

Preschoolers' Development of Intent-Based Moral Judgement and the Role of Theory of Mind

by

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A thesis submitted to the Faculty of Graduate and Postdoctoral Affairs in partial fulfillment of the requirements for the degree of

Master of Arts

in

Psychology

Carleton University

Ottawa, Ontario

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DEVELOPMENT OF INTENT-BASED MORAL JUDGEMENT

Abstract

The current study examined 4- and 5-year-old children's ability to use intention information in their moral judgements of story characters with identical, neutral intentions that produced different outcomes (one neutral and one negative). Children were presented with two story types: stories in which two characters are included, and stories in which only one character is presented. It was hypothesized that children would show more mature moral reasoning when they were given the chance to directly compare the characters, especially their matched intentions, when they are presented within a single story, compared to across stories. However, results revealed that children's moral ratings were less mature when presented with dual-character stories compared to single-character stories. On the other hand, children's assignment of punishment and identification of the characters' intentions did not differ depending on the story type. Performance on the task was also examined in relation to false belief understanding.

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Acknowledgements

I would like to thank my supervisor Dr. Deepthi Kamawar for all of the time and energy that she has invested in this thesis. Deepthi's support and guidance throughout this project has been invaluable, and her thoughtfulness, encouragement, and enthusiasm have made this such an enjoyable and extremely rewarding experience.

I would also like to thank Dr. Christine Koggel and Dr. Monique Sénéchal, for graciously agreeing to be on my committee. I very much appreciate their valuable feedback and suggestions.

I am also extremely grateful for the incredible support that I've received from my lab mates, Dr. Corrie Vendetti, Dr. Andrea Astle, and Dr. Gal Podjarny. These ladies welcomed me into their lab, and provided me with help and encouragement every step of the way. I couldn't have asked for more selfless, thoughtful and inspiring role-models, and friends. Also, thank you to Kate Carroll for her hard work and help with data collection.

I cannot thank my family and friends enough for their continuous and tremendous support. From listening to me ramble about my research, to photo-shopping paint palettes, I owe them many thanks. A very special thank-you to Mark Dimock, for being, not only the best tech-support out there, but also, incredibly patient and always willing to help. Thank you to my parents who are always there for me, and who have provided me with encouragement and motivation to pursue my goals.

Finally, thank you to the children, daycares and schools who participated in this research. Without them, this research would not have been possible, and certainly would not have been as much fun.

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Introduction

Considerations of people's intentions as motivating their behaviours typically inform the moral judgements we make of those actions. Such considerations affect our behaviour toward them, and our social interactions. For example, we judge someone who intentionally causes harm differently from someone who intends to help but causes the same amount of harm. We do so by appealing to the motivations driving both actions, and not just the outcomes themselves. In addition to considerations of intentions, there are other factors that affect such judgements, such as the nature of the outcomes that ensue, and the degree of foreseeability of those consequences (Nobes, Pnagiotaki & Pawson, 2009). Researchers have found that consideration of such factors changes through childhood (e.g., Jones & Thomson, 2001; Berndt & Berndt, 1975; Nelson, 1980). Initially, children place greater emphasis on the outcome of an event, relative to the intentions that motivated the event, when evaluating the actor (moral judgement; e.g., Piaget, 1965; Shultz, Wright & Shleifer, 1986; Farnill, 1974). The now classic example of this finding comes from Piaget (1965), when he asked children to morally evaluate two characters, one who is trying to help but causes a fair bit of damage and another who is misbehaving when he causes a relatively small amount of damage. He found that younger children judge the first character as having behaved worse than the second character; such a judgement reflects the greater consideration afforded to outcome. Piaget also found that as children develop, they become better able to make more mature moral judgements in which intention becomes the primary consideration in assigning moral ratings. More recent research has supported his claim regarding a shift from outcome-based judgements to intent-based judgements (e.g., Baird & Astington, 2004;

Cushman, Sheketoff, Wharton & Carey, 2013; Helwig, Zelazo & Wilson, 2001; Nobes et al., 2009; Zelazo, Helwig & Lau, 1996; etc.), though at younger ages than those reported by Piaget.

This ability to consider intentions, and not just outcomes, has been shown to have implications in terms of children's social competence (Wainryb & Brehl, 2006), as well as their tendencies to make more tolerant moral judgements of others (Wainryb & Ford, 1998). Therefore, the investigation of children's appreciation of the role of intentions in their evaluations of other's actions is an important area of study.

Researchers have investigated children's moral judgements by employing scenarios involving characters with different intentions (e.g., neutral vs. positive) paired with different outcomes (e.g., neutral vs. negative; see the literature review below) to examine children's relative consideration of these factors when evaluating characters. Specifically, children are typically told stories about a main character and a specific combination of intention and outcome. Children are then asked to make judgements about whether the action was intentional, and make moral evaluations, about that character. Then, additional combinations of intention and outcome are presented across stories, with judgements made about the main character after each story. Researchers then compare the moral ratings assigned to characters (i.e., particular intention/outcome pairings) *across* stories to draw inferences about children's relative weighting of these factors in their judgements (e.g., Nobes et al., 2009, Cushman et al., 2013, Jones & Thomson, 2001, Nelson, 1980, Zelazo, et al., 1996). For example, researchers sometimes use stories in which the outcomes across stories are held constant, while the characters' intentions differ (e.g., Berndt & Brendt, 1975). In such cases, a child might be told a

story about a character (Jane), who wanted to help clean up (positive intention) but accidentally drops the dishes on the ground, breaking them (negative outcome). Children would then be asked to make moral judgements about Jane. Children would then hear another story about a different character (say, Jill) who wanted to break the dishes (negative intention) and dropped the dishes on the ground (identical negative outcome as in the Jane story). Children would once again make judgements, but this time about Jill. Children's moral ratings for the two characters would then be compared to draw conclusions about children's considerations of intentions and/or outcome in their judgements. Following the example given above, if children give Jill a more negative moral rating than Jane, it would be inferred that children are taking intention into account, finding it less of a violation to accidentally damage dishes than to do so on purpose. But, if children give them the same moral rating, the inference would be that those children were primarily considering outcome in their judgements, and were not affected by the different intentions motivating the two characters.

Researchers have also used paradigms in which the intention is held constant while the outcomes in the story differ (Shiverick & Moore, 2007). For example, the story might include a character (Jack) who wanted to help clean up (positive intention) and put away all of the dishes (positive outcome). Children would then make judgements about Jack. Next, they would hear a story about a different character (Josh) who wanted to help clean up (identical positive intention) but accidentally dropped the dishes on the ground (negative outcome). Again, children would make judgements, and the same types of comparisons would be made about children's considerations of intentions and outcomes. In this example, if children rate both characters equally, it would be inferred that they are

taking intention into account. However, if children rate Josh more negatively than Jack, it suggests that they are primarily considering outcome. Thus, by varying the character's intentions and outcomes across stories, inferences can be drawn as to whether children appeal more to outcome or intention when making moral judgements.

In the literature, there seems to be the assumption that because the stories have been well matched and differ on only the critical component (e.g., a positive intention versus a negative intention), children's judgements *clearly* reflect the effect of that difference. This standard method is not without merit. It does provide a great deal of insight into when children switch from outcome-based to intent-based judgements and what story factors contribute to this change. However, I suggest, that although informative, this design likely underestimates young children's sensitivity to intention information because it is possible that these similarities are not necessarily obvious to young children, as they are not given the opportunity to *directly* compare the characters of differing intentions, actions, outcomes, etc. Instead, they judge each character, in a given story, independently and the researcher draws inferences about children's relative weighting of intention and outcome *across* stories.

I suggest an alternative approach that allows us to examine young children's judgements in situations where it should be easier for them to make direct comparisons. Specifically, I suggested that children should be presented with stories in which they hear about *both* characters together, who match on all factors but one (such as Jill and Jane from above). This could allow for a more direct comparison as the similarities and differences between the characters' intentions and outcomes would be more readily comparable. Such a change to the task, I hypothesized, would allow young children to

demonstrate more mature moral judgements (i.e., those that consider intention), relative to the standard ‘across story’ design.

The inclusion of two characters in a single story, to allow children to make more direct comparisons when assigning moral judgement, has been used in only one previously published study (to the best of my knowledge). Baird and Astington (2004), when investigating children’s ability to take into account mental states when providing moral evaluations of others’ actions, claimed that including two characters in the same story would result in a more “stringent test” (p. 39) of children’s ability to evaluate the characters, compared to when children are asked to make judgements across stories. However, Baird and Astington do not provide any evidence to support their claim, as they do not make a comparison across designs, nor do they provide an explanation for their claim. However, note that I am not making the same claim, as I do not argue that having two characters appear in the same story allows for a more *stringent* measure. Rather, I have suggested that having them together provides a clearer opportunity for young children to make direct comparisons between the characters, thereby making the similarities and differences more salient. Further, unlike Baird and Astington, I investigated this claim through empirical investigation.

While there is no direct support for the hypothesized advantage of including two characters in the same story with children, there is some research with adults that suggests that my expectation has merit. Research examining what is known as the *Side-Effect Effect* (Knobe, 2003) reveals an asymmetry in adults’ judgements of intentionality for two actors with the *same expressed intentions* and *actions*. What differs between them is whether a side-effect of the story characters’ action results in a negative or a

positive outcome (Sripada, 2012). In the classic story, participants hear about a CEO who intends to make profit with a new business plan, but is told that if this plan is implemented it will hurt the environment. The CEO states, “I don’t care at all about harming the environment. I just want to make as much profit as I can.” (Knobe, 2003, p. 191). The CEO implements the new business plan and makes profit, but also hurts the environment. Or, participants hear about a CEO who intends to make profit with a new business plan, but is told that if this plan is implemented it will help the environment. The CEO states, “I don’t care at all about helping the environment. I just want to make as much profit as I can.” (p. 191). The CEO implements the plan and makes profit, but also helps the environment. In both versions of the story, the CEO states a lack of caring in regards to the environment as well as identical intentions in terms of making profit. Then, participants are asked to judge whether the CEO intentionally harmed/helped the environment (varied by condition). A large majority of participants report that the actor whose actions resulted in a negative side-effect acted intentionally, while a small minority of participants report that the character whose actions resulted in a positive side-effect, did (Knobe, 2005).

This finding has been replicated many times (e.g., Beebe & Buckwater, 2010) and is striking; much has been made of this ‘asymmetry’ (for interpretations of this effect, see Scaife & Webber, 2013). Furthermore, in most studies examining this effect, participants hear only one of these stories (between-subject design), with no possibility of comparing the two characters directly (e.g., Dalbauer & Hergovich, 2013; Sripada, 2012; Hughes & Trafimow, 2012; Knobe, 2003, Knobe 2004; etc.). However, Cushman and Mele (2008) found an interesting order effect (with adults) when they ran a within-participant design

using both of these versions, counterbalancing order. When participants heard the positive side-effect story followed by the negative side-effect story, the asymmetry was significantly reduced, with more adults reporting that even in the negative outcome scenario, the actor did not intentionally harm the environment. In other words, adults' judgements of whether the actors behaved intentionally were more similar across stories, as many would expect.

The relevant implication from this study is that by simply presenting otherwise well-matched scenarios to participants in a way that allowed for a more direct comparison of story characters' motivations and actions, adults demonstrate more 'mature' (i.e., consistent) ascriptions of intention. Extrapolating from Cushman and Mele's (2008) findings is it plausible that children would benefit from the opportunity to make more direct comparisons of characters. However, for young children, who have more limited memories, such a comparison would likely need to be made *within* a story. That way, they would be better able to consider the similarities and differences between the characters, and possibly make more mature moral judgements (i.e., show an earlier shift from outcome based to intent based judgements) relative to when they are presented with information about only one character at a time.

The observed change from considering only outcome to relying more so on intention when making moral judgements (the outcome-to-intention shift) has been shown to be related to an increasing ability to consider mental states, which is known as the development of a Theory of Mind (e.g., Smetana, Jambon, Murray, & Sturge-Apple, 2012). It has been suggested that an understanding of mental states better enables children to consider the intentions of the story character, therefore allowing them to make

more mature moral judgements (e.g., Killen, Mulvey, Richardson, Jampol & Woodward, 2011; Fu, Killen, Xiao & Lee, 2014). Research has demonstrated that by approximately 5 years of age children have begun to consider intentions more than outcomes when making moral judgements (e.g., Liao, Li & Deak, 2011; Zelazo et al., 1996; Helwig, et al., 2001), and that their Theory of Mind (ToM) skills contribute to such considerations (Killen et al., 2011). However, with the one exception, the research reported thus far employs the practice of comparing characters across scenarios.

I have argued that examining children's moral judgements using scenarios that allow them to directly compare characters should allow for a better understanding of children's moral development, and their shift from outcome-based to intention-based reasoning. The age group of interest is children aged 4 to 5 years of age because during this age range children show substantial changes in terms of their consideration of intentions in moral ratings, as well as their development of Theory of Mind (e.g., Carlson & Moses, 2001; Wellman, Cross, & Watson, 2001). Therefore, studying this age group is particularly informative.

Prior to describing the method of the current research in detail, an overview of the most relevant research examining children's consideration of intention and outcome when making moral judgements will first be presented, with particular attention paid to the factors that have been shown to affect children's moral evaluations. Following this, the relationship between children's Theory of Mind and moral judgements will be discussed. Due to the complexity of the story-based situations that are presented to children in this type of research, it is important to take into account certain cognitive requirements that are expected to affect performance, such as working memory (i.e., the

ability to hold and manipulate information in mind; Garon, Bryson & Smith, 2008) and general language ability. Therefore, both of these constructs will be discussed. Finally, the current study, along with hypotheses, results and discussion, will be reported.

Children's Considerations of Intentions and Outcomes

Research on children's considerations of intentions and outcome in their moral judgements is extensive and has employed a variety of methods to examine the factors that influence such judgements. The most common approach used within the literature involves presenting children with stories in which the factors of interest are manipulated, and then asking for moral evaluations of the story characters. Some studies also ask for assignment of punishment to the characters as an indicator of moral reasoning (e.g., Nobes et al., 2009; Cushman et al., 2013; Killen et al., 2011; etc.). Although many factors have been studied in relation to children's moral development, the ones most relevant to this thesis are: intention, outcome, and foreseeability.

It was originally proposed that until approximately 7 to 8 years of age, children are not able to take into account an actor's intentions when assigning a moral evaluation. Rather, they were said to rely entirely on the outcome that the actor brought about (Piaget, 1965). For instance, when children were presented with a situation in which an actor accidentally made a large ink stain, compared to a situation in which an actor intentionally made a small ink stain, children under the age of 7 evaluated the actor who produced the more severe outcome more negatively (Piaget, 1965). Since these studies, many researchers have refuted aspects of this claim, presenting evidence that children are, in fact, able to take intentions into account at an earlier age when methods with a more structured manipulation of intention and outcome were employed. For example,

Armsby (1971) investigated 6-, 8-, and 10-year-olds' ability to consider intention in moral situations. To do this, story pairs that contrasted accidental and intentional acts were constructed. The consequence resulting from the intentional acts remained the same in each pair while four levels of outcome were varied for the accidental acts. Each child received four story pairs, each with a different level of outcome severity (e.g., a child who breaks one cup accidentally compared to a child who breaks 15 cups accidentally). When a given degree of outcome was compared across intentional and accidental scenarios, the vast majority of children made judgements that demonstrated a consideration of characters' intentions. An age trend was observed, with older children making more judgements based on intention compared to the younger children. However, even the youngest children were shown to make judgements using intention information 75% of the time (versus 95% for the older participants). This consideration of intentions in making moral judgements did change when the severity of the consequences were not matched within the pair. Specifically, as the outcome in the accidental story increased in severity compared to the intentional story, 6-year-old children were more likely to use outcome information to inform their moral judgement. This effect was said to be mixed for 8-year-olds whereas 10-year-olds did not differ in their use of intention information at varying levels of outcome.

This study provides evidence that children as young as 6 years old are able to take into account intention information in making moral judgements. It also shows that children become better able to consider intention information in the face of conflicting outcome information as they grow older, and that the severity of the outcome affects their judgements. However, the article did not provide a clear description of the method used

to obtain children's moral judgements, such as the questions that were asked or how the children responded.

Andrews et al. (2015) also varied the severity of the outcomes that the characters produced. In this study, the researchers were interested in examining whether the severity of the outcome (varied within subjects) affects moral evaluations in 4- to 5-year-old children. To do this, they used stories in which characters produced neutral, mildly negative or moderately negative outcomes, with either positive or negative intentions (varied between subjects). In this study children were asked about the characters' intentions, their moral rating of the character and whether they would assign the character punishment. For example, in one story, a little girl had made cookies and either wanted to share them (good intention) or did not want to share them (negative intention), and she dropped or threw the tray of cookies to the ground (respectively, by intention). The outcome varied such that no cookies broke (neutral), two broke (mildly negative), or eight broke (moderately negative).

