non-specific goal conditions. Specifically, children in the concrete

goal condition may have prioritized goal fulfillment which required less than half of their blocks, choosing not to share needlessly beyond the required number of blocks. However, children in the non-specific goal condition also distributed the resources in the favor of the owner. This finding is in line with past research by Fehr et al. (2008) that found 3- and 4-year-old children to prioritize their own rewards, rather than sharing equally with a partner. The current study may then provide some support that young children do indeed understand what is involved in a sharing scenario, as their distribution pattern differed only when one character was present. Furthermore, their behaviors in the concrete goal condition illustrate some recognition of a person's goal, and the knowledge of how to fulfill it. Finally, when there is no goal present, children seem to have some difficulty with sharing resources equally between two partners, even when their own resources are not involved. These behaviors may change with additional exposure to peers who reinforce societal standards for equity and fairness.

Similarly, 5- and 6-year-olds also chose to distribute fewer blocks to a character that made clear his goal of having enough blocks to make his tower taller than him in the concrete goal condition than in the baseline or non-specific goal conditions. As fulfillment of this goal required only three additional blocks, children were able to complete his goal, while not distributing additional resources that may have been unnecessary. However, children not only shared less than half of the blocks in the concrete goal condition, but also in the non-specific goal condition. This is in contrast with the equal distributions made by children of both age groups when given five blocks. One possible explanation for this inequity may be that children are only willing to give a character in-need a small amount of blocks, regardless of the total number available. When given only five blocks, sharing two may seem reasonable, and is nearly half of the total blocks. Yet on the other hand, children may feel like sharing half of the 11 blocks is a

larger sacrifice, focusing on the total number of blocks at-hand rather than the proportion. Support for this possibility comes from a study conducted by Wu and Su (2013) that found 2- through 4-year-old children focused more on the absolute number of items that they shared, rather than a proportion. That is, these children received an increasing number of resources, but the proportion of their sharing was increasingly self-maximizing, suggesting that they may focus on ownership, as they shared only a small number of resources, not taking into account the proportion of the resources shared.

Taken together, children's distribution behaviors varied by the number of resources given to them, even when they could not distribute any of the resources to themselves. Specifically, 3- and 4-year-olds preferred an equitable distribution when given only five blocks, even when one character was absent during the distribution. However, when given 11 blocks, the majority of the blocks were kept for the owner when both characters were present, and blocks were only equally distributed when one partner was absent. This may seem to highlight a priority of someone's goal in the concrete goal condition, as less than half of the blocks are necessary for goal fulfillment, but the same is not true in the non-specific goal condition. Rather, younger children still retain the majority of the resources for the owner. This provides some evidence that children understand a difference in a distribution scenario where two characters are present, compared to when one character is absent. This is supported by children's equitable distributions of 11 blocks when only one character was present, compared to their inequitable distributions when both characters were present. Thus, children maximize the owner's resources when they are present, but allow another character an equal number of resources when the owner is absent.

The 5- and 6-year-olds showed an increased sensitivity to someone's goal, even when given a limited number of resources. When distributing only five blocks, these children gave

more in the baseline condition in which only one character was present than in the non-specific goal condition in which no rationale was provided for a character's resource desire. They also demonstrated an understanding of a sharing distribution, giving more than half of the blocks in the baseline condition to the requesting character, as no one else was available to utilize them. However, this pattern changed when asked to distribute 11 blocks, leading children to behave less equitably. Children gave the fewest blocks to a character in-need in the concrete goal condition, fulfilling the goal at-hand without providing unnecessary resources, but also were inequitable in the non-specific goal condition, preferring to maximize the resources of the owner, highlighting a focus on the absolute number of resources shared, rather than a proportion.

Yet, one important consideration is that children may not have understood how to solve a character's problem and fulfill a goal, a potential explanation for the lack of difference found between the concrete and non-specific goal conditions. However, children's responses to the manipulation check question in the concrete goal condition minimize this concern. Children's estimate of the number of blocks necessary to complete the tower did not differ from the actual number needed, although they did overestimate the number of blocks needed. Furthermore, when given 11 blocks, children of both age groups' number of blocks distributed did not differ from their hypothesized number needed to complete the tower. This may provide some evidence that children were attuned to the goal at-hand, and were willing to share the small number of blocks necessary to complete the goal.

On the other hand, when they had a limited number of resources, children gave less blocks to the character in-need than they expected would be necessary to fulfill his tower. However, this may be because children estimated that the tower required more blocks than actually necessary for completion (younger children hypothesized it would need 5 more, while

older children thought 4 more). Fulfilling this goal would have then required that they gave all (or nearly all) of the resources to this character, leaving the owner with less than half of the resources. While children distribute five blocks equitably, it is unlikely that they will leave the owner at a disadvantage, giving the majority of the blocks to another character, despite his rationale.

Overall, these findings provide the first evidence for a relationship between children's understanding of someone's goal and how they choose to distribute resources. For one, children shared the most blocks with the requesting character in the baseline condition, emphasizing their understanding of a difference between sharing and distribution paradigms. That is, when no one else is present, it may be okay to temporarily relinquish more of their resources for another. However, children also changed their distribution behaviors in the concrete goal condition. Specifically, 5- and 6-year-olds chose to share less in this condition, taking into consideration what was needed to fulfill the animal's goal, but not giving more than they deemed necessary to complete that task. This may serve as early evidence for children's developing understanding of efficiency, a preference for the maximization of resources' usefulness (e.g., Meuwese et al., 2015). In other words, if children thought that the animal needed only four more blocks to complete the tower at-hand, then they may have distributed only as many blocks to him, reasoning that additional blocks would be unnecessary and thus may be better utilized elsewhere. However, this finding paired with the lack of equity exhibited in the non-specific goal condition may actually indicate that children are only willing to share a small number of resources with a requesting character, regardless of the goal at-hand.

One limitation of this study is highlighted in the children's answers to the manipulation check question, as this revealed that they overestimated the number of blocks necessary to

complete the animal's tower. Future work could involve an explicit statement by the experimenter of how many blocks are actually required to fulfill the goal at-hand. This may lead children to give the animal what is indeed necessary when distributing five blocks, as they may feel more compelled to help finish the tower knowing that they would not have to sacrifice all of the blocks to one character to do so.

A second consideration may be that children were asked only to distribute resources between two other characters. Although past research (Mar & Oatley, 2008) has found that children may experience emotional reactions to characters, it is possible that children may felt detached from the scenario. Rather, children may have been more sensitive to the nuances of the rationale presented to them if their own resources were at stake and they were a possible recipient. One possibility is that self-interest may lead children to maximize their own resources regardless of the rationale given by another character. However, an alternate possibility is that children will be more attuned to the goal at-hand, sharing with a partner enough to fulfill their own resources, but defaulting to equity when no goal is given. This possibility will be investigated in Study 2.

3 STUDY 2

Piaget (1932) argued that while children are able to reason about others' morality early on, their own behaviors do not reflect the same moral expectations. Researchers have also identified self-involvement as being difficult for children when making sharing decisions. For example, while Sommerville et al. (2013) found an early emerging preference for equality, other work with preschoolers shows that they seek to maximize their own rewards (e.g., Dunfield, 2014; Fehr et al., 2008). Taken together, there appears to be an extended development of

influences on children's sharing behaviors, where children may first expect sharing decisions from others that they are unable to make themselves.

Study 2 assessed whether the challenges of self-involvement impact how children make decisions related to others' goals in a sharing context. This is in contrast to Study 1, in which children needed only to make distributions for two other characters, excluding the children's own desires. Although children have been shown to experience emotional reactions to characters that they understand are not real (Mar & Oatley, 2008), it is possible that they will be more motivated when they are involved in the distribution paradigm and will thus show different patterns of responding. Furthermore, this measurement of children's own sharing behavior is more aligned with past research examining children's sharing in a first-person context (e.g., Svetlova et al., 2010).

To do this, children were presented with the same scenario as in Study 1, but now they were asked to distribute resources between themselves and another character, necessitating that they contend with such competing desires. If children's decisions mirrored the pattern of results found in Study 1, then there is evidence that they can apply their views of how others should behave to their own sharing interactions. However, if they show less sharing behavior than in Study 1, there is support for a protracted development of sharing, where children have difficulty sharing their own resources more than those of others.

3.1 Methods

3.1.1 Participants.

Participants were recruited and tested at the Fernbank Museum of Natural History. Families were approached by a researcher and asked if they had interest in participating in a brief research study. All children recruited were between 3- and 6-years-old, and data was only used

from children whose parent was present to give oral consent for their participation. Verbal assent from children age 6 years was also required. Participants received a small prize (valued at less than $1) for their participation. All research was approved and overseen by Georgia State University's internal review board.

A total of 48 children were tested, with 24 in each of two between-subjects' conditions (G-Power, effect size = .35, alpha = .05, and power = .95). An additional four children were tested, but their data were excluded due to inattention or parental interference. Half of the participants in each condition were 3- and 4-years-old (M = 3.29, SD = .46), while the other half were 5- and 6-years-old (M = 5.5, SD = .51). 30 participants were male, and 65% identified as Caucasian, 15% as other/multiples races, 10% as Asian, 6% as African American, and 4% as Hispanic.

3.1.2 Materials.

One of two stuffed animals (an 11.5" dog and cat) was shown to each participant. Across conditions, children interacted with between five and fourteen transparent, plastic blocks, 2" x 2", each containing a small toy (e.g., a soccer ball and net).