Children identified the characters with negative intentions as having acted intentionally significantly more than the character with positive intentions. However, the children were also affected by the outcome that was produced such that when children were asked about the character's intentions after hearing stories about positively intentioned characters, they rated the characters as having acted accidentally significantly more often when the character produced a neutral outcome compared to a moderately negative outcome, whereas there was no difference in their ratings of intentionality between the mild and neutral outcomes or mild and moderate outcomes. When the character had a negative intention, characters that produced a neutral outcome were rated

as having acted accidentally significantly more than when the characters produced a mildly or moderately negative outcome.

In terms of children's moral judgements, children did not consider the characters' intentions when morally evaluating the characters. They did, however, consider outcome. Specifically, the children rated characters who produced neutral outcomes significantly more favourably compared to those who produced mildly or moderately negative outcomes, regardless of the intention motivating the action. Interestingly, children did consider intention when assigning punishment as they assigned more punishment to characters that had negative intentions. There was also an effect of outcome in terms of children's assignment of punishment such that children assigned significantly less punishment to characters that produced a neutral outcome compared to those who produced mildly and moderately negative outcomes, for both positive and negative intentions. Therefore, children's intention identification, moral judgement and punishment were differentially affected by the character's intentions and the outcomes that were produced. Additionally, it is clear that children were able to distinguish between different levels of outcome aside from just positive versus negative outcomes.

A study by Brendt and Brendt (1975) assessed children's moral judgements in a more systematic way than Armsby (1971). In this study, preschool, second grade and fifth grade children were shown videos and heard stories in which an actor produced a negative outcome either intentionally or unintentionally, and, with a positive or negative motive. Children were then asked to identify whether the actor had acted "on purpose" and to give moral judgements about the actors by rating them as: good, bad, or, a little good and a little bad. They found that preschool children were able to make the

distinction between intentional and unintentional actions; however, 2nd and 5th grade children were able to do so more consistently. They also found that for the stories in which the actor had a positive motive and acted unintentionally, moral evaluations became significantly more positive between preschool and second grade. In situations in which the actor had a negative motive and acted unintentionally, evaluations became significantly more positive between second and fifth grade. When the actor intentionally brought about the negative outcome, there were no significant age differences. Therefore, this study found evidence for a developmental increase in the understanding of intention in moral situations that seemed to influence the moral evaluations of the actors by the children. Different developmental patterns for stories where the intention and outcome were in conflict were observed, therefore requiring the integration of intention and outcome information rather than relying solely on outcome to make a “mature” moral evaluation.

This shift from outcome- to intent-based moral judgements has also been examined in younger children. Somewhat more recently, Zelazo, et al. (1996) told 3-, 4-, and 5-year-olds, as well as adults, stories in which a character had the intention to be good or mean while interacting with a make-believe animal. This allowed them to sometimes introduce the animal as one that liked to be hit because petting hurt its rubbery skin. The character performed the act of petting or hitting, which resulted in an outcome of the animal either crying (canonical response to hitting) or smiling (non-canonical response), depending on the condition. Thus, participants were required to consider information about intentions, actions and outcomes. Participants were then asked a series of questions including rating the acceptability of the character’s act (using a 5-point scale

consisting of faces ranging from a large smile to a large frown) and whether they thought the character should be punished, and if so, to what degree. Again, these results demonstrated an age-related shift towards being able to take into account intention when making moral judgements. Specifically, when asked to give a moral evaluation of the character's act, the effect of intention was only significant for the oldest groups (5-year-olds and adults). However, children at all ages predominately used outcome to assign judgement. Similar results were found for participants' assignment of punishment. Adults and 5-year-olds were more likely to assign punishment if both intention and outcome were negative, than for other combinations. The younger participants, on the other hand, used much simpler rules for assigning punishment (based on outcome and canonical notions of hitting being bad and petting being good). Therefore, this study provides evidence for the beginning of a shift from outcome- to intent-based moral judgements in 5-year-olds. However, it should be noted that the considerations required in this study were more complicated than in many used with this age group; children not only had to track intention and outcome information, but also had to consider fictional animals with atypical reactions to being pet and hit.

Much more recently, Cushman et al. (2013) proposed a two-process model which has gained support in the adult literature on moral development, and attempt to explain the general findings of children's outcome-to-intention shift using this model. This model involves two processes, one that takes into account the nature of the outcome and another that considers the intentions or mental state of the person who caused the outcome. In instances when these two processes do not match, such as when a negative outcome is caused by non-negative intention (i.e., an accident), a conflict occurs in making a moral

judgement. They proposed that the process involved in considering responsibility for the outcome assigns punishment, and the other ascribes a moral judgement based on the actor's mental states. In other words, their model predicts that moral judgements are made by considering the intentions motivating the action, while assigning punishment is based on considerations of outcome. However, they argue that in young children the two processes are not yet differentiated and therefore outcomes that are deemed punishable (those with a negative outcome) are automatically also considered morally wrong. They predict that when children start to rely more on intention to make moral judgements, the two processes become more differentiated and a difference between what is punishable and what is morally wrong can be observed. Furthermore, according to the model, intent-based judgements of moral wrongs should constrain children's assignment of punishment. Cushman et al. (2013) refer to this as the "constraint hypothesis" and tested this hypothesis by presenting 4- to 8-year-old children with two stories: one involving an accidental harm (a good intention with a negative outcome), and one involving an attempted harm (a negative intention with a good outcome). Following each story children were asked for their moral judgement and whether the character should be punished. The order in which children received each type of story, as well as the order they were asked each question was counterbalanced. The researchers employed four different story contents (e.g., an apple and a shopping basket, a ball in a bin, etc.). However, for reasons not explained in the article, children always received two stories with the *same* content. For example, if a child heard a story about a character that accidentally broke a mirror, the child would then hear a story about the same child attempting to break a mirror (but failing to do so).

Considering only the first story that the children heard (which the authors decided to do due to order effects that they deemed difficult to interpret), they found that as children aged, an outcome-to-intent shift was observed for judgements of accidental harms. This trend was not apparent in judgements of attempted harms. It was also shown that punishment ratings were more sensitive to outcome whereas moral judgements were more reliant on intention for all ages above 4 years. Thus, as children begin to pay more attention to intention, they also start to use outcome information more so for assignment of punishment compared to moral judgements, and they also begin to use intention information more so for moral judgements relative to assignment of punishment. This finding, they claim, supports the two-process model for their older children. Furthermore, Cushman et al. (2013) argue that they found evidence for the constraint hypothesis through significant question order effects such that participants were less likely to assign punishment in accidental situations when they had been asked to give a moral judgement before assigning punishment. Additionally, a mediation analysis revealed that moral judgements mediated participants' assignment of punishment; however, punishment did not mediate moral judgements. The author's interpreted this finding as evidence that developmental changes from outcome-to-intent based moral judgements constrain whether children assign punishment to accidental harms, thus, supporting the constraint hypothesis.

Although this study found support for the proposed model, there are a number of limitations that should be taken into account. Firstly, children heard only one story of each type which limits the reliability of their findings. Additionally, the two stories that the children heard were from the same story context. The similarities between the two

stories could be a cause for confusion as the children may have conflated the two stories. Furthermore, while they suggest that ToM understanding may contribute to the observed outcome-to-intent shift, this relation is not empirically investigated.

Research has demonstrated that children are capable of taking into account intention at a much younger age than was originally proposed by Piaget (1965), with this ability increasing from 3 until at least 8 years of age. So, while it has been established that children begin taking into account intention when making moral judgements from a relatively young age, this does not provide direct evidence that children's emerging understanding of mental states is related to changes in moral reasoning. Therefore, research investigating this relation will be described in the following section.

Moral Reasoning and Theory of Mind

An important aspect of making mature moral judgements is the ability to take into account the intentions of the actor who is being evaluated. For example, we would expect someone to be more upset with a person who intentionally spilled coffee on a new sweater than someone who had done so unintentionally (though we would likely be displeased in both situations). In order to differentially evaluate the actors in this example, both of whom ruined a sweater (i.e., brought about the same outcome), one must be able to consider the actor's mental states. The ability to consider mental states, whether one's own or another's, is broadly known as Theory of Mind (e.g., Premack & Woodroff, 1978; Wimmer & Perner, 1983).

A very relevant Theory of Mind (ToM) skill, for the research proposal presented here, is false belief understanding. This is an aspect of ToM that has been very well studied

(see Wellman, et al., 2001 for a meta-analysis). False belief tasks measure a child's ability to consider beliefs (their own or another's), and do so by using situations that are in conflict with what a child knows to be true (e.g., Wimmer & Perner, 1983). More generally, false belief tasks provide insight into whether a child understands that someone's behaviour is best understood on the basis of that person's beliefs (representations). This aspect of ToM is relevant because intentions, in contrast to outcomes, are mental states. Thus, false belief understanding is taken to provide an index of children's ability to consider others' mental states (e.g., intentions).

Generally, two types of false belief understanding are used to evaluate ToM understanding in relation to moral development: first- and second-order false belief understanding. In a standard first-order false belief task, a child hears about a character that places an object in one location (e.g., the cupboard) and then leaves the room. While that character is absent, someone else moves the object to another location (e.g., the fridge), and the first character then returns. Participants are asked where that first character will look for the object, and the answer to that question indicates whether the participant is predicting the character's behaviour by appealing to mental states or reality (non-mental). Answers indicating the first location (the cupboard) are interpreted as evidence that the participant recognizes that the character will act in accordance with her (false) belief. Answers indicating the second location (the fridge) are interpreted as evidence of the participant expecting the character to act in accordance with reality, and that the participant is not considering the character's mental representation of the world. Children typically succeed on this type of task at around 4 years of age (see Wellman et al., 2001 for details).

A more advanced aspect of ToM is second-order false belief reasoning. Second-order false belief understanding is the ability to consider someone's beliefs about another's beliefs (e.g., 'what does Jenny think Joe thinks?'). Given the recursion involved, this task is more difficult and is typically mastered around 5 to 6 years of age (e.g., Sullivan, Zaitchik & Tager-Flusberg, 1994). There is, however, variability in 4- to 5-year-olds' performance on these tasks, which justifies its use in the current study with this age group (Vendetti, 2015). In morally relevant situations it is often necessary to take into account not only the beliefs and intentions of another, but also what someone believes another person is thinking and feeling. This type of understanding would allow for more mature moral judgements to be made. Thus, this skill is relevant to the investigation of moral development and this has been reflected in the literature as many researchers have examined the relationship between moral reasoning and Theory of Mind. A selection of these articles will be described next.

In order to examine the relationship between moral reasoning and Theory of Mind, Baird and Astington (2004) told four-, five-, and seven-year-olds stories about characters that performed the same action with either a positive or negative intention (motive). The researchers indicated that they wanted to focus on considerations of intention, so they state that they did not provide outcome information. The authors claimed that using stories that included *both* characters side-by-side would be a more stringent assessment of children's ability to make moral evaluations and demonstrate their attention to intention. In their study, children heard stories that each involved two characters, one with a positive intention and one with a negative intention. In one story, they hear about a character who wants to help take care of her mother's garden by watering it with a hose

(positive intention) and another who wants to make her brother's sand castle collapse by watering it with a hose (negative intention). The story ended with both characters performing identical actions, in this case, turning on a hose. However, the researchers do not describe the ensuing outcome to the participants. They explain this decision by saying that they only wanted to focus on the characters' intentions, and not outcomes. However, the way in which the stories end, strongly suggest that the intended outcomes are brought about by the characters.

After hearing the stories, children were asked to morally evaluate each character by indicating which one of three coloured faces (good, bad and neutral) fit the characters' actions, and then had to qualify that choice by indicating whether the act was "a little" or "a lot" good/bad (resulting in a 5-point scale). Children were also asked whether they would assign punishment for each of them (if they would, they were asked to indicate whether the character should be punished "a little" or "a lot"). The researchers used the difference in ratings between their two characters as the dependent variable of interest, with larger differences indicating a greater sensitivity to intentions. The benefit of difference scores is that they are sensitive to the relative differences in judgements that the children make between characters at an individual level. That is, the accuracy of the child's rating is not determined by whether she evaluates the character in a way that is deemed correct *a priori*; rather, the difference score reveals the variance in ratings, regardless of the specific ratings given. This is important, for example, in situations in which a child might be inclined to rate all characters as somewhat positive, regardless of their intentions or the outcomes. Using difference scores in this situation would reveal

any difference in how the child has rated the two characters, despite the fact that the child might be somewhat reluctant to use the negative end of the rating scale.

The results from this study replicated the developmental trend found in previous work. Four-year-olds were significantly worse at differentiating between characters with good and bad motives compared to 5- and 7-year-olds, but no significant difference was found between the 5- and 7-year-olds. Punishment ratings followed the same pattern.

In order to examine these findings in relation to ToM, all children were given first-order false belief tasks, while the 7-year-olds also received second-order false belief tasks. Children's scores on both the first- and second-order false belief tasks were significantly correlated with the children's moral judgements as well as punishment assigned. In other words, there was a positive correlation between false belief understanding and moral judgements, indicating that better scores on false belief understanding was related to larger differences in moral judgements and punishment ratings between the characters with positive and negative motives. Therefore, this study provides evidence for the relationship between moral judgement and Theory of Mind.

Though their findings were supportive of the role ToM understanding in children's ability to take into account mental states when making moral judgements, there are some significant limitations. Firstly, despite Baird and Astington's argument that having two-character stories would be a 'more stringent' measure, in comparison to the typical one-character design, this was not tested so there is no evidence to support this claim. Furthermore, the authors claim that because they did not include outcome information in their stories, their study can be taken as evidence that children were better able to

correctly evaluate the characters' intentions at a younger age than is typically shown. However, they did include information about the intended (and expected) outcome, so their judgements are likely considering those outcomes. In other words, the participants might have been affected by the outcome information that the authors claimed to have removed from the stories. Given that the outcomes (positive versus negative) were congruent with the nature of the expressed intention, children's moral judgements of the characters would likely be similar whether the children were taking into consideration the characters' intentions, or whether they were simply considering outcome. Thus, it is difficult to disentangle the degree to which children's 'improved' performance was due to including two characters in the same story (giving them the opportunity to make direct comparisons between the characters) and the fact that outcome was suggested. Furthermore, this study included only 35 participants, with approximately 12 in each age group which limits the reliability of these findings.

Another study that examined the relationship between moral reasoning and Theory of Mind is Lane, Wellman, Olson, LaBounty and Kerr (2010)¹. Lane et al. (2010) used longitudinal data in order to examine how Theory of Mind understanding predicted moral reasoning. To do this, children were given multiple false belief tasks when they were approximately 3.5 years old and were then assessed two years later in terms of their moral reasoning, decision making, and false belief understanding. The task used to assess moral reasoning employed stories involving a moral dilemma and the child was asked to choose what the character in the story should do (forced choice) and to explain

¹ While this study also considered other variables, only the findings that are relevant to this thesis will be reported.

their decision. The researchers were interested in whether children made reference to the characters' psychological needs and affective states (e.g., "so [character] doesn't hurt his/her friend's feelings", p. 878). The results showed that the children's false belief understanding from the first time point (when they were 3.5 years old) was a significant predictor of reference to psychological needs in children's explanations of their decision in the moral dilemma two years later. Therefore, in situations in which children were required to evaluate and make decisions regarding moral dilemmas, the ability to produce responses that took into account the mental states of others was significantly, and positively, related to Theory of Mind understanding. These results highlight that Theory of Mind makes a contribution to moral reasoning.

Finally, Fu, et al. (2014) used a slightly different paradigm to demonstrate the shift from outcome- to intent-based moral judgements and its relation to Theory of Mind understanding. Fu et al. used a false belief task that incorporated morally relevant scenarios such that the character performed an accidental "moral transgression" due to his/her false belief (the character in the story always created the negative outcome unintentionally). In their task, children in China heard a story about a character that brings a cupcake to school, puts it in a paper bag and puts it on a table in the classroom to save it for later and then leaves to go play outside. Another character (the "moral transgressor") comes into the classroom to help the teacher clean up and throws away the paper bag containing the cupcake, thinking it was garbage². Children aged 4- to 7-years were asked a series of questions after hearing each of these stories. Children were asked

² This study also compared children's judgements of characters in a prototypical moral transgression story in which a character intentionally caused a negative outcome (e.g., pushing someone off of a swing), however, these details are not relevant to the current study.

to morally evaluate the character's intention by indicating on a 4-point likert scale whether the character thought he/she was doing something all right, or not all right. Children were also asked to evaluate the act itself by indicating whether they themselves thought the character's actions were "all right" or "not all right" using the same scale as above. Children were also given first- and second-order false belief tasks. Results showed that children's moral evaluations of the character's intentions became increasingly positive with age, replicating the outcome- to intent-based shift in moral judgements.

Children's performance on the second-order false belief tasks was related to their evaluations of the characters' intentions. Specifically, children with better scores on the second-order false belief task rated the character's intentions less negatively. However, there were mixed results in terms of the contribution of first-order false belief understanding. Two types of first-order false belief tasks were administered; the first of which was embedded in the morally relevant scenario and the second was a standard first-order false belief task. The results showed that the false belief task embedded within the scenario was related to evaluations of the character's intentions such that higher scores on this task were related to more positive ratings of the character's intentions. The standard first-order false belief task, however, was not a significant predictor of children's evaluations of intentions after controlling for age.

Children's evaluations of the characters' acts in the scenarios did not show the same pattern of results as their evaluations of the intentions motivating those acts. Evaluation of the act itself was not related to false belief understanding, nor age. However, it is possible that this was due to the manner in which this question was asked to the children.

Rather than asking the child if the character did something good or bad, as is typically used in the literature, children were asked if *they themselves* thought the action was “all right or not all right”. Asking the question in this way removes the need to use the character’s mental state information as it is focused on the act itself irrespective of the character’s intentions or beliefs. However, children received only one story to assess their ability to take into account intention when evaluating the actions of a character who accidentally commits a transgression, thus, limiting the reliability of the results. This study does, however, highlight the importance of theory of mind understanding in children’s moral reasoning; it also suggests that first- and second-order false belief understanding may play different roles in this development.

It is clear that the ability to take into account others’ mental states plays a role in children’s moral reasoning abilities, specifically in the shift from relying on outcomes to focusing on intentions when evaluating others’ behaviour. Therefore, the role of first- and second-order false belief understanding when evaluating children’s moral reasoning abilities was examined. There are, however, other cognitive skills that need to be considered in conjunction with ToM reasoning.

Contributing Cognitive Skills

Due to the complexity of the stories that children are required to follow and understand, it is important to ensure that differences in children’s performance, and relations across measures, is not simply due to the amount of information they are able to hold in mind. Furthermore, as the main tasks in this type of paradigm are very verbal (e.g., stories, instructions, etc.), it is also important to ensure that the effects found are not carried by variability in general language skills (i.e., that it is not the case that different

measures are spuriously correlated because they all rely on general language ability). Therefore, measures of working memory and receptive language need to be considered, and controlled, in the analyses. These constructs will be briefly reviewed in the following sections, as performance on these tasks is used as control variables in the analyses.

Working Memory. Working memory refers to the ability to hold and manipulate information in mind (Garon, Bryson & Smith, 2008). According to Baddeley (1986), there are two types of working memory: verbal and visuospatial. Verbal (phonological) working memory is responsible for the storage and rehearsal of verbal information. Visuospatial working memory holds mental images in mind. For the current study, children are required to keep in mind spoken story details, so verbal working memory is the relevant type to measure. More specifically, children must be able to hold and manipulate multiple story and character facts in mind in order to understand the story and then respond to questions. As this is often not a variable of interest within the types of studies reviewed, it is not clear the degree to which this skill plays a role in moral reasoning. However, it is important to control for verbal working memory as it could act as a confounding variable. Therefore, children received two working memory tasks; the listening recall task and the backward word task.

There exist a variety of tasks used to measure this skill in the age group of interest. For example, a commonly used task is the backward digit span (e.g., Davis & Pratt, 1996). In this task, children have to listen to a string of numbers given by the experimenter and repeat the numbers back in reverse order. The strings of numbers increase in length by one number every two trials. While this has been used with the age

group of interest, and in similar studies, there is another verbal working memory task that is more directly relevant. The *listening recall* task requires children to listen to a series of spoken sentences, and after each, respond “true” or “false” (Alloway, Gathercole & Pickering, 2006). Then, the child must recall the final word of each sentence in the set they just heard; in the order they were presented. The truth/falsity judgement ensures that children are processing the sentences in the set, and not simply attending to the final words. This task is particularly well suited to control for the current task demands because the current study requires children to keep story details in mind, while listening to more of the story.

In this task, children hear sets of sentences. Each set includes three trials with the same number of sentences. The first set consists of trials of one sentence, with each subsequent set size increasing by one until the maximum number of four sentences is reached. This continues until children fail to remember three trials within a set – at this point the task is ended (ceiling has been reached). Research has demonstrated a gradual increase in the number of words recalled with increasing age. Specifically, 4.5-year-olds were able to recall approximately 4 words (i.e., succeeded on sets of 4 sentences), 5.5-year-olds were able to recall approximately 6 words, and 6.5-year-olds were able to recall approximately 8 words (Alloway, et al., 2006). Thus, there is appropriate variability for the age group of interest.

Children also received a second working memory task, the *backward word* task. This task is similar to the backward digit span described above; however, words are used instead of digits. Specifically, children were shown cards with pictures of objects on them and were asked to identify them. Then, the cards were turned facedown so the

objects were no longer visible and the child was then asked to recall the items in reverse order. Requiring the children to recall the words in reverse order ensures that they are processing the words. Each set included two trials with the same number of words. The first set includes two words, with subsequent sets increasing by one. The task was ended when the child failed to correctly remember both trials in a particular set. Previous research has demonstrated that this is an appropriate task for use with the proposed age range (Carlson, et al., 2001).

General Receptive Language Skills. Given that the planned tasks are language-based, it is important to control for general language ability when examining the correlations between moral reasoning and Theory of Mind. Therefore, performance on the PPVT-III (Dunn & Dunn, 1997) was controlled for in the analyses. The PPVT is a standardized measure of receptive vocabulary (see method for details).

Present Study

Research on children's moral reasoning has established a number of important findings. It has been shown that children begin to take into account intention when making moral evaluations by around five years of age. This ability, however, increases with age and is initially affected primarily by considerations of outcome, but gradually switches to intention based judgements. However, it is possible that consideration of intention could appear at a younger age with the use of a different methodology. A number of studies have also presented strong evidence for the influence of false belief on children's moral reasoning (e.g., Fu et al., 2014; Killen et al., 2011; Smetana et al., 2012; etc.). Specifically, better false belief understanding has been related to more mature moral evaluations (i.e., taking into account intention). What has not been studied,

however, is whether children's ability to make moral evaluations improves when given the opportunity to directly compare characters' intentions and the outcomes that result from their actions. This research is of value because it provides insight into whether the dominant paradigm (one character per story, comparing across stories) *underestimates* young children's moral reasoning skills.

The main goal of the present study was to explore one way that the shift from outcome-based judgements to intent-based judgements may be facilitated. Firstly, children heard *dual-character stories* in which both characters have the same neutral intentions, perform identical actions, but bring about different outcomes (one neutral, one negative). This allowed the children to directly compare the actors (intentions, actions, and outcomes), which could make the similarities and differences between them more salient. After hearing each story, children answered comprehension questions, and were then asked to: (1) indicate whether the actions were intentional ('on purpose'); (2) morally rate each character; (3) and decide how much, if any, punishment to assign to each character. The difference in moral judgement ratings and punishment assignment for the two types of characters (neutral outcome and negative outcome), as well as accuracy on identification of intention, was calculated and used in the analyses. Because the characters' intentions (and overt actions) are identical, smaller differences in ratings between the two characters would signify more mature moral reasoning, as it demonstrates that children are taking into account intention rather than only considering outcome. As noted previously in regards to Baird and Astington (2004), difference scores are beneficial due to the fact that they are sensitive to the relative differences in

judgements that children make between characters at an individual level, therefore, they were used in the analyses.

To investigate whether this method revealed more mature reasoning than using the more traditional method, children's moral reasoning in these dual-character stories was compared to how they judged characters when they were presented in the typical format, namely individually in separate stories (*single-character stories*). The single-character stories are stories in which a single character is presented with a particular intention/outcome combination. In this example, this included a character with a neutral intention whose actions result in a neutral outcome and another story in which a different character also has a neutral intention but his/her actions result in a negative outcome. The difference and accuracy in children's ratings (moral judgement, punishment and identification) of the neutral intention/neutral outcome single-character stories and the neutral intention/negative outcome single-character stories were computed, and these scores were compared to the difference and accuracy scores computed for the same contrast presented in the dual-character stories.

The concepts of negligence and the foreseeability of the outcome have also been identified within the literature as potential factors that may affect children's moral reasoning (eg., Gall, 1985; Nobes et al., 2009; etc.). Therefore, to control for this, the characters in my stories were carefully matched (i.e., matched foreseeability and neutral, identical actions) on both of these factors so that judgements could not be made differentially relative to each other based on negligence or the foreseeability of the consequences.

To further investigate the potential benefit of presenting the characters together to make their matched intentions more obvious, question order was also manipulated. More specifically, participants were either given the intention identification questions before or after the moral judgement and punishment questions. This was done due to the possibility that being asked to indicate intention first could draw their attention to the fact that the character brought about the outcome unintentionally. It is likely that this would influence the child to evaluate characters who produced negative outcomes less severely compared to when the outcome is more salient than intention. The order in which the moral judgement and punishment questions are asked was fixed such that the moral judgement questions were asked first.

The second goal of this study was to gain a better understanding of the factors that contribute to the development of children's moral reasoning. Of specific interest is the role of ToM understanding in children's moral development. Children received first- and second-order false belief tasks in order to examine how ToM relates to children's moral reasoning in terms of their judgements of intention, moral judgements and assignment of punishment.

Hypotheses

1. The first set of hypotheses was that participants would be able to make more mature judgements when they were given the opportunity to directly compare the two characters. Recall that this would be evidenced by more similar judgements across the two characters and higher accuracy on intention questions when they appeared within a story compared to when they appeared across stories.

Differences were predicted because it was expected that the dual-character stories

would allow the child to directly compare the two characters, thereby noting their matched intentions. Additionally, it was predicted that the adult comparison group would not differ depending on the story type.

- a. It was hypothesized that accuracy on the intention questions would be significantly higher in the dual-character stories compared to the single-character stories.
 - b. Next, it was hypothesized that the difference in moral judgement ratings would be significantly smaller in dual-character stories compared to those for the single-character stories.
 - c. Lastly, it was hypothesized that the difference in punishment ratings would be significantly lower in dual-character stories compared to single-character stories.
2. The second set of hypotheses was that children's false belief understanding would be related to children's performance in both single- and dual-character stories (no specific predictions were made in regards to the difference between the types of stories). Given that research has demonstrated that a better false belief understanding is related to more mature moral reasoning due to the fact that an understanding of mental states is required to take others' intentions into account, this should be reflected in higher accuracy on intention questions as well as smaller differences in moral judgement and punishment ratings between characters (due to the fact that intentions are matched).

- a. Specifically, it was predicted that accuracy on intention questions would be significantly, positively correlated with false belief scores, controlling for age, working memory and receptive language abilities.
 - b. Next, it was predicted that difference scores in moral judgement ratings would be significantly, negatively correlated with false belief scores, controlling for age, working memory and receptive language abilities.
 - c. Finally, it was hypothesized that differences in punishment ratings would be significantly, negatively correlated with false belief scores, controlling for age, working memory and receptive language abilities.
3. The third set of hypotheses was that participants would demonstrate more mature judgements when they were asked to report on the characters' intentions before giving moral judgements and punishment ratings, as opposed to after (i.e., there will be an order effect for the questions). When the intention questions are asked prior to the moral judgement and punishment questions, the participant's attention may be drawn to the fact that the character brought about the outcome unintentionally. By having the participant commit to an ascription of intention, it is likely that this would then influence their moral judgement and punishment such that they would rate the character less negatively compared to when outcome is more salient.
 - a. It was hypothesized that the difference in moral judgement scores would be significantly smaller when participants are asked the intention questions first.

- b. Similarly, it was hypothesized that the difference in punishment ratings would be significantly smaller when participants are asked the intention questions first.

Method

Participants

A total of 95 four- and five-year-old children participated in the study; however, 15 children were excluded for failing to respond with the correct valence for moral judgements (i.e., not responding that the character who shared her crayons did something good) during the screener stories (four of these children experienced language barriers). An additional seven children were excluded due to having responded incorrectly, after three attempts, to at least one of the comprehension questions following each of the main stories. The remaining sample consisted of 72 children, between 47³ and 71 months of age with a mean age of 59.67 months and standard deviation of 0.47 (38 females). Further, one group of 20 adults (13 females) was recruited to participate to provide an adult comparison (through SONA and word-of-mouth).

Children were recruited from daycares and schools in the Ottawa area. Informed consent was obtained from the daycare coordinator or principal, as well as the parents of the children who participated in the study (see appendices G-L). Children were asked for verbal assent before participating and were informed that they may discontinue testing if they wished. Experimenters were also sensitive to whether children appeared

³ Note. Only two children were under 48 months of age, and each was within 1 week of their fourth birthday. Therefore they were treated as having met the age requirement of being four for the purposes of this study.

uncomfortable and discontinued testing if that was the case. Testing took place in quiet spaces in the daycares and schools, such as a corner in the classroom or in a hallway. The daycare and school teachers were given enough stickers for children in the class, regardless of their participation. Adult participants were recruited through the SONA system at Carleton University as well as through word of mouth. Informed consent was obtained from each participant.

Procedure

Children participated individually with an experimenter in a quiet space in their daycare or school. The two testing sessions each lasted for approximately 15-20 minutes. Across the sessions, participants completed the key task (the Stories Task), which consisted of nine stories: three screener stories, two dual-character stories, two single-character stories with a neutral outcome, and two single-character stories with a negative outcome. After the screeners, the stories were presented to children in sets of two, separated by the remaining tasks. Each set of two consisted of either two dual-character stories, or a single-character neutral story and a single-character negative story. Therefore, the sets were fairly well matched because each type of outcome appeared in each set. The order in which children were presented with the neutral and negative outcomes was counterbalanced between subjects. Further, whether children were presented with the dual- or single-character stories first was counterbalanced between participants. All other tasks were presented in a fixed order: first-order false belief (2 tasks), working memory (backward word), second-order false belief (2 tasks), working memory (listening recall task) and the receptive vocabulary measure (PPVT).

Measures

Stories Task. Children were presented with a total of nine stories in this task. The first three were always screener stories that were used to familiarize the children with the moral judgement and punishment questions that were used during the main Stories task (for story details and questions refer to Appendix C). In addition to familiarizing the children with the task, the purpose of the screener stories was to ensure that children were comfortable with, and had some familiarity with the moral judgement and punishment rating questions. Further, they established that the participants were able to appropriately evaluate characters that perform good, bad, and neutral actions, in straightforward scenarios. Furthermore, the screener was used to make sure that the children were able to comprehend simple story details. If children did not respond correctly to the comprehension questions within the screener, feedback was given and relevant story information was presented again. If children were unable to respond correctly after three attempts, testing was discontinued.

The screener included simple stories involving characters that performed characteristically ‘good’, ‘bad’, or ‘neutral’ actions (i.e., sharing crayons, stealing a ball, playing with a toy; See Appendix A for stories). For example, in the ‘good action’ screener story, children heard “This is Harper and this is Morgan. Harper is drawing a picture with her crayons. Morgan doesn’t have anything to colour with so Harper decides to share her crayons with Morgan.” Children were then asked the same series of questions as the test stories (see below): comprehension questions (“Were they eating a snack? Did Morgan share her crayons?”); moral judgement question (“Think about Morgan. Did Morgan do something good/bad?”) If ‘yes’, this was followed with, “How

good/bad? A little or a lot?”; punishment question (“Think about Morgan. Should Morgan get in trouble?” If ‘yes’, this was followed with, “How much? A little or a lot?”).

The six remaining stories were divided into three different Story Types, with two of each kind. There were six different story contents (i.e., story situations). In all stories, the characters were matched in terms of their intentions (which were neutral) and in terms of the foreseeability of the outcome (equally foreseeable). The first Story Type, which has been referred to as *dual-character stories*, involved two characters that had the same intention, the same knowledge about the situation, and performed the same action. However, they differed in terms of the outcome produced by each character’s action. Specifically, one character produced a negative outcome while the other produced a neutral outcome, but the details were otherwise identical. The next two types of stories are in line with the standard type of paradigm used in this area. In each, there was a single character of interest. In one type, which will be referred to as the *single-character-negative stories*, there was a single character that brought about a negative outcome, motivated by a neutral intention. In the other type, *single-character-neutral*, there was a single character who produced a neutral outcome. In all stories the characters had matched neutral intentions. For both story types, the order of presentation (character that causes a negative outcome first or second) was counterbalanced.

So as to not confound the Story Types (dual-character, single-neutral, and single-negative) with specific situations, the story contents were crossed with Story Type. That way, the results cannot be said to be due to some transgressions being considered ‘naughtier’ than others, for example. Three different combinations were used, such that

each content appears equally for each Story Type, and this was counterbalanced across participants (see Appendix F for combinations).