3.1.3 Procedure.

All participants were first introduced by the researcher to a stuffed animal character (counterbalanced across participants). The children then saw blocks placed on the table, and the experimenter outlined the details of the scenario for the condition to which the child had been randomly assigned. After the description was complete, children were asked if they would like to share any blocks with the animal. The number of blocks (5 or 11) first given to the child to distribute were counterbalanced across participants.

3.1.3.1 Vignette period.

Children were first introduced to a stuffed animal (either Cat or Dog), and were then randomly assigned to either the concrete goal condition or the non-specific goal condition that were similar to those outlined in Study 1. The difference here was that the experimenter told the child that the blocks were theirs, rather than belonging to a second animal character. In both conditions, children had the opportunity to distribute five and eleven blocks between themselves and an animal partner. A baseline condition was not included in Study 2, as there was no way to introduce a self-involvement manipulation matched to the baseline condition of Study 1.

3.1.3.2 Response period.

In response to the vignette, children were then asked if they would like to continue playing with their blocks, or if they would like to share any blocks with Dog or Cat. As in Study 1, children indicated their distribution preferences by relinquishing blocks to the animal, by either placing them in front of or on top of Dog's (or Cat's) tower. Once they made their distribution, all blocks were returned to the center of the table, and the experimenter repeated this demonstration for Trial 2, varying only the number of blocks that children were asked to distribute (either 5 or 11 blocks).

3.1.3.3 Manipulation check.

Finally, at the end of the concrete goal condition only, children were asked how many blocks Dog (or Cat) would really need to make his tower taller than him. This was included only in this condition, as the non-specific goal conditions did not have one answer that could fulfill the question. It allowed for an investigation into whether children understood how many blocks were needed to fulfill the goal at-hand, and whether they respected this necessity when distributing the blocks between animals.

3.2 Scoring and dependent measures

The dependent measure of interest was the number of blocks that children shared with the animal partner. Possible responses included zero through five blocks shared in the five block trial and zero through 11 blocks shared in the 11 block trial. Children's performance was scored in real-time by the experimenter conducting the study, as the experimenter counted the number of blocks relinquished to the animal. Children's responses to the manipulation check were scored on same scale. For a random 25% of the children in the study, a second researcher was present to code the interaction, also recording how many blocks were relinquished by the child. Inter-rater reliability was 100% between the two raters.

3.3 Results

As the data were non-normally distributed, non-parametric tests were used throughout. Preliminary analyses revealed no significant effects of gender (Mann-Whitney *U* tests, 5 blocks, $U = 202$, $p = .15$; 11 blocks $U = 222.5$, $p = .31$), presentation order of the number of blocks, (5 blocks, $U = 254$, $p = .48$; 11 blocks, $U = 267$, $p = .51$), or animal with whom they interacted (5 blocks, ($U =$, 240.5, $p = .33$; 11 blocks, $U = 273.5$, $p = .77$). Finally, I tested for an effect of age on children's distributions, and found no significant age difference in the concrete goal (5 blocks, $U = 64$, $p = .64$; 11 blocks, $U = 64.5$, $p = .67$) or non-specific goal groups (5 blocks, $U = 63$, $p = .6$; 11 blocks, $U = 43.5$, $p = .1$). Therefore, I collapsed across these variables in all subsequent analyses.

Children's sharing behaviors were first analyzed to determine if these decisions were impacted by the partner's goal across conditions. Two separate Mann-Whitney *U* tests were conducted, and revealed that, across ages, there was no difference between the conditions when children were asked to share either five blocks ($U = 250$, $p = .43$) or eleven blocks ($U = 262.5$, *p*

= .6). However, given the age findings in Study 1, Mann-Whitney *U* tests were then conducted to examine potential age effects and ensure similarity between the studies (see Figures 3.3.1 and 3.3.2). There was no difference between conditions for the 3- and 4-year-olds when sharing 5 blocks ($U = 63$, $p = .6$) or 11 blocks ($U = 56.5$, $p = .37$). Furthermore, there was no difference between conditions for 5- and 6-year-olds when they shared 5 blocks ($U = 66$, $p = .73$), but there was a marginally significantly difference when they shared 11 blocks, where they shared more in the non-specific goal condition than in the concrete goal condition ($U = 33.5$, $p = .05$).

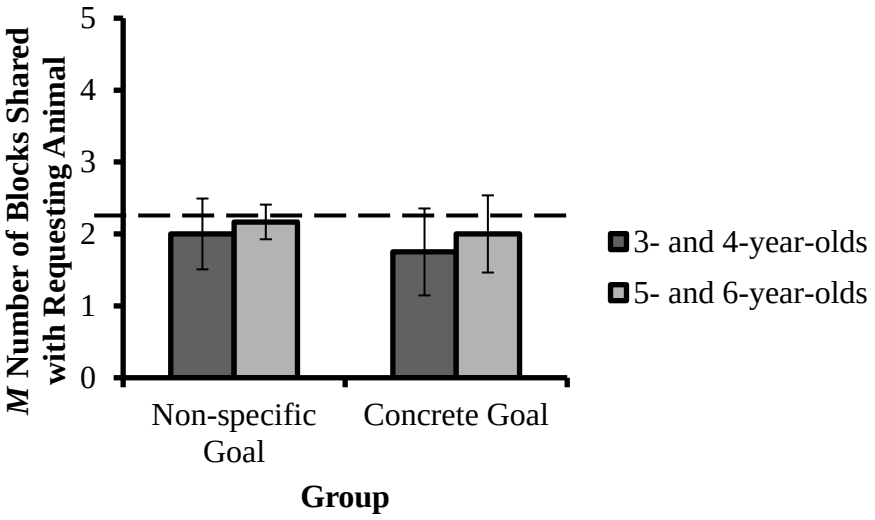

Figure 3.3.1. The mean number blocks (of 5) distributed in Study 2 to the animal requesting additional resources by condition and age. Error bars represent standard error. Dashed line represents an equitable amount distributed.

Children's sharing distributions were then compared to an equitable distribution (i.e., half) using a series of one-sample sign tests. When given five blocks, children's sharing in neither the concrete goal condition nor the non-specific goal condition differed from half (both *p*s = .15). However, when given 11 blocks, children in both conditions shared significantly less than half of their blocks (concrete goal condition, $p < .001$; non-specific goal condition, $p < .05$). Following Study 1, these analyses were then conducted separately for each age group: 3- and 4-

years-old, and 5- and 6-years-old (see Figures 3.3.1 and 3.3.2). Younger children's sharing in the concrete goal condition did not differ from half when they were given five or 11 blocks (both *p*s = .15). Furthermore, their sharing also did not differ from half in the non-specific goal condition (5 blocks, $p = .39$; 11 blocks, $p = .15$). Moreover, older children's sharing in the concrete goal condition did not differ from half when they were given only 5 blocks ($p = .77$); however, when they were given 11 blocks, they shared significantly less than half of their blocks ($p < .001$). In the non-specific goal condition, children's sharing did not differ from half when they were given 5 blocks ($p = .39$) or 11 blocks ($p = .15$).

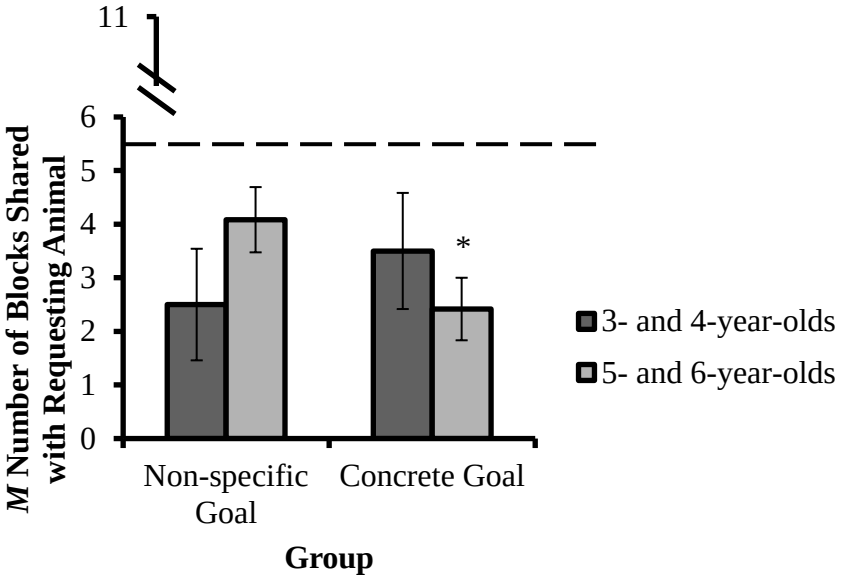

Figure 3.3.2. The mean number blocks (of 11) distributed in Study 2 to the animal requesting additional resources by condition and age. Error bars represent standard error. Dashed line represents an equitable amount distributed.