Following each illustrated story (photos of Playmobil dolls, see Appendix C), children were asked comprehension questions, questions about characters' intentions, to make moral judgement, and assign punishment. An example of each type of story and the corresponding questions are presented in Table 1. Each story included either one or two characters depending on whether it was a single- or dual-character story, respectively. All of the remaining story details were matched across stories, excluding the critical difference of outcome (see below). In each story the general setting and intention (i.e. neutral) of the characters was introduced. Next, the foreseeability of the situation was explained (e.g. Mark doesn't know what's up there), followed by the characters' actions. The characters' actions all resulted in some type of consequence (e.g. the plate of cookies falls), however, the final outcome differed and was either neutral (e.g. no cookies break) or negative (e.g. five cookies break). In the dual-character stories, one character's actions resulted in the neutral outcome while the other character's actions resulted in the negative outcome. For the single-character stories, children heard two stories in which a neutral outcome takes place (single-character-neutral) and an additional two stories in which a negative outcome takes place (single-character-negative). Following each story, children were asked comprehension questions, intention questions, moral judgement questions and punishment questions as outlined in Table 1. Comprehension questions ensured that the child had understood the relevant story details. If the child answered the questions incorrectly, the relevant story details were highlighted and the questions were asked again. This was repeated up to three times. If the child failed to answer the

comprehension questions correctly after three times, testing continued, as responses for that story were initially to be entered as missing data. However, upon further reflection, missing data on one of the stories would result in the moral judgement and punishment scores being calculated very differently compared to those without missing data. Therefore, children who failed to answer one or more comprehension question correctly after three times were excluded from the analysis (this resulted in 7 children being excluded). The intention questions were either presented before or after the moral judgement and punishment questions. The order in which the punishment and moral judgement questions were presented was fixed such that the moral judgement questions were presented before the punishment questions.

Table 1
Stories Task Examples and Structure

Components	Napkin Story: Dual-Character Version	Napkin Story: Single-Character-Neutral Version	Napkin Story: Single-Character-Negative Version
Introduction and intention	This is Finn and this is Mark. They are having a snack and they each need a napkin so they both go over to the shelf to grab some napkins.	This is Finn. He is having a snack and he needs a napkin so he goes over to the shelf to grab a napkin.	This is Mark. He is having a snack and he needs a napkin so he goes over to the shelf to grab a napkin.
Foreseeability	Finn and Mark don't know what's up there.	Finn doesn't know what's up there.	Mark doesn't know what's up there.
Action	Finn and Mark each grab a napkin from the shelf.	Finn grabs a napkin from the shelf.	Mark grabs a napkin from the shelf.
Consequence matched	But look, there's a plate of cookies on top of each napkin and the plates fell.	But look, there's a plate of cookies on top of the napkin and the plates fell.	But look, there's a plate of cookies on top of the napkin and the plate fell.
Neutral	Look at Finn, when this plate fell, none of the cookies were ruined.	Look at Finn, when this plate fell, none of the cookies were ruined.	---
Negative	Look at Mark, when this plate fell, 5 of the cookies were ruined.	----	Look at Mark, when this plate fell, 5 of the cookies were ruined.
Comprehension	1a. Did Finn need a napkin?	1a. Did Finn need a napkin?	1b. Did Mark need a napkin?

	2a. Before he pulled the napkin, did Finn see the cookies up there?	2a. Before he pulled the napkin, did Finn see the cookies up there?	2b. Before he pulled the napkin, did Mark see the cookies up there?
	1b. Did Mark need a napkin?		
	2b. Before he pulled the napkin, did Mark see the cookies up there?		
Intent	3a. Did Finn pull the napkin on purpose?	3a. Did Finn pull the napkin on purpose?	3b. Did Mark pull the napkin on purpose?
	4a. Did Finn make the plate of cookies fall on purpose?	4a. Did Finn make the plate of cookies fall on purpose?	4b. Did Mark make the plate of cookies fall on purpose?
	3b. Did Mark pull the napkin on purpose?		
	4b. Did Mark make the plate of cookies fall on purpose?		
Moral Judgement Punishment	5a. Think about Finn. Did Finn do something good ⁴ ? (if yes) How good, a little or a lot? Did Finn do something bad? (if yes) how bad, a little or a lot?	5a. Think about Finn. Did Finn do something good? (if yes) How good, a little or a lot? Did Finn do something bad? (if yes) how bad, a little or a lot?	5b. Think about Mark. Did Mark do something good? (if yes) How good, a little or a lot? Did Mark do something bad? (if yes) how bad, a little or a lot?

⁴ Note: The order in which children were asked if characters “did something good” or “bad” was counterbalanced.

6a. Should Finn get in trouble?
(if yes) How much trouble, a little or a lot?

5b. Think about Mark. Did Mark do something good? (if yes) How good, a little or a lot? Did Mark do something bad? (if yes) how bad, a little or a lot?

6b. Should Mark get in trouble? (if yes) How much trouble, a little or a lot?

6a. Think about Finn.
Should Finn get in trouble? (if yes) How much trouble, a little or a lot?

6b. Think about Mark. Should Mark get in trouble? (if yes) How much trouble, a little or a lot?

For the Intention questions, originally children were to receive a score of 1 if they were able to correctly answer both intention questions regarding a single character (3a and 4a, or 3b and 4b) and a score of 0 otherwise. However, upon further reflection, I decided to use only the second intention question in the analyses (i.e. “Did Mark drop the plate of cookies on purpose?”) for a number of reasons. Having a contingent score in which children must give two correct answers is overly stringent when compared to the moral judgement and punishment questions which require only one response. Furthermore, the second question is the critical component that must be understood in order for the child to interpret the action as accidental. Whether they answer correctly or incorrectly to the first question (i.e. “Did Mark pull the napkin on purpose?”) does not affect the child’s understanding of the situation as having been unintentional. Therefore, children received one point for each correct answer to question 4, and within each Story Type, the scores for the two characters were summed. The same procedure took place for both trials of each type of story and the scores were summed such that intention scores between single- and dual-character stories could be compared. These scores were used in the analyses.

Scores for moral judgement and punishment questions were handled in the same way. First, the difference scores between the ratings given for the characters producing neutral from those producing negative outcomes were computed. Difference scores were then summed, and averaged (divided by two) across Story Type.

Moral judgement ratings range from -2 to +2 (per story, per character), with more critical ratings of the characters corresponding to more negative numbers. The difference in ratings was calculated for each story (or story pair in the case of the single-character stories) by subtracting the score assigned to the character producing the neutral outcome

from that given to the character producing the negative outcome. The difference scores were then summed by Story Type and averaged. These scores were used in the analyses.

Punishment ratings range from 0 - 2 (per story, per character). The difference, and summed difference, scores were calculated as described above, for the moral judgement scores (i.e., averages across Story Type were calculated). These scores were used in the analyses.

First-order False Belief. Children were given two first-order false belief tasks. In one task (adapted from Wimmer & Perner, 1983), children were told a story in which two characters are both aware of the initial location of an object. However, one character is unaware that the object has been moved from one place to another and therefore has a mistaken belief about reality. For example, “Jill was playing with a ball. When she was done playing with it, she put it in the white box and then she went outside, while Jill was outside, her friend Peter came along. Peter found the ball in the white box and he played with it for a while. When he was done, he put it in the polka dot box and then he went home for lunch.” Children were then asked memory questions about the ball’s initial location and where the ball is in reality. Then the test question was asked about the character with a false belief, “Where will Jill look for the ball?”. If the memory, reality, and belief questions were all answered correctly, children receive a point for this task.

In the other first-order false belief task (adapted from Gopnik & Astington, 1988), children were presented with a cardboard Crayola box and are asked, “What’s in here?”. The box was then opened to reveal to the child that there is a plastic pig (an unexpected item) in the box instead of crayons. The researcher commented, “Yeah! A pig! That’s

interesting isn't it? I just put it in this box to keep it safe. Well, let's put him back in to the box now...". The pig was placed back inside the box, and the box was closed. Children were then asked, "What's in the box?" (reality question) and "What did you think was in the box before we opened it?" (false belief-self). Finally, children were asked, "Tomorrow, we are going to a different daycare, and we're going to play this game with a little boy/girl named Jimmy/Betty there. What will s/he think is inside the box before s/he opens it?" (false belief-other). Children received one point if they are able to correctly answer the reality question, and the false belief-self question. Children received an additional point if they are able to correctly answer reality question and the false belief-other question. The scores across the tasks are summed for a total false belief scores ranging from 0-3, and these scores were used in the analyses.

Second-order False Belief. Children were given two second-order false belief tasks. In the first task, children were told a story about two characters. Both characters in the story are aware of the location of an object and are aware that it has been moved from one place to another. One character, however, has a mistaken belief about the other character's knowledge about the location of the object. For example, "Molly and Andrew are doing their homework in the kitchen. Molly made some cookies for them to share. Andrew wants to eat the cookies, but Molly doesn't want to. Molly needs to ask her dad a question about her homework. She puts the plate of cookies in the fridge and leaves the room. While Molly is gone, Andrew gets the plate of cookies and eats one of them. Then he puts the plate of cookies in the cupboard. Molly is finished asking her dada questions and she comes back. She sees Andrew putting the plate of cookies in the cupboard. Molly watches Andrew, but Andrew does not see Molly." Next, children were

asked questions about the object's initial location (memory question) and where the object was in reality. They were then asked: "Does Molly know where the cookies are now?" and the second-order false belief question, "Where does Andrew think Molly will look for the cookies?" (adapted from Sullivan et al., 1994; Loke, 2010). If children were able to pass the memory and reality questions, and both belief questions, they receive one point, for scores of 0 or 1. The next second-order false belief task followed the same structure with different objects and character names (see Appendix D). Scoring was also the same, and a composite score was created by summing the two scores, resulting in scores from 0-2 being possible for the total second-order false belief score. This score was to be used in the analyses. However, children were found to have performed at floor on the second-order false belief scores (mean = 0.5), therefore, these scores were not used within the analyses.

Working Memory Tasks. Children received two measures of working memory.

Listening recall task. This task requires children to hold and manipulate verbal information in mind. Performance on this task was used in order to measure children's relevant working memory ability and partial it out of analyses. Also, it has been used with the age ranges included in the present study (Alloway, et al., 2006). Following Alloway et al. (2006), children were given a series of sets of sentences and were required to respond "true" or "false" to each. Then, children were asked to recall the last word of each sentence in that set. Each set includes three trials. The first set included three trials of one sentence. Then, the number of sentences per trial increases by one, by set. The task is discontinued when the child fails all three trials in a given set. Consistent with Alloway et al. 2006, children received one point for each final word they were able to

correctly recall, regardless of the order in which they recalled it. This score was used in the analyses.

Backward word task. This is a measure that is also used to measure children's ability to hold and manipulate verbal information in mind. Performance on this task was used in order to measure children's relevant working memory ability and partial it out of analyses. This task has also been used with the age ranges included in the present study (Carlson, Moses & Breton, 2002). Based on Carlson et al. (2002), children were shown one card at a time and asked to name it. After the child identified each card, it was placed face down in front of her/him. Once all the cards in that trial had been named (and are no longer visible), the child was asked to name the items in "backward order". Each set included two trials with the same number of items, with two words in the first set. The number of items in each trial increased by one, by set, up to a maximum of five. Testing continued until the child was unable to recall both trials in a single set. Children received 0.5 for each correct trial, for a score out of four. This score was used in the analyses.

Peabody Picture Vocabulary Test – Third Edition (PPVT-III; Dunn & Dunn, 1997). This task is a standardized measure of receptive vocabulary, and was administered in accordance with the testing manual. In this task, children were presented with an array of pictures and had to indicate which picture best fit the word that the experimenter says. Training trials were administered before starting the task in which feedback was given. All children continued on to the test trials regardless of their performance on the training trials. During testing trials no feedback was issued. The difficulty of the words given by the experimenter increased as the task went on. The

PPVT-III is arranged into blocks of 12 words. The formal basal and ceiling rules dictate where testing begins and ends. If the child erred eight or more times in a single block the task was stopped. Standardized scores, in which age is accounted for, were used in all analyses.

Results

Prior to conducting the main hypotheses, preliminary examination of the data was checked to make sure that the assumptions were met for the analyses conducted. In terms of the mixed-design multivariate analysis of variance (MANOVA), the assumption of multivariate normality is met if sample sizes are roughly equal, or if there are at least 20 degrees of freedom for the between-participant error term, and if two-tailed tests are used (Tabachnick & Fidell, 2007, p. 373). Sample sizes on all variables were very close to equal, with the exception of the two different age groups ($N = 72$ for children and $N = 20$ for adults). However, the adult age group was used only as a baseline and were expected to perform at ceiling on the task. Inspection of the homogeneity of covariance with a Levene's test of homogeneity of variance revealed that the variances within each dependent variable were significantly different: dual-character intention identification, $F(3, 88) = 19.00, p < .001$; single-character intention identification, $F(3, 88) = 11.37, p < .001$; dual-character moral judgement, $F(3, 88) = 14.78, p < .001$; single-character moral judgement, $F(3, 88) = 8.91, p < .001$; dual-character punishment, $F(3, 88) = 20.13, p < .001$; single-character punishment, $F(3, 88) = 6.83, p < .001$. Because the univariate tests were significant, the assumption of homogeneity of covariance was violated. Therefore, Hotelling's T^2 statistic was used to report the results, as it is robust to this violation (Field, 2009). In terms of the assumptions for the partial correlations, the

normality of the sampling distribution was satisfied as the variables tested were from samples larger than 40, and were without the presence of outliers (e.g., Field 2009; Tabachnick & Fidell, 2007).

Preliminary inspection of the data for order effects was conducted using a mixed-design MANOVA which included the three dependent variables (intention identification, moral judgement, and punishment). Independent variables included story type (dual-character- versus single-character-stories) as a within-subject variable, age group (adult versus child) as a between subject variable, and three orders⁵ which were each between-subject variables. The three orders included were: whether the participant was asked if the character did something “good” before or after she was asked if the character did something “bad”; whether the participant was asked about the character producing a negative or neutral outcome first; and finally whether the participant was presented with the dual-character stories before or after the single-character stories. This analysis revealed that there were no significant order effects, nor interaction effects (all $p > .14$); therefore, these orders were not considered in the subsequent analyses. Performance across the cognitive measures (not including main task) can be found below in Table 2. Means and standard deviations for the three dependent variables, across story types, can be found below in Table 3.

⁵ Note that the question order of intention questions, moral judgement, and punishment questions was not included here, as there were specific hypotheses regarding this order.

Table 2
Descriptive Statistics for Cognitive Measures

Variable	Mean (SD)	Range
First-Order False Belief (out of three)	1.88 (1.07)	3.00
Second-Order False Belief (out of two)	0.51 (0.75)	2.00
Backward Word (0.5 points for each word recalled)	0.90 (0.60)	2.00
Listening Recall (1 point for each word recalled)	2.90 (2.24)	9.00
PPVT (standardized score)	110.00 (12.14)	62.00

Note. N = 72.

Main Analyses

In order to compare children's and adults' performance on dual- and single-character stories, as well as the order of questions of interest in the main hypotheses, a mixed-design MANOVA was conducted. Three dependent variables were included in the analysis: accuracy of intention identification, moral judgement difference scores, and punishment difference scores (refer to page 43 for explanation of how these difference scores were calculated). Story type (dual- versus single-character stories) was included as a within-subject variable, with age group (adult versus child) and question order (whether the participant was asked for a moral judgement of the character before or after being asked to identify the character's intention) included as between-subject variables.

The first set of hypotheses was that children would be able to make more mature moral judgements when they were given the opportunity to directly compare two characters in the dual-character stories, compared to single-character stories. Recall that

this would be evidenced by more similar ratings across the two characters in terms of moral judgement and punishment (i.e., smaller difference scores), and higher accuracy on intentions questions. Furthermore, it was predicted that adults would not be affected by the story type. The analysis revealed that this hypothesis was partially supported. Using Hotelling's T² statistic, there was a significant effect of story type, $T = .12, F(3, 86) = 3.07, p = .032$. There was also a significant effect of age group, $T = .39, F(3, 86) = 11.34, p < .001$. These main effects were qualified by a significant interaction between story type and age group, $T = .12, F(3, 86) = 3.55, p = .018$. Means and standard deviations can be found in Table 3.

To interpret the significant interaction, univariate analyses of variance (ANOVAs) were run for each dependent variable, with age group and story type included as independent variables. These analyses revealed that the interaction between story type and age group was significant only for the moral judgement ratings, $F(1, 88) = 8.58, p = .004$. To follow-up this significant interaction, paired-sample t-tests were run. These t-tests revealed that, in direct contrast to the hypothesis, children's difference scores for moral judgement were significantly *larger* for dual-character-stories than for single-character-stories, $t(71) = -5.54, p = .003$. There was no significant difference across the two story types for adults (adults were near ceiling across all story types; refer to Table 3).

In addition to this interaction effect, the univariate ANOVAs also revealed that there were significant main effects of age group on intention identification, and punishment. Specifically, adults were significantly more accurate than children in identifying the characters' intentions, $F(1, 88) = 14.28, p < .001$. Finally, adults had

significantly smaller difference scores in terms of their punishment ratings compared to children, $F(1, 88) = 9.12, p = .003$.