Note. * Represents distributions significantly less than half to the requesting character

I then investigated children's responses to the manipulation check question in the concrete goal condition. On average, children answered that the tower required 3.83 additional

blocks. Specifically, 3- and 4-year-olds thought that the character would need an average of 3 more blocks, while on average 5- and 6-year-olds thought he would need 4.67 more blocks, neither of which differed from the actual three blocks necessary ($p = .15$, $p = .39$). I then compared each of these numbers to the number of blocks that children actually shared in this condition. When given five blocks to distribute, children shared significantly less of their blocks than they thought was required to complete the tower ($M = 1.88$, $p < .001$). Yet, this pattern was not true for children when given 11 blocks, and the number of blocks that they shared did not differ from the number that they hypothesized would complete the tower ($M = 2.96$, $p = .16$). When the age groups were analyzed separately, 3- and 4-year-olds' sharing did not differ from the number that they thought necessary to complete the tower when given five blocks ($M = 1.75$, $p = .06$) or 11 blocks ($M = 3.5$, $p = .65$). 5- and 6-year-olds' shared significantly less than they thought was necessary to complete the tower when they were given five blocks ($M = 2$, $p < .001$) and 11 blocks ($M = 2.42$, $p < .01$).

Finally, I compared conducted a between-subjects examination of children's distribution decisions in Study 1 to their sharing decisions in Study 2. In the concrete goal condition, when given five blocks to distribute, 3- and 4-year-olds distributed significantly more blocks to a character in-need in a third person scenario (Study 1, $M = 3.25$) than a first person scenario (Study 2; $M = 1.75$, $U = 35.5$, $p < .05$). However, there was no difference in their distributions in the concrete goal condition when they were given 11 blocks (Study 1 $M = 4.83$; Study 2 $M = 3.5$, $U = 48$, $p = .17$). Furthermore, in the non-specific goal condition, these younger children's sharing behavior did not differ between a third and first person scenario (5 blocks, Study 1 $M = 2.58$; Study 2 $M = 2$, $U = 53.5$, $p = .3$; 11 blocks, Study 1 $M = 3.8$, Study 2 $M = 2.5$, $U = 39.5$, $p = .06$). For the older children in the concrete goal condition, there was no difference in their

distribution behaviors in third and first person scenarios (5 blocks, Study 1 M = 2.75; Study 2 M = 2, U = 53, p = .28; 11 blocks, Study 1 M = 3.67; Study 2 M = 2.42, U = 50, p = .21). Finally, there was no difference in the older children's distributions in the non-specific goal condition (5 blocks, Study 1 M = 2.75, Study 2 M = 2.17, U = 44, p = 11; 11 blocks, Study 1 M = 5.33, Study 2 M = 4.08, U = 48, p = .18).

3.4 Discussion

Overall, this study informs on how children understand someone else's goal, and whether such understanding might affect their willingness to their resources with someone. Notably, when I collapsed across age groups, children did not show evidence of differentiating their distributions based on the rationale given for an animal desiring resources. Furthermore, when their responses were compared to an equal distribution, there was no difference from half in either condition when they had only five blocks, but when they were given 11 blocks, children in both conditions shared significantly less than half of their blocks. Taken together, when given the opportunity to share their own resources, children were not influenced by someone's goal, as evidenced by a lack of differences between conditions, regardless of the number of blocks that they were given.

However, when children's responses were analyzed separately by age groups, a different pattern was revealed. Specifically, younger children indeed did not take into account the goal of the requesting animal, despite the number of blocks that were available to them. On the other hand, older children showed no difference in their sharing behaviors across conditions when they had only five blocks to distribute, but there was a marginally significant difference in which they shared more blocks in the non-specific goal than the concrete goal condition when given 11 blocks. Taken together, this suggests that older children may have an increased sensitivity to a

goal held by someone else, and that they may alter their behavior to fulfill this goal, even if it actually renders them less generous.

For a more detailed picture of children's sharing decisions, the number of blocks that children shared was compared to an equitable distribution, or half of the total blocks. When given five blocks, the number of blocks that children across ages shared did not differ significantly from half. This may underlie a predisposition towards distributing resources between themselves and a partner equally. This would reveal children as more generous than in past studies, where 3- to 6-year-olds have been found interested in maximizing their own rewards, deemphasizing the desires of their partner (Fehr et al., 2008).

On the other hand, when given 11 blocks, children in both conditions shared significantly less than half. In the concrete goal condition, this may be expected from children who understand the animal's goal, as it can be fulfilled with less than half of the total blocks. However, children in the non-specific goal condition also shared significantly less than half of the blocks. These findings taken together suggest that these children were willing to only share a small number of blocks with the animal, regardless of how many total blocks they were given, or the rationale provided for why a character may want some of their resources, again preferring to share an absolute number with a character rather than a proportion of the blocks (Wu & Su, 2013).

However, a different pattern was revealed when children's age was considered. That is, 3- and 4-year-olds' sharing decisions did not differ from half in any condition, regardless of the number of blocks that they were given, enforcing a preference to make equitable decisions between themselves and a partner, with no sensitivity for the rationale of their partner's resource desire. Similarly, 5- and 6-year-olds' sharing also showed no difference from half in the non-specific goal condition, suggesting that these children may prefer equity when they are given no

rationale for someone's resource desire. Yet, their sharing decisions in the concrete goal condition were more nuanced. When given only five blocks, these older children's sharing did not differ from half, but when they were given 11 blocks, they shared significantly less than half of their blocks with the requesting animal. This may suggest that children are placing emphasis on completing the character's goal, and while this requires approximately half of the resources when only five blocks are available, children are able to complete this goal with less than half of their resources when given 11 blocks.

Nonetheless, it is important to consider that children, particularly younger children whose sharing decisions seemed to prioritize equity, may not have understood how to fulfill the animal's goal. The results of the children's answers to the manipulation check render this possibility unlikely. Specifically, these data suggest that children understand how many blocks are necessary to complete the character's goal of making the tower taller than itself. In fact, the number of blocks that they shared did not differ significantly from the number they believed necessary to fulfill the goal at-hand. However, this may result from children's answering the manipulation question after they have already distributed their blocks, and do not want to show themselves as unwilling to help someone, and so they are influenced by how many blocks they previously shared with the character.

Finally, children's performance in Study 1 where children were asked to distribute resources between two characters was compared to Study 2 in which they were asked to distribute resources between themselves and one other character. Interestingly, the only condition in which distribution behaviors differed between studies was the 3- and 4-year-olds' decisions when distributing five blocks in the concrete goal condition. Specifically, they chose to distribute more blocks to a character in-need in a third person scenario in which they shared

another character's blocks than in a first person scenario in which they would have had to share their own blocks. This may indicate that younger children have a difficult time relinquishing their own resources to another character when there are only a small number of resources available (Dunfield & Kuhlmeier, 2013; Fehr et al., 2008; Wu & Su, 2013). It is interesting to note that the mean number of blocks that children distributed to a character in-need was enough blocks to complete the tower in the third person scenario (M = 3.25 blocks), but not in the first person scenario (M = 1.75 blocks). Thus, while younger children may respect the goal at-hand and have the knowledge to solve the problem, they are only able to prioritize and fulfill the goal when they need not relinquish their own resources. In sum, younger children's expectations of distribution behaviors may show a protracted development in which they expect others to be more generous than themselves early on.

However, children's performance did not differ in any other condition for either age group. Therefore, while younger children struggle with sharing when only a small number of resources are available, they do not show the same struggle with sharing when more resources are available. Additionally, 5- and 6-year-olds' distributions decisions did not differ across third and first person scenarios, providing evidence that by age five, children's distribution decisions no longer show such a protracted development. Rather, by this age, children's expectations of others' sharing behaviors are similar to expectations for themselves, regardless of how many resources are available. This is aligned with Piaget's (1932) work on children's moral development, where they initially expect more morality from others, but eventually expect the same level of morality from all people.

While children shared relatively equitably across the two conditions of this study, it is possible that their understanding of the goal at-hand could be improved. One possible way to

make goal fulfillment more salient for the younger children in particular is to present them with a forced choice option. Here, rather than asking children if they would like to share any blocks with the animal, the researcher could present the children with different possibilities. Specifically, in the 11 block condition, she could ask the children if they would like to share zero blocks (maximizing their own reward), 3 of the blocks (to fulfill the animal's goal and complete the tower) or 5 of the blocks (to form an approximately equal distribution). This would allow for additional insight into whether children put more emphasis on equity or goal fulfillment, and may make the different possibilities more salient, rather than children performing similarly across all conditions.

4 STUDY 3

Studies 1 and 2 tested whether children could consider that someone had a goal and alter their sharing decisions accordingly. However, an additional factor that has been shown to influence adults' donation behaviors is a recipient's proximity to the completion of their goal. Thus, the aim of Study 3 was to investigate whether children take into account how close someone is to accomplishing their goal, and whether this proximity has an influence on their sharing behavior. To do this, children's level of sensitivity to goal proximity was examined through the utilization of a goal-gradient methodology adapted from Cryder et al. (2013). They found that adults donated more in a charitable scenario when the goal was nearer completion (i.e., 65% or 85% completed) versus when it was still far from completion (i.e., 10%). However, another study (Kuppuswamy & Bayus, 2015) found the opposite pattern; as Kickstarter goals neared completion, donors became less likely to give to that campaign.

In Study 3, children were presented with similar gradient goals to assess whether their sharing behaviors, like adults, are influenced by early- versus late-stage progress towards a goal.

Children are an interesting population to examine here, as they will provide evidence on humans' earliest charitable donation preferences. To do this, children were introduced to an animal character whose goal was again to build a tower taller than it, which required a total of 32 blocks. In one condition, the high-gradient condition, the tower was 65% complete (with 21 blocks), while in a second condition, the low-gradient condition, the tower was only 10% complete (with 3 blocks). This allowed for an examination of children's sensitivity to different levels of goal completion, where one tower was nearer completion than another. Both conditions were presented as a first person scenario, similar to the procedure used in Study 2. By affording children the opportunity to interact with these real objects, they may have had a better understanding of the potential contribution that their distribution could have.

4.1 Methods

4.1.1 Participants.

Participants were children recruited and tested individually at the Fernbank Museum of Natural History. Families were approached by a researcher and asked if they had interest in participating in a brief research study. A total of 48 participants were recruited for this study, 24 in each of two conditions: high-gradient and low-gradient (G-Power, effect size =.35, alpha = .05, and power =.95).

Half of the participants in each condition were 3- and 4-years-old (M = 3.54, SD = .51), while the other half were 5- and 6-years-old (M = 5.21, SD = .42). Approximately half of the participants (n = 29) were male (two families elected not to disclose gender information), and 70% identified as Caucasian, 13% as other/multiple races, 9% as African American, and 7% as Asian (2 families chose not to identify a race).

4.1.2 Materials.

The two stuffed animals from Study 1 (i.e., a dog and a cat) were used. Each child interacted with one of these two animals in this task. In addition, they had the opportunity to interact with and distribute a set of five small building blocks (1.5 x .6"). Finally, they were presented with a tower of these building blocks, comprised of either 3 (in the low-gradient condition) or 21 (in the high-gradient condition) blocks.

4.1.3 Procedure.

All children were first introduced by the researcher to an animal character standing next to a tower of blocks. The researcher then explained that the animal was trying to build a tower taller than themselves. Children were then randomly assigned to one of two conditions that varied by the tower's proximity to completion. They were then asked to distribute blocks between themselves and the animal. Notably, children in neither condition had enough blocks to complete the animal's goal. This decision was made to reflect a common donation situation where it is unlikely that one person would donate all of the money needed to fulfill a charity's goal. The animal with which children interacted was counterbalanced across participants.

4.1.3.1 Vignette period.

When children approached the table to participate, the researcher handed them five small blocks telling them that they could play with the blocks. She then introduced them to an animal character standing next to a tower of stacked blocks (i.e., "This is dog! And this is dog's tower"). She then informed the children of the animal's goal, explaining that the "dog wants to make his tower even taller than he is."

In the *low-gradient* condition, the tower next to the animal was comprised of 3 blocks stacked atop one another, representing a completed 10% of the total desired tower height. In the

high-gradient condition, the tower next to the animal consisted of 21 blocks, representing a completed 65% of the total goal. Thus, the only difference between the conditions in the vignette period was the number of stacked blocks present next to the animal character.

4.1.3.2 Response period.

For the test prompt, the researcher asked the children "Would you like to keep playing with your blocks, or would you like to share any of your blocks with the dog?" Children indicated their distribution preferences by relinquishing blocks to the animal, placing them either in front of the animal's tower, or stacking their blocks on top of the tower.

4.2 Scoring and dependent measures

The dependent measure of interest was the number of blocks that children physically shared with the animal character. Possible responses included zero through five blocks shared. As in Study 2, sharing included only physically relinquishing blocks, either placing blocks in front of the animal, or stacking them on top of already-present tower of blocks. However, relinquishment did *not* include blocks that were extended to or verbally offered, but ultimately were retained by the child (e.g., Svetlova et al., 2010). Children's performance was scored in real-time by the experimenter conducting the study, as the experimenter counted the number of blocks relinquished to the animal. For a random 25% of the children in the study, a second researcher was present to code the interaction, also recording how many blocks are relinquished by the child. Inter-rater reliability was 100% between the two raters.

4.3 Results

As the data were non-normally distributed, non-parametric tests were used throughout. Preliminary analyses revealed no significant effects of gender (high-gradient, $U = 54.5$, $p = .75$; low-gradient $U = 51$, $p = .34$), or animal with whom they interacted ($U = 257.5$, $p = .56$).

Consequently, I collapsed across these variables for all analyses. Finally, preliminary analyses revealed an age difference in the data, whereby older children (ages 5 and 6) shared significantly more blocks (M = 3.63) than younger children (ages 3 and 4; M = 2.33) across conditions (Mann-Whitney U = 177, $p < .05$). Consequently, all data will be analyzed and presented separately for each age group.

The remaining analyses examined whether children's sharing behavior was influenced by the proximity to goal completion across the high- and low-gradient conditions. Specifically, it was first revealed that the younger children did not show a difference in their sharing behavior across the two conditions (see Figure 4.3.1; U = 61, p = .54). In contrast, older children's sharing decisions showed a different pattern, wherein they shared significantly more blocks in the high-gradient condition (M = 4.58) than in the low-gradient condition (M = 2.67; U = 30.5, $p < .05$).

Furthermore, to examine whether children placed emphasis on equality or goal fulfillment, I conducted a series of one-sample sign tests to compare the number of blocks shared by children to half (2.5 blocks). Younger children's sharing behaviors did not differ significantly from half in either the high-gradient or the low-gradient condition (p = .61; p = .39, Bonferroni corrected, respectively). Older children's sharing behaviors did not differ significantly from half in the low-gradient condition (p = .77). However, these 5- and 6-year-olds shared significantly more than half of their blocks in the high-gradient condition ($p < .01$).

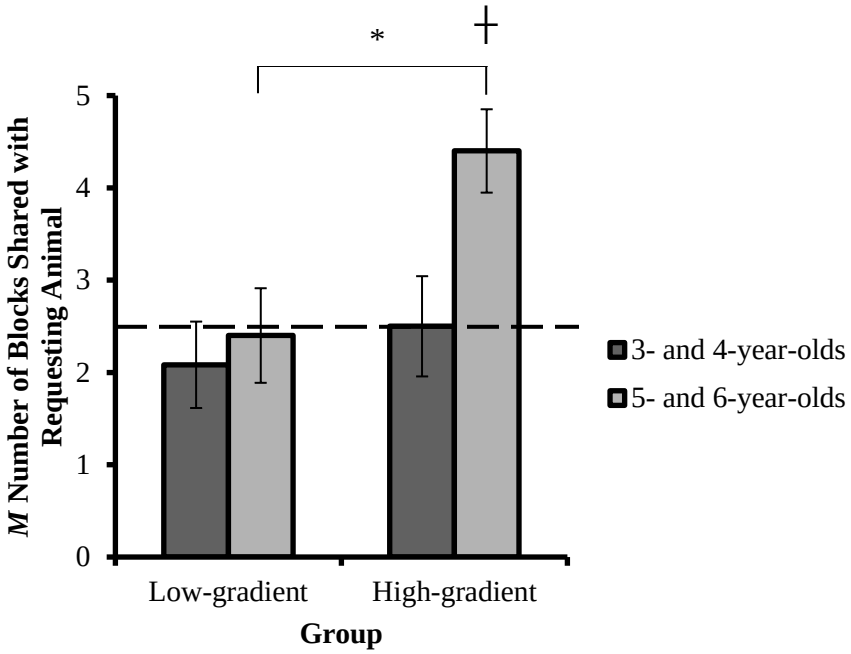

Figure 4.3.1. The mean number blocks (of 5) distributed in Study 3 to the animal requesting additional resources by condition and age. Error bars represent standard error. Dashed line represents an equitable amount distributed.

Note.

* represents 5- and 6-year-olds giving significantly more blocks in the high- than low-gradient condition

┼ represents 5- and 6-year-olds sharing significantly more than half of their blocks

4.4 Discussion

In this study, 3- and 4-year-old children did not show sensitivity to the proximity of a goal's completion, as sharing behaviors did not differ across the two conditions in response to the animal's tower being differentially completed. However, 5- and 6-year-olds began to show such sensitivity and adjusted their sharing behaviors accordingly. Specifically, they chose to share more of their blocks with the animal when the tower was near completion, rather than when it was far from completion. Furthermore, while the younger children's distributions did not differ significantly from half, the older children prioritized fulfilling the animal's goal, sharing more than half of their blocks, but only in the high-gradient condition.

The lack of a difference in the 3- and 4-year-olds' sharing behaviors across conditions suggests that they may not have been sensitive to the varying degree of a goal's completion. This finding is in line with those from Studies 1 and 2, serving as evidence that younger children appear unable to consider another's goals when making their sharing decisions. Instead, these children seem to rely on a preference for equity, not showing a significant difference from half in their block distributions. However, while they did not elect to share more than half of their blocks with the animal, this is a higher prevalence of sharing than has been previously found with this age group. Previously, Fehr et al. (2008) found only 8.7% of 3- and 4-year-olds willing to share, preferring to maximize their own rewards rather than sharing with another. Thus, while children may not have felt compelled to maximize the animal's goals over their own desire for the blocks, they seem to treat their desires equally and distribute the materials between themselves equally, possibly because children were less invested in the resources as their ownership of them was temporary.

Young children's lack of difference in their sharing behaviors across conditions may serve as evidence that they did not understand differentially presented goals. Thus, it is possible that younger children may have benefitted from a third person scenario in distributing these blocks. For example, if children were given five blocks and asked to distribute between dog's 65% completed tower and cat's 10% completed tower, their distributions may have looked different. Presenting these differentially completed towers simultaneously may have provided more support to children, and shed light on how younger children respect goal completion when distributing resources.