Table 3

Means and Standard Deviations for Age Group by Story Type on Intention Identification, Moral Judgement and Punishment

Story Type	Dependent Variable	Child	Adult
		Mean (SD)	Mean (SD)
Dual-Character	Intention Identification (accuracy)	2.82 (1.34)	4.00 (0.00)
	Moral Judgement (difference score)	-1.76 (1.35)	-0.05 (0.22)
	Punishment(difference score)	0.56 (0.76)	0.03 (0.11)
Single-Character	Intention Identification (accuracy)	2.70 (1.52)	3.85 (0.67)
	Moral Judgement (difference score)	-0.81 (1.12)	-0.08 (0.29)
	Punishment (difference score)	0.40 (0.65)	0.08 (0.18)

Recall that the second set of hypotheses predicted that false belief understanding would be correlated with children's moral ratings such that children who had higher false belief scores would have higher accuracy on intention identification, and smaller difference scores for both moral judgement and punishment ratings (after partialing out performance on the control measures). In order to address this hypothesis, correlations between the variables were examined. The partial correlations were calculated between first-order false belief and each of the dependent variables, for each story type. Story types were investigated separately due to the significant effect of story type found in the

previous analysis. Standardized PPVT scores (which incorporate age), as well as working memory scores on the Backward Word task and Listening Recall task were statistically controlled in the analysis. A significant, positive partial correlation was found between false belief understanding and accuracy of intention identification for both single- and dual-character stories, such that children with higher false belief scores had higher accuracy in identifying intention, $pr(70) = .36, p = .003$, and $pr(70) = .29, p = .018$, respectively. First-order false belief did not correlate significantly with moral judgement nor punishment after controlling for PPVT scores and both working memory measures. Therefore, the second hypothesis was only partially supported.

Finally, the third set of hypotheses predicted that participants would be more accurate in their identification of intention, and have smaller difference scores for their moral judgement and punishment ratings when they were presented with the intention questions prior to the moral judgement and punishment questions. The results from the previous MANOVA (see page 51) revealed that there was not a significant effect of question order, $T = .01, F(3, 86) = 0.258, p = .86$ (n.s.). Therefore, there was no support for the third set of hypotheses.

Additional Analyses

Throughout the process of data collection, additional research questions arose. One such question was whether the dependent variables were significantly related to each other. Partial correlations from the above analysis address this question. Another question was whether children's intention identification, moral judgement and punishment ascriptions were affected by the outcome of the situation (i.e., negative vs. neutral outcome). This question was tested using three t-tests. A Bonferroni correction

was applied to the alpha level in order to account for the family-wise error associated with running 12 additional tests (i.e., additional correlations and t-tests). Therefore, the alpha level used for the additional analyses was .0042.

Firstly, within each dependent variable, performance for dual- and single-character stories correlated with each other (with working memory and PPVT included as control variables; see Table 4 for partial correlations). Specifically: (1) dual- and single-character stories were positively correlated in terms of accuracy of intention identification; (2) dual- and single-character stories were positively correlated in terms of moral judgement ratings; and (3) dual- and single-character stories were positively correlated in terms of punishment. Additionally, it was of interest whether the three dependent variables would be related to each other (above and beyond WM and PPVT). Again, because there was an effect of story type found in previous analyses, the dependent variables were considered separately for each story type. A significant, negative partial correlation was found between moral judgement and punishment ratings for dual-character stories. A significant, negative partial correlation was also found between moral judgement and punishment ratings for single-character stories such that the more children were affected by outcome in their moral judgements, the more they were affected by outcome in their assignment of punishment. A marginally significant negative partial correlation was found between intention identification accuracy and punishment ratings for dual-character-stories such that the more accurately children ascribed intention, the less differently that children would assign punishment. All other partial correlations were found to be non-significant after controlling for PPVT and the working memory measures.

Table 4
Partial Correlations between the Dependent Variables

Variables	Partial Correlation (<i>pr</i> , p-value)
Intention Identification: Dual-Character and Single-Character	.71 (<i>p</i> < .001)*
Moral Judgement: Dual-Character and Single-Character	.43 (<i>p</i> < .001)*
Punishment: Dual-Character and Single-Character	.63 (<i>p</i> < .001)*
Dual-Character: Intention Identification and Moral Judgement	.22 (<i>p</i> = .08)
Dual-Character: Intention Identification and Punishment	-.34 (<i>p</i> = .005)
Dual-Character: Moral Judgement and Punishment	-.71 (<i>p</i> < .001)*
Single-Character: Intention Identification and Moral Judgement	.04 (<i>p</i> = .77)
Single-Character: Intention Identification and Punishment	-.19 (<i>p</i> = .12)
Single-Character: Moral Judgement and Punishment	-.69 (<i>p</i> < .001)*

Note. * $p < .0045$, two-tailed, $df = 66$, controlling for working memory performance on backward word task and listening recall task, as well as standardized PPVT scores.

Another question of interest was whether children's judgements were affected by the outcome of the situations. In order to examine whether children's identification of

intention varied depending on the outcome that the character produced, a paired-samples t-test was run on their accuracy scores for both types of outcome, collapsing across story types (recall the lack of a story type effect for this variable). The results revealed that children were significantly more accurate in terms of their identification of intention when the character produced a neutral outcome (mean = 3.18) compared to when the character produced a negative outcome (mean = 2.40), $t(71) = 5.55, p < .001$. In other words, they were more likely to say an action was intentional when it led to a negative outcome than when it led to a neutral one. For moral judgement ratings, each story type was examined separately due to the effect of story type for this variable (see the interaction described above). Recall that assigning the characters producing neutral and negative outcomes equal moral ratings would result in difference scores of 0. Results revealed that for both dual- and single-character stories, children's moral judgement ratings differed significantly from 0. Two one-sample t-test were run and revealed that children's difference scores did differ from 0, $t(71) = -11.02, p < .001$, and $t(71) = -5.75, p < .001$, respectively. For both story types, children rated characters producing neutral outcomes more favourably compared to those producing negative outcomes. In terms of children's punishment ratings, again assigning the characters producing neutral and negative outcomes equal punishment would result in difference scores of 0. A one-sample t-test was run (collapsing across story types) comparing difference scores to 0, and the results revealed that they did differ significantly from 0, $t(71) = 6.49, p < .001$. Specifically, children assigned the character producing a negative outcome more punishment than the character producing a neutral outcome.

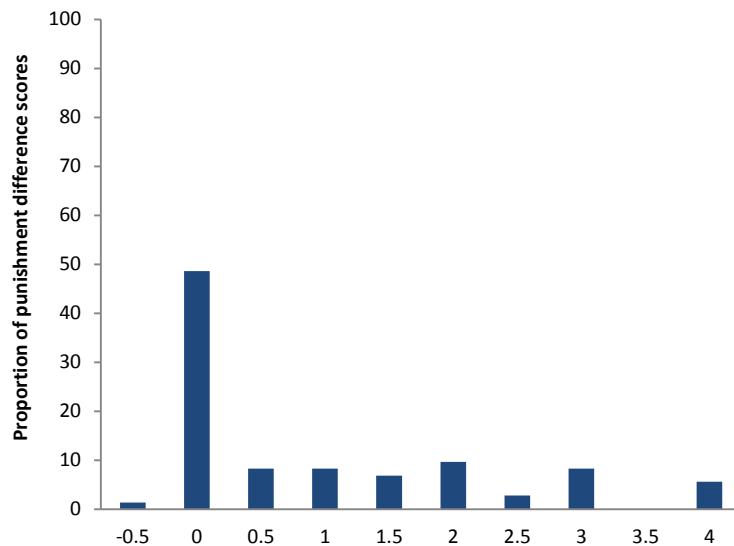


Figure 1. Proportion of children's punishment difference scores, collapsed across story type.

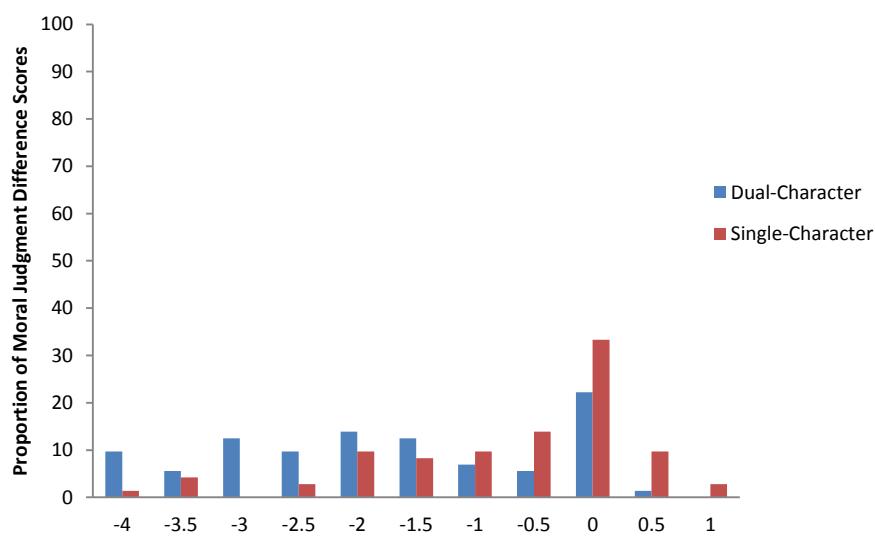


Figure 2. Proportion of children's moral judgement difference scores for dual- and single-character stories.

Discussion

The main goal of the present study was to examine how 4- to 5-year-olds' ability to take into account intention when making moral evaluations may be facilitated by

presenting them with stories that included two characters with matching intentions (and actions) who brought about different outcomes. Performance on these dual-character stories was contrasted to stories that employed single characters (the typical method used by researchers; e.g., Nobes, et al. 2009; Jones & Thomson, 2001; Berndt & Berndt, 1975, etc.). Further, the order in which participants were asked to make moral evaluations (moral judgements and punishment ascriptions) and identify intentions was also manipulated in order to examine whether the order in which these questions were presented would affect children's ability to consider intention. In addition to comparing children's performance across story types and question order, another goal of the current study was to examine the roles that first- and second-order false belief understanding play in children's ability to consider intention. The results, as they address the hypotheses, will be discussed and then followed by a discussion of the additional analyses.

Comparing Performance across Story Types

The first set of hypotheses, that children would be able to make more mature judgements when presented with dual-character stories compared to single-character stories, was not supported by the results. It was expected that giving children the chance to directly compare between two characters would make the similarities more salient. Because the characters in the stories matched in terms of the intentions motivating their actions (and the actions themselves), it was expected that children would be better able to consider that the characters had the same intention and performed the same actions, allowing them to make more mature moral evaluations (i.e., take into account intention). Therefore, it was predicted that children would have higher accuracy in terms of the intention identification questions, and smaller difference scores for both their moral

judgement and punishment ratings when presented with dual-character stories relative to single-character stories. However, results revealed that there was no difference between how accurately participants identified characters' intentions across the story types, nor was there a difference for the punishment ratings. There was, however, an effect of story type on moral judgement. Adults' moral judgement scores were not affected by the story type (they performed near ceiling), whereas children rated characters *more* differently when they appeared in dual-character stories compared to single-character stories. Put another way, children considered outcomes *more* when the two characters appeared side-by-side than when they appeared across stories. While a difference was predicted, the direction of the difference was contrary to expectations.

Children's accuracy in terms of the intention identification questions was not differentially affected by the story type. They were however, affected by the outcome that the characters produced such that children were more accurate at identifying the characters' intentions that produced neutral outcomes compared to negative outcomes. It was predicted that having the characters presented side-by-side would enable children to more easily identify the characters' intentions. However, given that children were equally accurate for both single- and dual-character stories, this was not the case. In other words, having the characters presented side-by-side did not make the intention information more salient. Compared to children's moral judgements, which suggest that outcome information seems to become more salient by presenting the characters side-by-side, the same effect is not seen for intention information as evidenced by the fact that children's accuracy of intention identification did not improve.

In contrast, children's moral judgements were affected by story type. I will outline a possible explanation for this effect, and will also discuss how children's punishment ratings relate to these findings. We know from previous research that children have a tendency to focus on outcome when making moral evaluations (e.g., Cushman et al., 2013, Helwig, et al., 2001, Nobes et al., 2009, etc.). In the current study, children were presented with dual- and single-character stories, and the degree to which children focused on outcome differed by story type. It is of interest to identify the aspect which explains the children's greater focus on outcome information when they are able to directly compare between the characters in the dual-character stories. It could be that children have a tendency to notice any differences between story characters, whatever that might be for a particular story. In the present study, the only difference that exists between the two characters is the outcome that they bring about, and this may have made the outcome information especially salient. This makes the already challenging task of considering the characters' intentions even more difficult, resulting in the moral judgements that children assign each character being affected by the outcome of the situation. By presenting the children with dual-character stories, in which the characters are presented within the same story, the difference in outcome would be highlighted, making it more difficult for children to consider intention. However, when children are presented with the characters across stories, the difference in outcomes is less salient, compared to dual-character stories, so it is relatively easier to consider the characters' intentions. Because outcome was the only story detail that was varied, it is not possible to draw conclusions in regards to whether this effect is, in fact, is caused by children's attention being drawn to any difference that exist between the stories, or if it is because

the difference is about the outcome, which children are already overly considering. A follow-up study would provide insight.

This could be accomplished by varying the characters' intentions, while holding the outcomes that are produced constant. Specifically, 4- to 5-year-old children could hear stories in which a character with a neutral intention, and one with a negative intention, both brought about the same, neutral outcomes. Children would also hear single-character stories in which the characters with neutral and negative intentions would be presented across stories. In all cases, the characters would produce a neutral outcome. For example, one character would want to paint a picture (neutral intention), so she goes to get some paint to use. However, she accidentally drops the box of paint. The box of paint falls, but no paint spills (neutral outcome). Another child, does not want to share the paint (negative intention), so she goes to get the paint to throw on the ground. The box of paint falls, but no paint spills (neutral outcome). These types of contrasts (intention/outcome) would be presented either within a story, or individually in separate stories. Similarly to the present study, the difference between how children judge characters with neutral and negative intentions would be calculated within each story type, allowing for an analysis of an effect of story type. In this case, the greater the difference in ratings between the characters, the more it would indicate that children are taking into account intention information due to the fact that the two characters would differ only in terms of their intentions.

If the results from this follow-up study revealed that the difference scores in children's moral evaluations were significantly larger for dual-character stories compared to single-character stories, it would provide support for the explanation presented above.

Specifically, this would suggest that children's attention is drawn to whatever differs between the characters in a story, and when outcome information is not highlighted (i.e., by not being presented side-by-side, nor being the only difference in the story), children are better able to consider intention. Therefore, intention would act as the salient feature in the story and, although children have a propensity to focus on outcome information, enabling children to directly compare between the characters would provide them with enough support to be able to consider the characters intentions. This would show that presenting this type of information side-by-side could be used as a way to help children focus on the relevant details of a situation. Alternatively, if children rated the characters equally across the stories, it would indicate that they were only able to consider outcome information. This would show that at this age, even when intention information is made salient, their propensity to focus on outcome information is too strong to allow them to consider intention information as well.

In terms of the current thesis, the differences observed in children's moral judgements across story types does not appear to be due to any other type of story detail as the stories were well-matched, varied across types (i.e., content and question orders), and finally, they did not appear to bias adults' moral ratings toward a particular story type (there was no effect for story type for adults, for any variable). It was expected that adult participants would show mature moral reasoning regardless of the story type. This prediction was supported by the results as there was no difference between dual- and single-character stories in terms of adult's identification of intention, moral judgements, or punishment ratings. This finding provides a reason to be fairly confident that the stories were well matched and included the relevant details necessary to make "mature"

moral evaluations. Further, it demonstrates that the intention information was provided sufficiently clearly that adults were using this information to make their judgements. Additionally, it shows that having characters presented in dual- or single-character stories does not continue to impact moral evaluations through development, therefore, as children develop it can be expected that their moral judgements will become more similar across story types.

Interestingly, though the effect of story type was significant for children's moral judgements, it was not significant for children's punishment ratings. It would be expected that the type of information used to make a decision about one type of judgement would also influence the other, making the moral judgement and punishment ratings similar. Therefore, it is interesting that the punishment ratings did not follow the same pattern of results as the moral judgements in terms of the effect of story type. Given that this is the first study that has compared dual- and single-character story types, it is not possible to compare these results directly to past research. However, it is worth considering the only published study (to the best of my knowledge) that employed dual-character stories: Baird and Astington (2004). They found that although five- and seven-year-olds were significantly better at considering intention, relative to four-year-olds, even the youngest group was able to differentially morally judge the characters based on their intentions. Furthermore, the children's punishment ratings followed the same pattern as their moral judgements. On the face of it, this would suggest I should have found the same pattern. However, because Baird and Astington (2004) confounded the intention and outcome information presented in the study, it is not possible to know whether children were truly able to consider the character's intentions, or if they were

simply focusing on outcome information to inform their judgements (see p. 22 for a discussion of this confound).