By age 5, children's distributions begin to show a different pattern. Specifically, they exhibit sensitivity to goal completion and adjust their sharing behaviors accordingly. Not only

were the older children willing to share significantly more blocks in the high-gradient than low-gradient condition, but they were also willing to share significantly more than half of their blocks in the high-gradient condition. Thus, this provides evidence that 5- and 6-year-olds may prioritize goal fulfillment over equity. This serves as a contrast to past literature that has found 5- and 6-year-olds largely unwilling to share equally with another (e.g., Fehr et al., 2008). Rather, these children seem to be particularly motivated to share in this study, distributing their resources equitably in the low-gradient condition and even prioritizing the animal's goal over their own desire for equitably distributed resources in the high-gradient condition as someone's goal neared completion.

Thus, this study extends past adult literature that presented conflicting findings on how nearing a goal's completion affects donation behaviors. Specifically, the current findings are in line with work by Cryder et al. (2013) revealing that people act more generously in a situation where a goal is closer to completion rather than when a goal is just beginning. However, this is in contrast with the results of Kuppuswamy and Bayus (2015). In the latter, the authors analyzed Kickstarter data and found that donors were increasingly less likely to contribute to a campaign that was nearing funding compared to those that were further away from their final goal. However, as their data analyzed past Kickstarter campaigns, they consequently could not provide participants with equally desirable donation opportunities. Rather, these users may have donated to campaigns of interest to them, disregarding the proximity to the goal. Thus, the present study informs on how children contend with varying degrees of goal completion, revealing that they prefer to help another with their goal when they have almost achieved their goal. This may be because their contribution is seen as more meaningful, as sharing five blocks in the high-gradient condition may have a seemingly greater impact when only 12 blocks are needed than in the low-

gradient condition when 29 blocks are still needed. Similarly, participants may feel unmotivated to help in scenarios where someone's goal is in the beginning stages because their contribution is not enough to fulfill the goal at-hand and may feel minimized.

However, while the current findings suggest that the older children varied their distributions by the proximity to the goal, it is possible that this pattern of results instead stemmed from the difference in the magnitude of the towers. That is, children may have been compelled only to add on to the larger tower as it was more salient to them, rather than having an understanding of the proximity to the goal's completion. Yet, one piece of evidence suggests that this may not be the case, as younger children did not show the same distribution patterns, and shared equally across and high- and low-gradient conditions. Nonetheless, future work may benefit from an investigation that varies goal completion and the size of the towers presented. For example, instead of being presented with either a tall or short tower, children could be presented with towers that are the same height, but require different amounts of resources to complete them. This would inform on children's motivation to help someone complete a goal nearing proximity while controlling for the salience of the tower.

Taken together, this study serves as the first evidence that by age 5, children share their resources differentially dependent upon how close someone's goal is to completion. Specifically, these children prefer to donate resources to someone whose goal is nearing completion, rather than to someone whose goal has just begun. This may suggest that children find their donations to be more beneficial when they can donate a larger proportion of the remainder needed. This desire to help an animal complete its goal even superseded children's desire for their own blocks in the high-gradient condition, suggesting that children do understand someone's goal and can sacrifice their own rewards to work towards it.

5 GENERAL DISCUSSION

The three studies presented here investigated young children's distribution and sharing decisions, specifically considering whether understanding another's goal would influence these distributions. In Study 1, children were asked to distribute resources between two characters whose goal varied across conditions. Younger children's distributions indicated that they recognized a sharing scenario, differentiating their behaviors when two characters were present compared to when only one character was present. However, they did not show sensitivity to the goal at-hand, dividing resources similarly, regardless of the rationale provided to them. On the other hand, 5- and 6-year-olds did show sensitivity to the goal at-hand. Specifically, while they too chose to distribute more in a baseline condition in which only one character was present to utilize a resource, they also distributed significantly fewer blocks in the concrete goal condition when given additional resources, suggesting that they prioritized fulfilling the goal, but gave no more than was necessary.

Study 2 expanded this investigation, focusing on how children might respect another's goal when their own resources were at stake. While the number of blocks that children distributed still showed no difference across conditions, the average number of blocks that they gave to a character in-need was significantly less when they were forced to share their own resources rather when they distributed between two third party characters. Older children's sharing also took on a different pattern than that was observed in their distributions in Study 1. Specifically, they seemed to struggle with incorporating another's goal into their own sharing decisions, showing only a marginal difference in the number of blocks shared when they had a large amount of resources, and could share less than half and still fulfill the animal's goal. Taken together, this study reinforces young children's difficulty with understanding another's rationale

for resource desire, and older children's priority of goal fulfillment over equity, even if it leads them to behave less generously than they otherwise would have.

Finally, Study 3 investigated children's sensitivity to differentially completed goals. That is, they were presented with a character that had a goal either nearing completion or just beginning, and their sharing behaviors were recorded. Similar to the results of Studies 1 and 2, no evidence was found that 3- and 4-year-olds consider another's goal, as their sharing behaviors did not differ as a function of how close the character was to its goal. On the other hand, 5- and 6-year-olds shared significantly more in a scenario where a goal was nearing completion, rather than just beginning. This suggests that by age 5, children are sensitive to different degrees of goal completion, and prefer to share with someone whose goal is closer to being finalized, possibly because they feel that their donation has a proportionally larger impact on this goal's fulfillment.

Together, these three studies reveal some clear developments in children's understanding of a sharing scenario. By age 3, children differentiated a potential sharing scenario, in which two possible recipients are present, and a simple distribution scenario, in which only one character is present to receive resources. This was evidenced by more sharing in the baseline condition than either experimental condition in Study 1. They were also able to consider the resource owner when making their distribution decisions, as their distribution decisions differed from Study 1 to Study 2. Children gave significantly more to a requesting character when they belonged to another character than when the resources were their own. This is in line with past research that highlights young children's difficulty with sharing resources and the preference for maximizing their own reward (Fehr et al., 2008).

However, children do not yet exhibit a complete recognition of another's goal when forming their distribution decisions. For one, children in the youngest age group did not use another's goal to guide their distributions, as there was no difference across the non-specific and concrete goal conditions of Studies 1 or 2. This lack of difference existed even when they were a potential recipient of the resources, which was hypothesized to potentially heighten their attention to the character's rationale. Additionally, these children did not show evidence of considering different degrees of goal completion in Study 3, and the number of blocks shared did not differ when the tower was 10% versus 65% completed. Taken together, this suggests that by age 3, children have a foundational understanding of what is required to constitute a sharing scenario and vary their behaviors when their own resources are involved, but there was no evidence of them incorporating their knowledge of someone's goal in their distribution decisions.

On the other hand, 5- and 6-year-olds differentiate between a sharing and distribution scenario and alter their behavior when their own resources are involved, and they also take into account someone else's goal. Specifically, they were able to distinguish between simply having a goal (concrete goal condition) versus no goal (non-specific goal condition) in Studies 1 and 2. Notably, children seemed particularly attuned to another's goal when they were given 11 blocks, rather than five, which presented them the opportunity to share significantly less than half of their total blocks and still fulfill the others' goal in the concrete goal condition. This led them to share less than half in this condition, unlike than the non-specific goal condition in which their sharing did not differ from half, suggesting that providing children with a rationale for sharing may sometimes lead them to be less generous.

The results from Studies 1 and 2 may suggest that children seek to maximize their own rewards, sharing only what is necessary to fulfill the goal of another, as they share less than half in the concrete goal conditions. However, the findings from Study 3 illustrate that this self-maximization does not provide a complete picture of children's sharing. Indeed, the older children in Study 3 also prioritized another's goal, and did this at the expense of their own resources, but only when the goal was nearing completion. That is, these children were willing to put themselves at a disadvantage, sharing on average 4.5 of their five total blocks with someone who was nearing their goal, but still required additional help. Thus, this provides the first evidence of children viewing someone else's goal as a priority, and how they adjust their sharing behaviors to fulfill that goal, behaving less equitably when less than half of the total resources are required, but sharing all that they have when more resources are required.

One possible rationale for the observed age-related differences may involve children's increasingly sophisticated theory of mind. The identified time period (ages 3- to 6-years-old) is crucial in the development of children's understanding of others' mental processes (e.g., Wellman, 2011; Wellman & Liu, 2004). In the present studies in particular, children needed to consider two opposing resource desires. In Study 1, these were the desires of two different characters, while in Study 2 the contending desires were their own and another character's. While 3- and 4-year-olds treated another's desire for resources similarly to their own, 5- and 6-year-olds showed a more complex understanding of other, where the other character provided them with a concrete rationale for desiring more blocks. Although past research has indicated that children can understand the diverse desires of another person by age 2 (Cassidy et al., 2009; Repacholi & Gopnik, 1997; Wellman & Woolley, 1990), 3- and 4-year-olds have been shown to struggle with understanding that two people with conflicting desires may not both be happy after

receiving an outcome that satisfies only one of them (Lichtermann, 1991, cited in Perner et al., 2005). Thus, sharing here may require more than a simple understanding of another's opposite desire. Instead, in the current tasks, children were forced to contend with both parties' desires simultaneously. Although children may understand what a partner desires, until age 5, they may not be able to overcome their own competing desires to fulfill another's goal.