Another relevant study is Cushman et al. (2013). Although they did not include dual-character stories, they did compare moral judgement to ascriptions of punishment. They found that children's moral judgements were more dependent on their consideration of a character's mental states (i.e., intentions), whereas their assignment of punishment was related to the outcome of the situation (i.e., negative vs. positive outcomes). They found that different types of information were used to make moral judgements and assign punishment. Extrapolating from their findings, I should have found an effect of outcome in terms of children's punishment ratings, with greater punishments for more negative outcomes, but not an effect on moral judgements. However, the current study found an effect of outcome for both punishment and moral judgements. Therefore, there is a discrepancy between the results of the current thesis and that of Cushman et al. (2013).

One potential explanation for this discrepancy may have to do with how children were asked to make their moral ratings across these two studies. In Cushman et al. (2013), children were asked whether the character was a "bad, naughty girl/boy" (p. 10), whereas in the current study, children were asked "Did Mark do something good?" and, "Did Mark do something bad?". Clearly, by asking whether the character is a "bad, naughty girl/boy", children are being asked to make a much more severe judgement compared, to whether the character did something good or bad. Therefore, this could have caused children to be more reluctant in assigning negative moral evaluations of the characters. This would have contributed to the smaller effect of outcome on children's moral judgements found by Cushman et al. (2013). Therefore, the way that children are

asked for their moral evaluations of the characters may have impacted their responses, which would then have an effect on how differently children rated each character. This might account for the difference found between the current study and the results from Cushman et al. (2013), however, it does not explain why there's a story type effect for moral judgement but not for punishment within the present study.

Children's punishment ratings did not differ when children were given the opportunity to directly compare between the characters compared to when they were presented across stories, whereas children's moral judgements were affected by this manipulation. This suggests that it is possible that children did not rely on outcomes as heavily for their punishment ratings as they did for their moral judgements. Across story types (as there was no effect of story type for this variable), approximately 50% of the children assigned equal amounts of punishment for both types of characters (negative and neutral outcome). In contrast, only 33% of children judged the characters equally in terms of their moral ratings in single-character stories (i.e., had a difference score of 0), with 20% doing so for dual-character stories (see Figures 1 and 2). A possible explanation for this may have to do with the way in which moral judgement and punishment questions were asked. When children were asked for their moral judgements, they were asked if the character did something bad, and if the character did something good. This may have caused the children to focus on the 'goodness/badness' of the situation, rather than giving a moral evaluation about the character in particular. However, when children were asked about assigning punishment to the character, they may have then been more inclined to focus on the entire situation (i.e., outcome as well as intentions). This pattern of thinking would result in children's moral ratings being

more affected by the outcome of the situation compared to their punishment ratings. This is not to say that children were not affected by the outcome in their punishment ratings, as evidenced by the significant difference in their difference scores from 0 (i.e., equal ratings of the characters producing negative and neutral outcomes). However, it may be that children's focus on outcome was *greater* for moral judgement ratings compared to punishment rating. This focus on outcome in terms of children's moral judgements may have been highlighted when the characters were presented in dual-character stories. Thus, when children were given the chance to directly compare between the characters, children rated characters producing neutral and negative outcomes even more differently compared to when the characters were presented across stories in terms of their moral judgements. On the other hand, if children were more inclined to consider both the outcome of the situation, as well as the characters' intentions when assigning punishment ratings, whether the characters were presented side-by-side or in separate stories would not have differentially affected their punishment ratings.

Considering Intention and the Relation to False Belief Understanding

The second set of hypotheses predicted that false belief understanding would be related to children's ability to consider intention (as evidenced by higher accuracy in intention identification and smaller difference scores for moral judgements and punishment ratings). This was predicted due to the fact that in order to consider intentions, and to appropriately use that information when making moral judgements and assigning punishment, one must have an understanding of others' mental states. Furthermore, previous research on the topic has established a link between children's moral reasoning and false belief understanding (e.g., Baird & Astington, 2004, Smetana

et al., 2012, Killen et al., 2011, etc.). This hypothesis was partially supported, such that significant positive correlations were found between false belief understanding and accuracy of intention identification for both dual- and single-character stories. However, this relation was not found for moral judgement or punishment difference scores.

These results are somewhat contradictory to the previous research which reported a relation between false belief understanding and children's moral evaluations. For example, Baird and Astington (2004) found that first-order false belief was related to four- and five-year-olds' moral judgements and punishment ratings for characters with positive and negative intentions, after controlling for age. However, Baird and Astington (2004) used a moral judgement scale that differed from that used in the current study. They employed the use of a scale of faces ranging from a smile to a frown, and children had to indicate if the character was doing something "good, bad, or not good or bad" by choosing one of the three faces. The current study, however, asked children for their moral ratings verbally by asking if the character did something good, and if the character did something bad in two separate questions. It is possible that by asking children to choose from an array of pictures may have made it more difficult to give neutral ratings of the characters (the researchers did not report the frequency with which children chose them). In contrast, the current study allowed children to respond about whether the character did something good, separately from when they were asked to respond about whether the character did something bad. This allowed children to respond that the character did something 'a little good' and 'a little bad', which would result in a neutral rating. This difference might have affected the distribution of scores, relative to that of Baird and Astington. However, because no study has compared children's performance

on the various ratings scales, it is not possible to know for certain how children are affected by each type of scale.

My results are also in contrast to Lane et al. (2010), who found, using a longitudinal design, a correlation between false belief understanding when children were 3.5-years-old, and their moral reasoning two years later. Lane et al. (2010) did control for age, inhibitory control, and general IQ, however, the children in their study were older than the majority of the children in the present study when they received the moral reasoning task. Therefore, their false belief understanding was likely more sophisticated, allowing for the relationship between false belief understanding and children's moral judgements to be revealed. Therefore, although there appears to be a difference between the results from the current study and those of Lane et al. (2010), this is not necessarily the case given that false belief understanding was predictive of later moral reasoning and they did not report a concurrent relationship between false belief and moral reasoning. So, perhaps if the participants from the current study were tested at a later date, this relationship between earlier false belief understanding and later moral reasoning might be revealed.

Finally, Fu et al. (2014) found a relationship between children's moral reasoning and second-order false belief. However, as mentioned previously, in the present study children performed at floor on the second-order false belief tasks⁶ therefore, this variable was not included in the analyses. Fu et al. (2014) also found mixed results in terms of the

⁶ Children usually acquire second-order false belief between 5- and 6-years-of-age, thus, it was not surprising that children performed at floor. However, because some studies have found variability in terms of younger children's performance, and due to the relationships found with second-order theory of mind and moral reasoning, this task was used in the current study.

contribution of first-order false belief understanding. Fu et al. (2014) included two types of first-order false belief tasks in their study. The first was a standard version of a first-order false belief task, similar to those used in the present study. The second was embedded into the task which assessed children's moral reasoning. Specifically, children were asked about the character's beliefs (i.e., false beliefs) as part of the false belief task, and were then asked to morally evaluate the character in order to assess their ability to consider intention in their moral reasoning. A relationship was found between the 'morally relevant' first-order false belief task that the researchers had embedded into the moral reasoning task and children's moral evaluations of the characters' intention. The standard first-order false belief task, however, was not related to children's moral evaluations. This latter finding is compatible with that of the current study, as standard false belief tasks were employed.

It was expected that false belief understanding would be related to children's intention identification, moral judgements and punishment ratings given that being able to take into account other's mental states is necessary when considering others intentions. Therefore, having a more sophisticated understanding of mental states should improve children's ability to accurately identify the characters' intentions. This should in turn enable children to make more mature moral evaluations in terms of their moral judgement and punishment ratings, such that they consider the characters' intentions when making these evaluations. However, the fact that false belief understanding was related only to intention identification suggests that there is some type of difference between these questions.

A potential distinction between the questions that could explain the differing relationships among the dependent variables and false belief has to do with a consideration of how much of an affective component each of the questions requires. Specifically, intention questions might require less of an affective component compared to moral judgement and punishment ratings. Research examining the difference in the degree of affect that is required within a task has demonstrated that children perform differently on what are considered “hot” and “cool” tasks (Zelazo & Carlson, 2012). Cool tasks are associated with more abstract and decontextualized problems, whereas hot tasks involve an emotional component, and require the regulation of affect (e.g., Hongwanishkul, Happaney, Lee & Zelazo, 2005). Though that research is primarily focused on Executive Function, the contrast may be applicable here. The questions within the current study vary in terms of the degree of hot and cool aspects that are involved in responding to each. For example, when responding to intention identification questions, participants’ answers should appeal to story *facts*. Therefore, these questions could be described as having less of an emotional component (i.e., they are more ‘cool’) compared to the moral judgement and punishment questions, for which there should also be a consideration of story factors, but are also influenced by individual experiences. Specifically, people may have different personal perspectives on accountability and appropriate penalties, and therefore, likely vary in the amount of sympathy, and type of emotions that come into play when responding to these questions. Additionally, the standard false belief tasks that were used in the present study could also be described as ‘cool’ by these criteria. This similarity between the intention identification questions and the false belief task might contribute to the relationship between them.

This explanation may be supported by the findings from Fu et al. (2013), who found a relationship between children's performance on the false belief task that was embedded within their moral reasoning task, and children's moral evaluations, but not for children's moral evaluations and the standard false belief task. It could be argued that the false belief task that was included within the moral reasoning task required a greater affective component, similar to that required in the moral judgement and punishment questions, whereas the standard false belief task did not. Therefore, this finding might support the suggestion that the affective components required in each of the questions may account for some of the difference in their relationship with false belief understanding. However, because Fu et al. (2013) included the false belief task directly in their task evaluating children's moral reasoning, it is not possible to distinguish whether or not the relationship existed as a function of how well the children understood the story details, as the embedded false belief question required a recollection of story details.

In order to address this limitation and examine whether an affective version of a false belief task would, in fact, relate to moral judgement and punishment questions, a future study could be conducted that included an affective false belief task, that is separate from the moral reasoning task itself. Specifically, four- to five-year-old children could hear stories similar to those used in the current study, in which they are asked to give an identification of the characters' intentions, moral judgements of the characters, and punishment ratings, crossing characters' intentions and outcomes (e.g., neutral/positive intentions crossed with neutral/negative outcomes). Children would also receive a number of standard false belief tasks, as well as a number of affective false

belief tasks. These latter tasks could be modelled after that used by Fu et al. (2013), however, they would not be embedded within the moral reasoning task, thereby eliminating the overlap between story recall and false belief performance. For instance, children could hear about a story in which a character brings about a negative outcome due to a false belief. Children would then be asked about the character's false beliefs in order to obtain their "affective false belief score". By having a separate story for the affective false belief task, the relationship between children's false belief understanding and moral reasoning would not be confounded by their understanding of the specific story details. This study would allow for the examination of the relationship between the standard false belief task and intention identification, moral judgement and punishment. Additionally, it would be possible to examine the relationship between these dependent variables and the affective false belief task. If the standard false belief task is more highly related to the intention identification question, and the affective false belief task is more highly related to the moral judgement and punishment questions, it would support my suggestion that these questions differ in terms of the affective components involved in each, which causes a difference to be observed in terms of children's responses to each.

Comparing Performance across Question Order

The third set of hypotheses predicted that when children were asked about the characters' intentions prior to being asked to morally evaluate, and assign punishment to the characters, they would demonstrate more mature moral reasoning. It was expected that by having the children answer questions in regards to the characters' intentions; it would draw attention to the fact that the characters had neutral intentions, thereby

enabling the children to use this information to inform their moral evaluations. However, the results found no difference in children's or adults' moral judgement and punishment ratings depending on the order of questions. Therefore, children were not differentially affected by answering the intention questions before or after the moral judgement and punishment questions.

The hypothesis of this order effect was premised on the expectation that children would be better able to recognize that the characters' intentions were matched. However, if children's sensitivity to intention information was not sufficiently developed to possibly benefit from this manipulation, having this question presented before the moral evaluation questions would not help children use intention information to inform their evaluations. As it turned out, they did not seem to be. In addition to not benefitting from the dual-character stories, children were less accurate in terms of their identification of intention for the character producing a negative outcome. Therefore, it is possible that the children's attention was drawn to their inaccurate attributions of intention for the characters producing a negative outcome, which then went on to affect their moral evaluations. Children were more accurate in their ascriptions of intention for characters producing neutral outcomes. Therefore, if children were asked about these characters' intentions before their moral evaluations, it may have enabled them to consider their intentions in the subsequent evaluations. This difference in children's accuracy of intention identification across outcomes may have obscured an effect of question order. In order to test whether or not this was the case, in a follow up study children could be given feedback and support if they are unable to accurately identify the characters' intention to maximize their understanding that the characters had identical intentions.

This way, children would be able to consider the accurate intention before morally evaluating the characters. Children could receive the intention question before or after the moral judgement and punishment questions in order to test whether this would reveal an effect of order.

Relations among Intention Identification, Moral Judgement, and Punishment

In addition to the planned analyses, a number of partial correlations among the dependent variables were examined. Results showed that within each dependent variable, there was a relation between children's performance for dual- and single-character stories. Even after controlling for working memory and a standardized measure of receptive vocabulary (which took into account age), and adjusting the p-value to correct for family-wise error, the following positive inter-correlations were observed: (1) as children's intention identification accuracy improved on dual-character stories, single-character story intention accuracy also improved; and (2) as moral judgements and punishment rating difference scores for dual-character stories increased, so did single-character story difference scores. Taken together, these correlations indicate that although there was an effect of story type (for moral judgement), children were fairly consistent in their responses for dual- and single-character stories. This is interpreted to mean that children were able to respond to the stories fairly consistently, even when the details were presented in different ways.

A negative correlation between children's responses to moral judgement and punishment was also observed within story type⁷. This indicates that the more children

⁷ Recall that the difference score was calculated by subtracting the rating given to the character producing a neutral outcome from the rating given to the character producing a negative outcome.

were affected by outcome in their moral judgements, the more they were affected by outcome in their assignment of punishment. Thus, children were consistent in that they considered outcome for both moral judgement and punishment.

Prior to conducting the analyses, it was expected that intention identification would also be related to both moral judgement and punishment, given that the more accurately a child is able to identify a character's intention, the better she would be able to use this information when making moral evaluations. However, intention was not found to relate to moral judgement or punishment. These results follow with those relating to children's false belief understanding and its relationship with the dependent variables. False belief understanding was only related to intention identification, and moral judgement and punishment related to each other, but not to intention identification. This is consistent with my interpretation above, that there may be a difference between the intention questions and the moral judgement and punishment questions such that moral judgement and punishment may involve a greater emotional component compared to intention identification, which may contribute to the relationship between moral judgement and punishment, which is not observed with intention identification.

The main analysis was focused on whether the difference between how children morally rate, and assign punishment to characters producing neutral outcomes compared to negative outcomes was greater for dual- or single-character stories, and, whether the accuracy in children's identification of intention was better in dual- or single-character stories. The use of difference scores allowed for an examination of the variance in children's ratings between characters, regardless of the specific rating given. However, because the analyses were focused on comparing children's difference scores (for moral

judgement and punishment ratings), and accuracy scores for each story type, it was not possible to test for an effect of outcome on children's evaluations. However, a main finding in much of the previous research has to do with children's reliance on outcome information in their moral evaluations. Therefore, additional analyses were conducted in order to compare children's sensitivity to outcome in the current study to results from previous research.

Results revealed that children were affected by the outcome that the character produced in terms of their identification of intention, moral judgements, and punishment ratings. Specifically, children were more accurate in identifying the characters' intentions when the character produced a neutral outcome than a negative one. In other words, children described the character producing a negative outcome as having acted intentionally more than the character producing a neutral outcome. This suggests that at least some of the children are using outcome information to inform their identification of intention. However, it is not the case that children are relying solely on outcome information. If they had, then children's accuracy on intention questions for characters who produced negative outcome would be at, or near, floor (i.e., zero/4), with their accuracy for characters who produced neutral outcomes at, or near, ceiling (i.e., 4/4).

For both moral judgement and punishment ratings, children's ratings between the characters producing neutral and negative outcome differed significantly from having rated each character equally. Specifically, children rated the characters producing negative outcomes more harshly, and assigned them more punishment. These findings that children's evaluations were affected by outcome are consistent with previous findings within the literature. For example, Zelazo et al. (1996) found that 3- to 5-year-

old children predominantly used outcome information to morally evaluate and to assign punishment. Additionally, Fu et al. (2014) found that when 4- to 7-year-old children were asked to morally evaluate characters who produced a negative outcome unintentionally, older children rated the characters more favourably compared to the younger children (similar to the age group in the current study). In other words, the younger children focused more so on the outcome of the situation rather than the characters' intentions when evaluating them. Therefore, children's reliance on outcome information in the present study is typical of children of this age group within the previous literature (e.g., Jones & Thomson, 2001; Cushman et al., 2013; Zelazo et al., 1996).

Limitations and Future Directions

Although the results of the present study are informative in terms of gaining an understanding of children's developing ability to consider intention in moral situations, there are some limitations that need to be acknowledged. First and foremost, including older children in the study would have been advantageous. The expectation was that the manipulation of story type would facilitate children's ability to take into account intention compared to the typical method used within the literature. Because children begin to develop this ability around 5 years of age using the typical method, a younger sample of 4- and 5-year-olds was recruited. Unfortunately, the manipulation had the opposite effect than was expected, such that children showed *less* mature moral evaluations in the dual-character stories. Therefore, rather than including younger children who, according to previous research have difficulty considering intent over

outcome in the typically used method, it may have been more informative to include older children as the new task was in fact more difficult.

Adding six- to eight-year-olds (making the range of this future work 4- to 8-year-olds), would also have been beneficial in other ways as well. Firstly, this age group would demonstrate greater variability on the second-order false belief task, thereby enabling an examination of the relationship between second-order false belief and children's moral evaluations (though, the 7- to 8-year-olds would likely demonstrate ceiling effects). Additionally, a surprising number of children (16) failed the screener that preceded the main task (i.e., were unable to provide an evaluation in the appropriate valence), given that the scenarios and accompanying questions were expected to be fairly straightforward for this age group. This could also have been due to factors aside from a simple lack of understanding. For example, in some cases children would elaborate on the story, demonstrating that they had rewritten the story in their mind such that the story details differed from those originally presented to the child. For example, when asked to evaluate a child who had taken another child's toy, one child remarked (about the child who had taken the toy), "but then he shared so he did something good", suggesting that this child's version of the story included a redeeming act after the researcher's story ended. Thus, this child did not report that story character had done something 'bad'. It could have been informative to have asked children for their reasons for their evaluations and to have provided them with feedback to direct their attention to the relevant story details. Thus, future research could employ feedback such as, "Remember, Alex took Jordan's ball away from him, was it good that he did that?" if the child had responded on the incorrect valence.

Finally, as mentioned previously, the way in which children were asked for their moral judgements may have caused them to focus on the outcomes of the situation. Thus, children might not have been morally evaluating the character *per se*. Rather, they may have been evaluating whether they thought the situation itself was good or bad. Unfortunately, correcting this is not as simple as finding an alternate, ‘perfect’ moral rating scale, from the literature.

Finding an appropriate moral judgement scale is a challenge in this area of research as evidenced by the many types of scales which have been reported in the literature. Some studies have used questions that are specific to the character. For example, Cushman et al. (2013) asked children, “Is he/she a bad, naughty boy/girl” (pg. 10). It is problematic to have children answer this type of question as it asks for an overall evaluation of the character, rather than an evaluation specific to the scenario that has been presented. Other studies have asked children to select from pictures of faces ranging from a smile to a frown (e.g., Baird & Astington, 2004). Another study asked children to select pictures of either devils or angels, and then indicate the number of them, from one to three (Peterson, Peterson & Seeto, 1983). Others have used black dots and gold stars (Bussy, 1992). However, the less the question focuses on the character themselves (either as stable trait, or a situational trait), the more it becomes a question regarding the outcome that was produced. For example, Andrews et al. (2015) used faces ranging from a big smile to a big frown in order to obtain moral judgements (unlike the current thesis), and asked children verbally for their assignment of punishment (as done in the current thesis). They found that children’s moral judgements were only affected by the outcome of the situation, whereas assignment of punishment was also affected by the

character's intention. Therefore, having children use a scale of faces may have caused them to focus more so on the outcome of the situation rather than morally evaluating the character. Thus, it could be that children's punishment ratings are a more accurate indicator of children's "moral judgements" of the character. Ideally, children would be asked how they would morally evaluate the character, in the given situation given her intentions and the outcome. However, because of children's limited language abilities, this is not a feasible question to ask preschool children. Therefore, it is difficult to ensure that young children always understand, and respond to the question that (we think) we are asking. It is clear that this is a challenge within this area of research that has not yet been solved.

Conclusion

Taken as a whole, the current study has expanded on the existing body of research examining children's developing ability to consider others' intentions when making moral evaluations. First, the present study is the only one to compare the use of dual-character stories, which have been used only once previously in this area of research, with single-character stories (the typical method used in this area). Although this manipulation failed to find the expected effect, it did reveal an interesting effect in regards to children's ability to take into account intention information. Specifically, children made less mature moral judgements in dual-character stories compared to single-character stories. This finding raises additional questions and provides opportunity for future research to uncover the reasons for this pattern of results. However, it has revealed that giving children the chance to directly compare between characters does affect their moral evaluations. This finding, if due to the fact that side-by-side comparisons focus

children's attention on difference, could be used to try to direct young children's attention to a certain aspect of the story that might have been less salient to them. For example, if we are attempting to draw children's attention to intention information, making this aspect of the story more salient (by being the only difference).

This thesis has also shown that the relationship between false belief understanding and children's moral reasoning may not be as straightforward as expected. It was predicted that a better understanding of others' mental states would enable children to consider the characters' intentions, which would then affect their moral judgement and punishment ratings. However, false belief understanding was not found to be related to moral judgement and punishment ratings which suggest that the relationship between these variables may be more complicated than expected.

In sum, while the present study was not able to provide specific conclusions in regards to the nature of the difference in difficulty between dual- and single-character stories, it does provide an indication of additional factors can affect children's ability to take into account others' intentions.

References

- Alloway, T. P., Gathercole, S. E., & Pickering, S. J. (2006). Verbal and visuo-spatial short-term and working memory in children: Are they separable? *Child Development*, 77, 1698–1716.
- Andrews, K., Astle, A., Vendetti, C., Podjarny, G., Blackmore, D., & Kamawar, D. (2015, March). The effect of outcome and intention on children's moral judgements and assignment of punishment: The effect of valence and severity. Paper presented at the Biennial Meeting of the Society for Research in Child Development, Philadelphia, Pennsylvania, USA.
- Armsby, R. E. (1971). A re-examination of the development of moral judgements in children. *Child Development*, 1241–1248.
- Baddeley, A. D. (1986). Working Memory. Oxford: Oxford University Press.
- Beebe, J. R., & Buckwalter, W. (2010). The epistemic side-effect effect. *Mind & Language*, 25(4), 474. doi:10.1111/j.1468-0017.2010.01398.x
- Baird, J. A., & Astington, J. W. (2004). The role of mental state understanding in the development of moral cognition and moral action. *New Directions for Child and Adolescent Development*, 103, 37–49.
- Berndt, T. J., & Berndt, E. G. (1975). Children's Use of Motives and Intentionality in Person Perception and Moral Judgment. *Child Development*, 46, 904–912.
- Bussey, K. (1992). Lying and truthfulness: Children's definitions, standards, and

- evaluative reactions. *Child Development*, 63, 129-137. doi: 10.2307/113090
- Carlson, S. M., & Moses, L. J. (2001). Individual differences in inhibitory control and children's theory of mind. *Child Development*, 72, 1032–1053.
- Carlson, S., Moses, L. J., & Breton, C. (2002). How specific is the relation between executive function and theory of mind? Contributions of inhibitory control and working memory. *Child Development*, 73, 72-92. doi:10.1002/icd.298
- Cushman, F., & Mele, A. (2008). Intentional action: Two-and-a-half folk concepts? In J. Knobe & S. Nichols (Eds.), *Experimental philosophy*, 171–188. Oxford: Oxford University Press.
- Cushman, F., Sheketoff, R., Wharton, S., & Carey, S. (2013). The development of intent-based moral judgment. *Cognition*, 127, 6–21. doi: 10.1016/j.cognition.2012.11.008
- Dalbauer, N., & Hergovich, A. (2013). Is what is worse more likely? The probabilistic explanation of the epistemic side-effect effect. *Review of Philosophy and Psychology*, 4(4), 639-657.
- Davis, H., & Pratt, C. (1996). The development of children's theory of mind: The working memory explanation. *Australian Journal of Psychology*, 47, 25–31.
- Dunn, L. M., & Dunn, L. M. (1997). The PPVT-III: Peabody Picture Vocabulary Test. Third Edition. American Guidance Service. Circle Pines, MN.
- Farnill, D. (1974). The effects of social judgment set on children's use of intent information. *Journal of Personality*, 42(2), 276–289.

Field, A. (2009). Discovering Statistics Using SPSS (3rd ed). London, UK: Sage

Publications Ltd.

Fu, G., Xiao, W. S., Killen, M., & Lee, K. (2014). Moral judgment and its relation to second-order theory of mind. *Developmental Psychology, 50*(8), 2085-2092.

doi:<http://dx.doi.org/10.1037/a0037077>

Gall, S. (1985). Motive-outcome matching and outcome foreseeability: Effects on attribution of intentionality and moral judgments. *Developmental Psychology, 21*(2), 332-337.

Garon, N., Bryson, S., & Smith, I. (2008). Executive function in preschoolers: A review using an integrative framework. *Psychological Bulletin, 134*, 31–60.

Gopnik, A., & Astington, J. W. (1988). Children's understanding of representational change and its relation to the understanding of false belief and the appearance-reality distinction. *Child Development, 59*, 26–37.

Helwig, C. C., Zelazo, P. D., & Wilson, M. (2001). Children's judgments of psychological harm in normal and noncanonical situations. *Child Development, 72*, 66–81. doi:10.1111/1467-8624.00266

Hongwanishkul, D., Happaney, K. R., Lee, W. S., & Zelazo, P. D. (2005). Assessment of hot and cool executive function in young children: Age-related changes and individual differences. *Developmental Neuropsychology, 28*(2), 617-644.
doi:10.1207/s15326942dn2802_4

- Hughes, J. S., & Trafimow, D. (2012). Inferences about character and motive influence intentionality attributions about side effects. *British Journal of Social Psychology*, 51, 661. doi:10.1111/j.2044-8309.2011.02031.x
- Jones, E. F., & Thomson, N. R. (2001). Action perception and outcome valence: Effects on children's inferences of intentionality and moral and liking judgments. *Journal of Genetic Psychology*, 162, 154–166.
- Killen, M., Mulvey, K. L., Richardson, C., Jampol, N., & Woodward, A. (2011). The accidental transgressor: Morally relevant theory of mind. *Cognition*, 119, 197–215. doi:10.1016/j.cognition.2011.01.006
- Knobe, J. (2003). Intentional action and side effects in ordinary language. *Analysis*, 63, 190–193.
- Knobe, J. (2004): ‘Intention, Intentional Action and Moral Considerations’, *Analysis*, 64, 181–187.
- Knobe, J. (2005). Theory of mind and moral cognition: Exploring the connections. *Trends in Cognitive Sciences*, 9, 357–359.
- Lane, J.D., Wellman, H.M., Olson, S.L., LaBounty, J., & Kerr, D.C.R. 2010. Theory of mind and emotion understanding predict moral development in early childhood. *British Journal of Developmental Psychology*, 28, 871–889.

Liao, Y., Li, H., & Deak, G. (2011). Can unpredicted outcomes be intended? The role of outcome-beliefs in children's judgments of intention. *Cognitive Development*, 26, 106-117.

Loke, C. I. (2010). Children's understanding of intentional causation in moral reasoning about harmful behaviour (Unpublished doctoral dissertation) University of Toronto, Toronto.

Nelson, S. (1980). Factors influencing young children's use of motives and outcomes as moral criteria. *Child Development*, 51(3), 823-829

Nobes, G., Pnagiotaki, G., & Pawson, C. (2009). The influence of negligence, intention and outcome on children's moral judgments. *Journal of Experimental Child Psychology*, 104, 382-397

Piaget, J. *The Moral Judgment of the Child* (M. Gabain, trans.). New York: Free Press, 1965. (Originally published 1932.)

Peterson, C. C., Peterson, J. L. & Seeto, D. (1983). Developmental changes in ideas about lying. *Child Development*, 54, 1529-1535. doi: 10.2307/112981

Premack, D., & Woodruff, G. (1978). Chimpanzee problem-solving: A test for comprehension. *Science*, 202(4367), 532-535. doi:10.1126/science.705342

Scaife, R., & Webber, J. (2013). Intentional side-effects of action. *Journal of Moral Philosophy*, 10, 179-203.

- Shiverick, S., & Moore, C. (2007). Second-order beliefs about intention and children's attributions of sociomoral judgment. *Journal of Experimental Child Psychology*, 97, 44-60.
- Shultz, T., Wright, K., & Shleifer, M. (1986). Assignment of moral responsibility and punishment. *Child Development*, 57(1), 177-184.
- Smetana, J., Jambon, M., Murray, C., & Sturge-Apple, M. (2012) Reciprocal associations between young children's developing moral judgments and theory of mind. *Developmental Psychology*, 48(4), 1144-1155.
- Sripada, C. (2012). Mental state attributions and the side-effect effect. *Journal of Experimental Social Psychology*, 48, 232-238.
- Sullivan, K., Zaitchik, D., & Tager-Flusberg, H. (1994) Preschoolers can attribute second-order beliefs, *Developmental Psychology*, 30, 395–402.
- Tabachnik, B. G. & Fiddel, L. S. (2007). Experimental Design Using ANOVA. Belmont, CA: Thomson Books/Cole.
- Vendetti, C. (2015). Lies, damned lies and preschoolers: The roles of theory of mind and executive function in preschoolers' conceptual understanding and telling of self-serving and prosocial lies (Unpublished doctoral dissertation). Carleton University, Ottawa.
- Wimmer, H., & Perner, J. (1983). Beliefs about beliefs: Representation and constraining

- function of wrong beliefs in young children's understanding of deception.
Cognition, 13, 103–128.
- Wainryb, C., & Brehl, B. (2006). I thought she knew that would hurt my feelings: Developing psychological knowledge and moral thinking. In R. Kail (Ed.), *Advances in child development and behavior*, 131–171. New York, NY: Elsevier.
- Wainryb, C., & Ford, S. (1998). Young children's evaluations of acts based on beliefs different from their own. *Merrill-Palmer Quarterly*, 44, 484– 503.
- Wellman, H. M., Cross, D., & Watson, J. (2001). Meta-analysis of theory-of-mind development: The truth about false belief. *Child Development*, 72, 655–684.
- Zelazo, P. D., & Carlson, S. M. (2012). Hot and cool executive function in childhood and adolescence: Development and plasticity. *Child Development Perspectives*, 6(40), 354-360. doi:10.1111/j.1750-8606.2012.00246.x
- Zelazo, P., Helwig, C., & Lau, A. (1996). Intention, act, and outcome in behavioural prediction and moral judgment. *Child Development*, 67(5), 2478-2492.

Appendix A: Stories Task Screener

Screener

[Each time a character is mentioned, point to relevant character in illustration.]

(Bad outcome)

This is Jordan and this is Alex. Jordan is playing with a ball. Alex sees the ball and he wants it so, Alex comes along and takes the ball away from Jordan.

Comprehension

1. Were they playing with a dog? Yes/No

[If yes: “Remember, Jordan is playing with a ball”] up to 3X

2a. Did Alex take the ball from Jordan? Yes/No

[If no: “Remember, Alex comes along and takes the ball away”] up to 3X

Moral Judgement

1a. Think about Alex. Did he do something good? Yes/No

(if yes) How good, a little or a lot? Little / a lot

Did Alex do something bad? Yes/ No

(if yes) how bad, a little or a lot? Little/ a lot

Punishment

1a. Think about Alex. Should he get in trouble? Yes/No

(if yes) How much trouble, a little or a lot? Little/ a lot

(Good Outcome)

This is Harper and this is Morgan. Harper is drawing a picture with her crayons. Morgan doesn’t have anything to play with so Harper decides to share her crayons with Morgan.

Comprehension

1. Were they eating a snack? Yes/No

[If yes: “Remember, Harper is drawing a picture with her crayons”] up to 3X

2a. Did Harper share her crayons with Morgan? Yes/No

[If no: “Remember, Harper decides to share her crayons”] up to 3X

Moral Judgement

- | | |
|--|----------------|
| 1a. Think about Harper. Did she do something good? | Yes/No |
| (if yes) How good, a little or a lot? | Little / a lot |
| Did Harper do something bad? | Yes/ No |
| (if yes) how bad, a little or a lot? | Little/ a lot |

Punishment

- | | |
|--|---------------|
| 1a. Think about Harper. Should she get in trouble? | Yes/No |
| (if yes) How much trouble, a little or a lot? | Little/ a lot |

(Neutral Outcome)

This is Payton and this is Quinn. It is play time at daycare so Payton decides to play with a toy.