Another potential mechanism that underlies this struggle with fulfilling another's desires may be the younger children's still developing inhibition, the ability to ignore some information or suppress an initial response (e.g., Blaye & Chevalier, 2011). The age range under investigation is known to be a vital one for the development of inhibition. Specifically, Carlson (2005) used a series of tasks in which children had to suppress different desires (e.g., touching a gift, reaching to an incorrect, but highlighted, location). Across tasks, older children were found more sophisticated in their inhibition, with 5-year-olds performing significantly above 3- and 4-year-olds. In the past, such inhibition has also been related to children's sharing behaviors, where children better able to inhibit themselves are more likely to share (e.g., Moore, Barresi, & Thompson, 1998). In the present studies, if older children's inhibition is indeed more sophisticated, then they are likely able to override an immediate desire for the blocks, allowing them to instead focus on the goal at-hand.

A final factor of potential influence on children's prosociality is time spent in formal schooling for the older children. Past research indicates that these experiences may influence prosocial behaviors in a few ways. Specifically, teachers who verbally encourage prosocial behaviors in the classroom had students who displayed more prosociality (Spivak & Farran, 2012). Yet, the presence of peers on prosociality has produced mixed results. Laboratory based work has found that children behave more prosocially in the presence of a peer, particularly

when all possible helping decisions are made known to the peer (Engelmann, Hermann, & Tomasello, 2012; Leimgruber, Shaw, Santos, & Olson, 2012). However, this increase in prosociality was only seen when the participant was the only child able to help, and the peer was unable to provide any help. When a peer *is* available for help, 5-year-olds exhibit the bystander effect, showing less prosociality when the peer is present than when they are alone (Plötner et al., 2015). This experience with others has an influence on children's prosociality, and may have a greater impact on older children, who spend a larger amount of their time outside the family setting.

These findings do not align with Paulus' (2014) goal-alignment theory, which posited that children simply become "infected" with another's goal, making efforts to carry it through as though it were their own. Rather, children in these studies showed a difference between distributing objects for two others versus themselves and one other. This suggests that children do not treat another's goal as it was their own, or it would be expected that their performance would be the same in the baseline and experimental conditions. Furthermore, children did not always distribute resources differentially across the non-specific and concrete goal conditions, so providing them with a goal did not always result in a change in their behavior from when no goal was provided. However, like Paulus' theory, children did show an attunement to others' goals, as their answers to the manipulation check did not differ from the number of blocks necessary to fulfill a tower, indicating that they did understand the others' goal and how to complete it. Thus, this goal-alignment theory may not provide a complete picture of how young elementary school age children form their goal-driven distribution decisions, failing to take into account how willing children are to help others as a factor of whose resources are being requested.

Another past theory has been one regarding socialization, where some researchers (Hay & Cook, 2007; Paulus, 2014; Rheingold, 1982; Tomasello & Vaish, 2013; Warneken & Tomasello, 2009a) have posited that children behave prosocially only in an attempt to interact with others. That is, they are not focused on being helpful, rather than only being concerned with an attempt to interact with others. The results of the current project suggest that this is unlikely, as children differed their distributions based on the number of characters present, selectively giving more resources when only one character was present. Furthermore, children in Study 3 showed relatively low levels of sharing in the low-gradient goal, but shared nearly all of their blocks in the high-gradient goal. If children were sharing only in the interest of interacting with others, then it is unlikely that their behaviors would differentiate across conditions, as the scenario presented to them would not influence their interactions.

On a larger scale, the current studies may inform caregivers and teachers about children's ability to share. Primarily, while children may often be socialized to behave prosocially (Hay & Cook, 2007), this study raises the possibility for manipulations that could target sharing specifically. For example, by age 5, children in the current study adjusted their sharing behaviors to align with someone's goal; thus, it may be beneficial for adults to explain to children *why* they are being asked to share. Alternately, it is possible that this will lead them to share less than what is intended, as they prioritize goal fulfillment over equity. Importantly, this may be effective for children as early as in kindergarten, but may not be something that preschoolers are yet able to consider on their own. Adults may also be able to foster cooperation in children utilizing this information, as children were motivated to donate more to someone whose goal was nearing completion. Thus, if children combine their efforts and work together, they may feel as though their contribution is greater and this may foster more teamwork.

One limitation of the current study is that providing children with only five blocks may not have proved sensitive enough to identify a difference between goal prioritization (where the animal's goal required three additional blocks) and an equitable distribution (2.5 blocks). This may account for the lack of a difference between the concrete and non-specific goal conditions. Rather, future work should investigate how children distribute a smaller number of blocks, examining a preference for equity or goal fulfillment. Furthermore, children's answers to the manipulation check questions often overestimated the number of blocks required to complete the tower. As children may have thought they needed to give up a larger proportion of their blocks (or all of their blocks, when they had only five), future research may provide children with the number of blocks actually required to fulfill the tower. This would allow for a more confident interpretation of children's distribution preferences, as it would remove any uncertainty that children were not fulfilling a tower if they meant to do so.

Another important limitation is that children in the current study were recruited at an Atlanta museum, and thus the children in this sample may have been from a higher socioeconomic (SES) status that is representative of the larger Atlanta metropolitan area. Accordingly, these children's sharing behaviors may not be representative of all children, particularly those who may be impoverished, with a lack of access to resources. However, past work has found that children from lower SES homes are more generous to others (e.g., Guinote, Cotzia, Sandhu, & Siwa, 2015; Piff, Kraus, Côté, Cheng, & Keltner, 2010). Thus, more research is needed with a larger sample, including children from all SES groups to ascertain how access to resources influences children's distribution behaviors, and the influence that goals may have on such decisions. This may lead to more knowledge on how to promote such prosociality in

children, fostering benefits of such prosocial behaviors, such as higher social sophistication and lower externalizing problems, which children from lower SES backgrounds may struggle with.

Finally, there may have been some methodological limitations in the present studies that should be further investigated in future works. For one, the blocks used in Studies 1 and 2 may have been too interesting for the children, distracting them from the task at-hand. Conversely, the blocks used in Study 3 were likely much less interesting, and children may have shared them with the character as they had little interest in keeping the blocks for themselves. Thus, finding resources with an appropriate level of salience will be vital for future work, and it is possible that providing them with small food treats will make the resources more salient and more comparable with past work. Additionally, further examinations may provide a third person scenario for Study 3, in which children are presented simultaneously with two characters with respective goals that are the same height, but require a different number of resources for completion. This would provide a better understanding of how the proximity to a goal influences children's sharing behaviors, and provide a better comparison to real world situations in which people have the opportunity to compare different charities' goals simultaneously.

Overall, these studies revealed that age 5 may be a pivotal time in development of children's sharing behaviors, as children younger than age 5 seem to exhibit a sensitivity to the requirements of a sharing scenario, but not to a rationale presented to them for resource requirement. Conversely, 5-year-olds begin to show different sharing patterns dependent on the proximity of the goal's completion. Furthermore, there is evidence that children show a prioritization of goal fulfillment, doing whatever is necessary to fulfill a goal, whether this requires sharing less than half of their resources or all of their resources.

REFERENCES

Axelrod, R., Hamilton, W.D. (1981). The evolution of cooperation. *Science, 211*(4489), 1390-1396.

Bandura, A., Caprara, G.V., Barbaranelli, C., Pastorelli, C., & Regalia, C. (2001). Sociocognitive self-regulatory mechanisms governing transgressive behavior. *Journal of Personality and Social Psychology, 80*(1), 125-135.

Batson, C.D. (1991). *The altruism question.* Hillsdale, NJ: Erlbaum.

Bear, G.G., Rys, G.S. (1994). Moral reasoning, classroom behavior, and sociometric status among elementary school children. *Developmental Psychology, 30*(5), 633-638.

Behne, T., Carpenter, M., Call, J., & Tomasello, M. (2005). Unwilling versus unable: Infants' understanding of intentional action. *Developmental Psychology, 41*(2), 328-337.

Bellagamba, F., & Tomasello, M. (1999). Re-enacting intended acts: Comparing 12- and 18-month-olds. *Infant Behavior and Development, 22*(2), 277-282.

Bischof-Köhler, D. (1991). The development of empathy in infants. In M.E. Lamb & H. Keller (Eds.), *Infant Development: Perspectives from German-speaking Countries* (pp. 245-273). Hillsdale, NJ: Erlbaum.

Blaye, A., & Chevalier, N. (2011). The role of goal representation in preschoolers' flexibility and inhibition. *Journal of Experimental Child Psychology, 108*(3), 469-483.

Boesch, C., Bolé, C., Eckhardt, N., & Boesch, H. (2010). Altruism in forest chimpanzees: The case of adoption. *PLoS ONE, 5*(1), 1-6.

Brownell, C.A. (2013a). Early development of prosocial behavior: Current perspectives. *Infancy, 18*(1), 1-9.

Brownell, C.A., Iesue, S.S., Nichols, S.R., & Svetova, M. (2013b). Mine or yours? Development of sharing in toddlers in relation to ownership understanding. *Child Development, 84*(3), 906-920.

Brownell, C.A., Svetlova, M., & Nichols, S. (2009). To share or not to share: When do toddlers respond to another's needs? *Infancy, 14*(1), 117-130.

Buhrmester, D., Goldfarb, J., & Cantrell, D. (1992). Self-presentation when sharing with friends and nonfriends. *The Journal of Early Adolescence, 12*(1), 61-79.

Burns, M.P. & Sommerville, J.A. (2014). "I pick you": The impact of fairness and race on infants' selection of social partners. *Frontiers in Psychology, 5*(93), 1-24.

Carlson, S.M. (2005). Developmentally sensitive measures of executive function in preschool children. *Developmental Neuropsychology, 28*(2), 595-616.

Cassidy, K.W., Cosetti, M., Jones, R., Kelton, E., Rafal, V.M., Richman, L., & Stanhaus, H. (2009). Preschool children's understanding of conflicting desires. *Journal of Cognition and Development, 6*(3), 427-454.

Chernyak, N., & Kushnir, T. (2013). Giving preschoolers choice increases sharing behavior. *Psychological Science, 24*(10), 1971-1979.

Cryder, C.E., Loewenstein, G., & Scheines, R. (2013). The donor is in the details. *Organizational Behavior and Human Decision Processes, 120*(1), 15-23.

Cryder, C.E., Loewenstein, G., & Seltman, H. (2013). Goal gradient in helping behavior. *Journal of Experimental Social Psychology, 49*(6), 1078-1083.

Darwin, C.R. (1859). *On the origin of species*. Cambridge, MA: Harvard University Press.

Darwin, C.R. (1871). *The descent of man*. London, UK: John Murray.

Dunfield, K.A. (2014). A construct divided: Prosocial behavior as helping, sharing, and comforting subtypes. *Frontiers in Psychology, 5*, 1-13.

Dunfield, K.A., & Kuhlmeier, V.A. (2013). Classifying prosocial behavior: Children's response to instrumental need, emotional distress, and material desire. *Child Development, 84*(5), 1766-1776).

Dunfield, K., Kuhlmeier, V.A., O'Connell, L., & Kelley, E. (2011). Examining the diversity of prosocial behavior: Helping, sharing, and comforting in infancy. *Infancy, 16*(3), 222-247.

Dunn, J., Cutting, A.L., Fisher, N. (2002). Old friends, new friends: Predictors of children's perspective on their friends at school. *Child Development, 73*(2), 621-635.

Eisenberg, N., & Fabes, R.A., Carlo, G., & Karbon, M. (1998). Emotional responsivity to others: Behavioral correlates and socialization antecedents. In N. Eisenberg & R.A. Fabes (Eds.), *Emotion and its regulation in early development: New directions in child development* (pp. 54-74). San Francisco, CA: Jossey-Bass.

Eisenberg, N., and Spinrad, T. L. (2014). Multidimensionality of prosocial behavior: Re-thinking the conceptualization and development of prosocial behavior, in Padilla-Walker, L. & Carlo, G. (Eds.), *Prosocial Behavior: A Multidimensional Approach* (pp. 17-39). Oxford: Oxford University Press.

Eisenberg-berg, N., Haake, R., Hand, M., Sadalla, E. (1979). Effects of instructions concerning ownership of a toy on preschoolers' sharing and defensive behaviors. *Developmental Psychology, 15*(4), 460-461.

Engelmann, J.M., Hermann, E., & Tomasello, M. (2012). Five-year olds, but not chimpanzees, attempt to manage their reputations. *PLoS ONE, 7*(10), 1-7.

Engelmann, J.M., Over, H., Hermann, E., & Tomasello, M. (2013). Young children care more about their reputation within group members and potential reciprocators. *Developmental Science, 16*(6), 952-958.

Farver, J.A.M., & Branstetter, W.H. (1994). Preschoolers' prosocial responses to their peers' distress. *Developmental Psychology, 30*(3), 334-341.

Fehr, E., Bernhard, H., & Rockenbach, B. (2008). Egalitarianism in young children. *Nature, 454*, 1079-1084.

Fetherstonhaugh, D., Slovic, P., Johnson, S.M., & Friedrich, J. (1997). Insensitivity to the value of human life: A study of psychophysical numbing. *Journal of Risk and Uncertainty, 14*(3), 283-300.

Flavell, J.H. (2000). Development of children's knowledge about the mental world. *International Journal of Behavioral Development, 24*(1), 15-23.

Frey, B.S., & Oberholzer-Gee, F. (1997). The cost of price incentives: An empirical analysis of motivation crowding-out. *The American Economic Review, 87*(4), 746-755.

Guinote, A., Cotzia, I., Sandhu, S., & Siwa, P. (2015). Social status modulates prosocial behaviors and egalitarianism in preschool children and adults. *Proceedings of the National Academy of Sciences of the USA, 112*(3), 731-736.

Hamilton, W.D. (1964). The genetic evolution of social behavior I & II. *Journal of Theoretical Biology, 7*(1), 1-52.

Hamlin, J.K. & Wynn, K. (2011). Young infants prefer prosocial to antisocial others. *Cognitive Development, 26*(1), 30-39.

Hamlin, J.K., Wynn, K., & Bloom, P. (2007). Social evaluation by preverbal infants. *Nature, 450*(7169), 557-559.

Hamlin, J.K., Wynn, K., & Bloom, P. (2010). 3-month-olds show a negativity bias in their social evaluations. *Developmental Science, 13*(6), 923-929.

Hay, D.F. (2006). Yours and mine: Toddlers' talk about possessions with familiar peers. *British Journal of Developmental Psychology, 24*(1), 39-52.

Hay, D.F., & Cook, K.V. (2007). The transformation of prosocial behavior from infancy to childhood. In C.A. Brownell & C.B. Kopp (Eds.), *Socioemotional development in the toddler years: Transitions and transformations,* (pp. 100-124). New York, NY: Guilford.

Hepach, R., Vaish, A., & Tomasello, M. (2013). A new look at children's prosocial motivation. *Infancy, 18*(1), 67-90.

Hoffman, M.L. (1975). Moral internalization, parental power, and the nature of parent-child interaction. *Developmental Psychology, 11*(2), 228-239.

Hoffman, M.L. (1982). The contribution of empathy to justice and moral judgment. In N. Eisenberg & J. Strayer (Eds.), *Empathy and its development* (pp. 47-80). Cambridge, UK: Cambridge University Press.

Hoffman, M.L. (2000). *Empathy and moral development: Implications for caring and justice.* New York, NY: Cambridge University Press.

Horner, V., Carter, J.D., Suchak, M., & de Waal, F.B.M. (2011). Spontaneous prosocial choice by chimpanzees. *Proceedings of the National Academy of Sciences of the USA, 108*(22), 13847-13851.

House, B.R., Silk, J.B., Henrich, J., Barrett, H.C., Scelza, B.A., Boyette, A.H., Hewlett, B.S., McElreath, R., & Laurence, S. (2013). Ontogeny of prosocial behavior across diverse societies. *Proceedings of the National Academy of Sciences of the USA, 110*(36), 14586-14591.

Karlan, D., & List, J. (2007). Does price matter in charitable giving? Evidence from a large-scale natural field experiment. *American Economic Review, 97*(5), 1774-1793.

Kanfer, F.H., Stifter, E., & Morris, S.J. (1981). Self-control and altruism: Delay of gratification for another. *Child Development, 52*(2), 674-682.

Killen, M., & de Waal, F.B.M. (2000). The evolution and development of morality. In F. Aureli & F.B.M. de Waal (Eds.), *Natural conflict resolution,* (pp. 352-372). Berkeley, CA: University of California Press.

Köster, M., Schuhmacher, N., & Kärtner, J. (2015). A cultural perspective on prosocial development. *Human Ethology Bulletin, 30*(1), 71-82.

Kuhlmeier, V.A., Dunfield, K.A., & O'Neill, A.C. (2014). Selectivity in early prosocial behavior. *Frontiers in Psychology, 5*, 1-6.

Kuppuswamy, V., & Bayus, B.L. (2015). Crowdfunding creative ideas: The dynamics of project backers in Kickstarter. *UNC Kenan-Flagler Research Paper, No. 2013-15.*

Leimgruber, K.L., Shaw, A., Santos, L.R., & Olson, K.R. (2012). Young children are more generous when others are aware of their actions. *PLoS ONE, 7*(10), 1-8.

Lewis, M. (1989). Culture and biology: The role of temperament. In P. Zelazo & R. Barr (Eds)., *Challenges to developmental paradigms* (pp. 203-223). Hillsdale, NJ: Erlbaum.

Lichterman, L. (1991). Young children's understanding of desires. In Perner, J., Zauner, P., & Sprung, M. (2005). What does 'that' have to do with point of view? Conflicting desires and 'want' in German. In J.W. Astington & J. Baid (Eds.), *Why language matters for theory of mind* (pp. 220-244). New York, NY: Oxford University Press.

Liebal, K., Vaish, A., Haun, D., & Tomasello, M. (2014). Does sympathy motivate prosocial behaviour in great apes? *PLoS ONE, 9*(1), 1-8.

Liew, J., Eisenberg, N., Spinrad, T.L., Eggum, N.D., Haugen, R.G., Kupfer, A., Reiser, M.R., Smith, C.L., Lemery-Chalfant, K., Baham, M.E. (2011). Physiological regulation and fearfulness as predictors of young children's empathy-related reactions. *Social Development, 20*(1), 111-113.

Malti, T., Gummerum, M., Keller, M., Chaparro, M.P., & Buchmann, M. (2012). Early sympathy and social acceptance predict the development of sharing in children. *PLoS ONE, 7*(12), 1-7.

Mar, R.A., & Oatley, K. (2008). The function of fiction is the abstraction and simulation of social experience. *Perspectives on Psychological Science, 3*(3), 173-192.

Martin, A. & Olson, K.R. (2015). Beyond good and evil: What motivations underlie children's prosocial behavior? *Perspectives on Psychological Science, 10*(2), 159-175.

Martin, R., & Randal, J. (2008). How is donation behavior affected by the donation of others? *Journal of Economic Behavior and Organization, 67*(1), 228-238.

Meier, S. (2007). Do subsidies increase charitable giving in the long run? Matching donations in a field experiment. *Journal of the European Economic Association, 5*(6), 1203-1222.

Meltzoff, A.N. (1995). Understanding the intentions of others: Re-enactment of intended acts by 18-month-old children. *Developmental Psychology, 31*(5), 838-850.

Meuwese, R., Crone, E.A., de Rooij, M., & Güroğlu, B. (2015). Development of equity preferences in boys and girls across adolescence. *Child Development, 86*(1), 145-158.

Moore, C., Barresi, J., & Thompson, C. (1998). The cognitive basis of future-oriented prosocial behavior. *Social Development, 7*(2), 198-218.

Muller, M.N., & Mitani, J.C. (2005). Conflict and cooperation in wild chimpanzees. *Advances in the Study of Behavior, 35*(1), 275-331.

Newman, S., Vasudev, J., & Onawola, R. (1985). Older volunteers' perceptions of impacts of volunteering on their psychological well-being. *Journal of Applied Gerontology, 4*(2), 123-127.

Newton, E.K., Laible, D., Carlo, G., Steele, J.S., & McGinley, M. (2014). Do sensitive parents foster kind children, or vice versa? Bidirectional influences between children's prosocial behavior and parental sensitivity. *Developmental Psychology, 50*(6), 1808-1816.

Paulus, M. (2014). The emergence of prosocial behavior: Why do infants and toddlers help, comfort, and share? *Child Development Perspectives, 8*(2), 77-81.

Pettygrove, D.M., Hammond, S.I., Karahuta, E.L., Waugh, W.E., & Brownell, C.A. (2013). From cleaning up to helping out: Parental socialization and children's early prosocial behavior. *Infant Behavior and Development, 36,* 843-846.

Piaget, J. (1932). *The moral development of the child.* Glencoe, IL: The Free Press.

Piff, P.K., Kraus, M.W., Côté, S., Cheng, B.H., & Keltner, D. (2010). Having less, giving more: The influence of social class on prosocial behavior. *Journal of Personality and Social Psychology, 99*(5), 771-784.

Plötner, M., Over, H., Carpenter, M., & Tomasello, M. (2015). Young children show the bystander effect in helping situations. *Psychological Science, 26*(4), 499-506.

Radke-Yarrow, M., Zahn-Waxler, C., Barrett, D., Darby, J., King, R., Pickett, M., & Smith, J. (1976). Dimensions and correlates of prosocial behavior in young children. *Child Development, 47*(1), 118-125.

Repacholi, B.M., & Gopnik, A. (1997). Early reasoning about desires: Evidence from 14- and 18-month-olds. *Developmental Psychology, 33*(1), 12-21.

Rheingold, H.L. (1982). Little children's participation in the work of adults, a nascent prosocial behavior. *Child Development, 53*(1), 114-125.

Rochat, P., Dias, M.D.G., Liping, G., Broesch, T., Passos-Ferreira, C.,Winning, A., & Berg, B. (2009). Fairness in distributive justice by 3- and 5-year-olds across seven cultures. *Journal of Cross-cultural Psychology, 40*(3), 416-442.

Ross, H., Friedman, O., & Field, A. (2014). Toddlers assert and acknowledge ownership rights. *Social Development, 24*(2), 341-356.

Rothbart, M.K., Ahadi, S.A., & Hershey, K.L. (1994). Temperament and social behavior in children. *Merrill-Palmer Quarterly, 40*(1), 21-39.

Schino, G., & Aureli, F. (2009). Reciprocal altruism in primates: Partner choice, cognition, and emotions. *Advances in the Study of Behavior, 39*(1), 45-69.

Schmidt, M.F.H., & Sommerville, J.A. (2011). Fairness expectations and altruistic sharing in 15-month-old human infants. *PLoS ONE, 6*(10), 1-7.

Silk, J.B., Brosnan, S.F., Vonk, J., Henrich, J., Povinelli, D.J., Richardson, A.S., Lambeth, S.P., Mascaro, J., & Schapiro, S.J. (2005). Chimpanzees are indifferent to the welfare of unrelated group members. *Nature, 437*(27), 1357-1359.

Sommerville, J.A., Schmidt, M.F.H., Yun, J., & Burns, M. (2013). The development of fairness expectations and prosocial behavior in the second year of life. *Infancy, 18*(1), 40-66.

Spivak, A.L., & Farran, D.C. (2012). First-grade teachers' behaviors and children's prosocial actions in classrooms. *Early Education and Development, 23*(5), 623-639.

Svetlova, M., Nichols, S.R., & Brownell, C.A. (2010). Toddlers' prosocial behavior: From instrumental to empathic to altruistic helping. *Child Development, 81*(6), 1814-1827.

Thompson, C., Barresi, J., & Moore, C. (1997). The development of future-oriented prudence and altruism in preschoolers. *Cognitive Development, 12,* 199-212.

Thompson, R.A., & Newton, E.K. (2013). Baby altruists? Examining the complexity of prosocial motivation in young children. *Infancy, 18*(1), 120-133.

Tomasello, M. & Vaish, A. (2013). Origins of human cooperation and morality. *Annual Review of Psychology, 64*, 231-255.

Tooby, J., & Cosmides, L. (1989). Evolutionary psychology and the generation of culture, part I. *Ethology and Sociobiology, 10*(1), 29-49.

Trivers, R. (1971). The evolution of reciprocal altruism. *The Quarterly Review of Biology, 46*(1), 35-57.

Ueno, A., & Matsuzawa, T. (2004). Food transfer between chimpanzee mothers and their infants. *Primates, 45*(4), 231-239.

Vaish, A., Carpenter, M., & Tomasello, M. (2009). Sympathy through affective perspective taking and its relation to prosocial behavior in toddlers. *Developmental Psychology, 45*(2), 534-543.

Vonk, J., Brosnan, S.F., Silk, J.B., Henrich, J., Richardson, A.S., Lambeth, S.P., Schapiro, S.J., & Povinelli, D.J. (2008). Chimpanzees do not take advantage of very low cost opportunities to deliver food to unrelated group members. *Animal Behavior, 75*(5), 1757-1770.

Warneken, F., Hare, B., Melis, A.P., Hanus, D., & Tomasello, M. (2007). Spontaneous altruism by chimpanzees and young children. *PLoS Biology, 5*(7), 1-7.

Warneken, F., & Tomasello, M. (2006). Altruistic helping in human infants and young chimpanzees. *Science, 311*(1301), 1301-1303.

Warneken, F., & Tomasello, M. (2009a). The roots of human altruism. *British Journal of Psychology, 100*, 455-471.

Warneken, F., & Tomasello, M. (2009b). Varieties of altruism in children and chimpanzees. *Trends in Cognitive Sciences, 13*(9), 397-402.

Warneken, F., & Tomasello, M. (2014). Extrinsic rewards undermine altruistic tendencies in 20-month-olds. *Developmental Psychology, 44*(6), 1785-1788.

Weinstein, N., & Ryan, R.M. (2010). When helping helps: Autonomous motivation for prosocial behavior and its influence on well-being for the helper and recipient. *Journal of Personality and Social Psychology, 98*(2), 222-244.

Wellman, H. (2010). Developing a theory of mind. In U. Goswami (Ed.), *The Blackwell handbook of childhood cognitive development* (2nd ed., pp. 258-284). Oxford: Blackwell.

Wellman, H.M., & Liu, D. (2004). Scaling of theory-of-mind tasks. *Child Development, 75*(2), 523-541.

Wellman, H.M., & Woolley, J.D. (1990). From simple desires to ordinary beliefs: The early development of everyday psychology. *Cognition, 35*(3), 245-275.

Wheeler, J.A., Gorey, K.M., & Greenblatt, B. (1998). The beneficial effects of volunteering for older volunteers and people they serve: A meta-analysis. *The International Journal of Aging and Human Development, 47*(1), 69-79.

Wilson, J., & Musick, M. (1999). The effects of volunteering on the volunteer. *Law and Contemporary Problems, 62*(4), 141-168.

Woodward, A.L. (1998). Infants selectively encode the goal object of an actor's reach. *Cognition, 69*(1), 1-34.

Woodward, A.L. (2009). Infants' grasp of others' intentions. *Current Directions in Psychological Science, 18*(1), 53-57.

Wu, Z., & Su, Y. (2013). Development of sharing in preschoolers in relation to theory of mind understanding. *Journal of Experimental Child Psychology, 120,* 73-86.

Yamamoto, S., Humle, T., & Tanaka, M. (2009). Chimpanzees help each other upon request. *PLoS ONE, 4*(10), 1-7.

Young, S.K., Fox, N.A., & Zahn-Waxler, C. (1999). The relations between temperament and empathy in 2-year-olds. *Developmental Psychology, 35*(5), 1189-1197.

Zahn-Waxler, C., & Smith, K.D. (1992). The development of prosocial behavior. In V.B. Van Hasselt & M. Hersen (Eds.), *Handbook of social development: A lifespan perspective* (pp. 229-256). New York, NY: Plenum.