Comprehension

- | | |
|--|--------|
| 1. Were they reading a story? | Yes/No |
| [If yes: “Remember, it’s play time so Payton decides to play with a toy”] up to 3X | |
| 2a. Did Payton play with a toy? | Yes/No |
| [If no: “Remember, it’s play time so Payton decides to play with a toy”] up to 3X | |

Moral Judgement

- | | |
|--|----------------|
| 1a. Think about Payton. Did she do something good? | Yes/No |
| (if yes) How good, a little or a lot? | Little / a lot |
| Did Payton do something bad? | Yes/ No |
| (if yes) how bad, a little or a lot? | Little/ a lot |

Punishment

- | | |
|---|---------------|
| 1a. Think about Payton. Should he get in trouble? | Yes/No |
| (if yes) How much trouble, a little or a lot? | Little/ a lot |

Appendix B: Examples of Stories Task Protocol

Napkin Story (Dual-character)

This is Finn and this is Mark. They are having a snack and they each need a napkin so they both go over to the shelf to grab some napkins.

Finn and Mark don't know what's up there.

Finn and Mark each grab a napkin from the shelf.

But look, there's a plate of cookies on top of each napkin and the plates fell.

[neutral] Look at Finn, when this plate fell, none of the cookies were ruined.

[negative] Look at Mark, when this plate fell, 5 of the cookies were ruined.

Comprehension (repeat up to 3X)

1a. Did Finn need a napkin? Yes/No

If incorrect: (point at 1st picture) This is Finn and this is Mark. They are having a snack and they each need a napkin so they both go over to the shelf to grab some napkins.

2a. Before he pulled the napkin, did Finn see the cookies up there? Yes/No

If incorrect: (point at 2nd picture) Finn and Mark don't know what's up there.

1b. Did Mark need a napkin? Yes/No

If incorrect: (point at 1st picture) This is Finn and this is Mark. They are having a snack and they each need a napkin so they both go over to the shelf to grab some napkins.

2b. Before he pulled the napkin, did Mark see the cookies up there? Yes/No

If incorrect: (point at 2nd picture) Finn and Mark don't know what's up there

Intent

3a. Did Finn pull the napkin on purpose? Yes/No

4a Did Finn make the plate of cookies fall on purpose? Yes/No

3b. Did Mark pull the napkin on purpose? Yes/No

4b. Did Mark make the plate of cookies fall on purpose? Yes/No

Moral Judgement & Punishment

5a. Think about Finn. Did Finn do something good? Yes/No

(if yes) How good, a little or a lot? Little / a lot

Did Finn do something bad? Yes/ No

(if yes) how bad, a little or a lot? Little/ a lot

6a. Should Finn get in trouble? Yes/No

(if yes) How much trouble, a little or a lot? Little/ a lot

5b. Think about Mark. Did Mark do something good? Yes/No

(if yes) How good, a little or a lot? Little / a lot

Did Mark do something bad? Yes/ No

(if yes) how bad, a little or a lot? Little/ a lot

6b. Should Mark get in trouble? Yes/No

(if yes) How much trouble, a little or a lot? Little/ a lot

Candy Story (Dual-character)

This is Anne and this is Liz. Their mom tells them that they can have some of their candy so they both go to the cupboards to get their candy.

Anne and Liz can't see what's inside so they don't know what else is in there.

Anne and Liz each open a cupboard.

But look, there's some glasses in each of the cupboards and the glasses fell.

[neutral] Look at Anne, when these glasses fell, none of them broke.

[negative] Look at Liz, when these glasses fell 5 of them broke.

Comprehension (repeat up to 3X)

1a. Did Anne want her candy? **Yes/No** _____

If incorrect: (point at 1st picture) This is Anne and this is Liz.

Their mom tells them that they can have some of their candy so they both go to the cupboards to get their candy.

2a. Before she opened the cupboard, did Anne see the glasses in there? **Yes/No** _____

If incorrect: (point at 2nd picture) Anne and Liz don't know what else is in there.

1b. Did Liz want her candy? **Yes/No** _____

If incorrect: (point at 1st picture) This is Anne and this is Liz. Their mom tells them that they can have some of their candy so they both go to the cupboards to get their candy.

2b Before she opened the cupboard, did Liz see the glasses in there? **Yes/No** _____

If incorrect: (point at 2nd picture) Anne and Liz can't see what's inside so they don't know what else is in there.

Intent

3a. Did Anne open the cupboard on purpose? **Yes/No**

4a. Did Anne make the glasses fall on purpose? **Yes/No**

3b. Did Liz open the cupboard on purpose? **Yes/No**

4b. Did Liz make the glasses fall on purpose? **Yes/No**

Moral Judgement & Punishment

5a. Think about Anne. Did Anne do something good? **Yes/No**

(if yes) How good, a little or a lot? **Little / a lot**

Did Anne do something bad? **Yes/ No**

(if yes) how bad, a little or a lot? **Little/ a lot**

- 6a. Should Anne get in trouble? Yes/No
- (if yes) How much trouble, a little or a lot? Little/ a lot
- 5b. Think about Liz. Did Liz do something good? Yes/No
- (if yes) How good, a little or a lot? Little / a lot
- Did Liz do something bad? Yes/ No
- (if yes) how bad, a little or a lot? Little/ a lot
- 6b. Should Liz get in trouble? Yes/No
- (if yes) How much trouble, a little or a lot? Little/ a lot

Napkin Story (Single-character-neutral)

This is Finn. He is having a snack and he needs a napkin so he goes over to the shelf to grab a napkin.

Finn doesn't know what's up there.

Finn grabs a napkin from the shelf.

But look, there's a plate of cookies on top of the napkin and the plate fell.

[neutral] Look at Finn, when this plate fell, none of the cookies were ruined.

Comprehension (repeat up to 3X)

- 1a. Did Finn need a napkin? Yes/No _____

If incorrect: (point at 1st picture) This is Finn. He is having a snack and he needs a napkin so he goes over to the shelf to grab a napkin.

- 2a. Before he pulled the napkin, did Finn see the cookies up there? Yes/No _____

If incorrect: (point at 2nd picture) Finn doesn't know what's up there.

Intent

3b. Did Finn pull the napkin on purpose? **Yes/No**

4b. Did Finn make the plate of cookies fall on purpose? **Yes/No**

Moral Judgement & Punishment

5b. Think about Finn. Did Finn do something good? **Yes/No**

(if yes) How good, a little or a lot? **Little / a lot**

Did Finn do something bad? **Yes/ No**

(if yes) how bad, a little or a lot? **Little/ a lot**

6b. Should Finn get in trouble? **Yes/No**

(if yes) How much trouble, a little or a lot? **Little/ a lot**

Napkin Story (Single-character-negative)

This is Mark. He is having a snack and he needs a napkin so he goes over to the shelf to grab a napkin.

Mark doesn't know what's up there.

Mark grabs a napkin from the shelf.

But look, there's a plate of cookies on top of the napkin and the plate fell.

[negative] Look at Mark, when this plate fell, 5 of the cookies were ruined.

Comprehension (repeat up to 3X)

1a. Did Mark need a napkin? **Yes/No** _____

If incorrect: (point at 1st picture) This is Mark. He is having a snack and he needs a napkin so he goes over to the shelf to grab a napkin.

2a. Before he pulled the napkin, did Mark see the cookies up there? **Yes/No** _____

If incorrect: (point at 2nd picture) Mark doesn't know what's up there.

Intent

3b. Did Mark pull the napkin on purpose? **Yes/No**

4b. Did Mark make the plate of cookies fall on purpose? **Yes/No**

Moral Judgement & Punishment

5b. Think about Mark. Did Mark do something good? **Yes/No**

(if yes) How good, a little or a lot? **Little / a lot**

Did Mark do something bad? **Yes/ No**

(if yes) how bad, a little or a lot? **Little/ a lot**

6b. Should Mark get in trouble? **Yes/No**

(if yes) How much trouble, a little or a lot? **Little/ a lot**

Appendix C: All Story Contents for Stories Task (Dual-Character Versions⁸) and Stimuli

Components	Napkin Story: Dual-Character Version	Candy Story: Dual-Character Version	Board Game: Dual-Character Version
Introduction and intention	This is Finn and this is Mark. They are having a snack and they each need a napkin so they both go over to the shelf to grab some napkins.	This is Anne and this is Liz. Their mom tells them that they can have some of their candy so they both go to the cupboards to get their candy.	This is Lola and this is Josie. They want to play a board game so they both go over to the shelf to get their board games.
Foreseeability	Finn and Mark don't know what's up there.	Anne and Liz don't know what else is in there.	Lola and don't know what's up there.
Action	Finn and Mark each grab a napkin from the shelf.	Anne and Liz each open a cupboard.	Lola and Josie each grab a board game from the closet.
Consequence matched	But look, there's a plate of cookies on top of each napkin and the plates fell.	But look, there're glasses in each of the cupboards and the glasses fell.	But look, there's a box of picture frames on each of the board games and the fell.
Neutral	Look at Finn, when this plate fell, none of the cookies were ruined.	Look at Anne, when the glasses fell, none of them broke.	Look at Lola, when this box fell, none of the picture frames broke.
Negative	Look at Mark, when this plate fell, 5 of the cookies were ruined.	Look at Liz, when the glasses fell 5 of them broke.	Look at Josie, when this box fell, 5 of the picture frames broke.
Comprehension	1a. Did Finn need a napkin? 2a. Before he pulled the napkin, did Finn see the cookies up there? 1b. Did Mark need a napkin? 2b. Before he pulled the napkin, did Mark see the cookies up there?	1a. Did Anne want her candy? 2a. Before she opened the cupboard, did Anne see the glasses in there? 1b. Did Liz want her candy? 2b. Before she opened the cupboard, did Liz see the glasses in there?	1a. Did Lola want her board game? 2a. Before she grabbed the game board, did Lola see the picture frames up there? 1b. Did Josie want her board game? 2b. Before she grabbed the game board, did Josie see the picture frames up there?
Intent	3a. Did Finn pull the napkin on purpose? 4a. Did Finn make the plate of cookies fall on purpose? 3b. Did Mark pull the napkin on purpose? 4b. Did Mark make the plate of cookies fall on purpose?	3a. Did Anne open the cupboard on purpose? 4a. Did Anne make the glasses fall on purpose? 3b. Did Liz open the cupboard on purpose? 4b. Did Liz make the glasses fall on purpose?	3a. Did Lola grab her board game on purpose? 4a. Did Lola drop the box of picture frames on purpose? 3b. Did Josie grab her board game on purpose? 4b. Did Josie drop the box of picture frames on purpose?
Moral Judgement Punishment	5a. Think about Finn. Did Finn do something good? (if yes) How good, a little or a lot? Did Finn do something bad? (if yes) how bad, a little or a lot? 6a. Should Finn get in trouble? (if yes) How much trouble, a little or a lot?	5a. Think about Anne. Did Anne do something good? (if yes) How good, a little or a lot? Did Anne do something bad? (if yes) how bad, a little or a lot? 6a. Should Anne get in trouble? (if yes) How much trouble, a little or a lot?	5a. Think about Lola. Did Lola do something good? (if yes) How good, a little or a lot? Did Lola do something bad? (if yes) how bad, a little or a lot? 6a. Should Lola get in trouble? (if yes) How much trouble, a little or a lot?

⁸ Single-character stories were identical to the dual-character stories, but provided information about only one character.

	<p>5b. Think about Mark. Did Mark do something good? (if yes) How good, a little or a lot? Did Mark do something bad? (if yes) how bad, a little or a lot?</p> <p>6b. Should Mark get in trouble? (if yes) How much trouble, a little or a lot?</p>	<p>5b. Think about Liz. Did Liz do something good? (if yes) How good, a little or a lot? Did Liz do something bad? (if yes) how bad, a little or a lot? 6b. Should Liz get in trouble? (if yes) How much trouble, a little or a lot?</p>	<p>5b. Think about Josie. Did Josie do something good? (if yes) How good, a little or a lot? Did Josie do something bad? (if yes) how bad, a little or a lot?</p> <p>6b. Should Josie get in trouble? (if yes) How much trouble, a little or a lot?</p>
Components	Paint Story: Dual-Character	Book Story: Dual-Character	Juice-box Story: Dual-Character
Introduction and intention	This is Mike and this is Patrick. They both want to paint a picture so they both go to get some paper from the craft cupboard.	This is Tanya and this is Lindsay. They both want to read a book so they both go to get a book from the bookshelf.	This is Marshall and this is Braydon. Their mom just brought home some groceries and they would like some juice. So they both go over to the counter to get some juice from the grocery bags.
Foreseeability	Mike and Patrick don't know what's up there.	Tanya and Lindsay don't know what's up there.	Marshall and Braydon don't know what else is in there.
Action	Mike and Patrick each grab a sheet of paper from the cupboard.	Tanya and Lindsay each pull out a book from the shelf.	Marshall and Braydon each grab a juice-box from the grocery bag
Consequence matched	But look, there's a box of paint on each of the sheets of paper and the boxes fell.	But look, there's a tray of tea cups on each of the books and the trays fell.	But look, there's an egg carton in each of the grocery bags and the egg cartons fell.
Neutral	Look at Mike, when this box fell, none of the bottles of paint spilled.	Look at Tanya, when this tray fell, none of the tea cups broke.	Look at Marshall, when this egg carton fell, none of the eggs broke.
Negative	Look at Patrick, when this box fell, 5 of the bottles of paint spilled.	Look at Lindsay, when this tray fell 5 of the tea cups broke.	Look at Braydon, when this egg carton fell, 5 of the eggs broke.
Comprehension	<p>1a. Did Mike want to paint a picture?</p> <p>2a. Before he grabbed the paper, did Mike see the paint up there?</p> <p>1b. Did Patrick want to paint a picture?</p> <p>2b. Before he grabbed the paper, did Patrick see the paint up there?</p>	<p>1a. Did Tanya want to read a book?</p> <p>2a. Before she pulled the book, did Tanya see the tea cups up there?</p> <p>1b. Did Lindsay want to read a book?</p> <p>2b. Before she pulled the book, did Lindsay see the tea cups up there?</p>	<p>1a. Did Marshall want juice?</p> <p>2a. Before he grabbed the juice-box, did Marshall see the egg carton in there?</p> <p>1b. Did Braydon want juice?</p> <p>2b. Before he grabbed the juice-box, did Braydon see the egg carton in there?</p>
Intent	<p>3a. Did Mike grab the sheet of paper on purpose?</p> <p>4a. Did Mike drop the box of paint on purpose?</p> <p>3b. Did Patrick grab the sheet of paper on purpose?</p> <p>4b. Did Patrick drop the box of paint purpose?</p>	<p>3a. Did Tanya pull out a book on purpose?</p> <p>4a. Did Tanya drop the tray of tea cups on purpose?</p> <p>3b. Did Lindsay pull out a book on purpose?</p> <p>4b. Did Lindsay drop the tray of tea cups on purpose?</p>	<p>3a. Did Marshall grab a juice-box on purpose?</p> <p>4a. Did Marshall drop the egg carton on purpose?</p> <p>3b. Did Braydon grab a juice-box on purpose?</p> <p>4b. Did Braydon drop the egg carton on purpose?</p>

Moral Judgement Punishment	<p>5a. Think about Mike. Did Mike do something good? (if yes) How good, a little or a lot? Did Mike do something bad? (if yes) how bad, a little or a lot?</p> <p>6a. Should Mike get in trouble? (if yes) How much trouble, a little or a lot?</p> <p>5b. Think about Patrick. Did Patrick do something good? (if yes) How good, a little or a lot? Did Patrick do something bad? (if yes) how bad, a little or a lot?</p> <p>6b. Should Patrick get in trouble? (if yes) How much trouble, a little or a lot?</p>	<p>5a. Think about Tanya. Did Tanya do something good? (if yes) How good, a little or a lot? Did Tanya do something bad? (if yes) how bad, a little or a lot?</p> <p>6a. Should Tanya get in trouble? (if yes) How much trouble, a little or a lot?</p> <p>5b. Think about Lindsay. Did Lindsay do something good? (if yes) How good, a little or a lot? Did Lindsay do something bad? (if yes) how bad, a little or a lot?</p> <p>6b. Should Lindsay get in trouble? (if yes) How much trouble, a little or a lot?</p>	<p>5a. Think about Marshall. Did Marshall do something good? (if yes) How good, a little or a lot? Did Braydon do something bad? (if yes) how bad, a little or a lot?</p> <p>6a. Should Marshall get in trouble? (if yes) How much trouble, a little or a lot?</p> <p>5b. Think about Braydon. Did Braydon do something good? (if yes) How good, a little or a lot? Did Braydon do something bad? (if yes) how bad, a little or a lot?</p> <p>6b. Should Braydon get in trouble? (if yes) How much trouble, a little or a lot?</p>
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Dual Character Story**Single Character Story**



Appendix D: False belief Protocols

First-order False Belief – Change of Location

BALL - CHANGE OF LOCATION

I'm going to tell you a story. Listen carefully and then I'll ask you some questions.

This little girl's name is Jill. Jill was playing with a ball. When she was done playing with it, she put it in the white box and then went outside to play. (*Move Jill aside, hidden*).

While Jill was playing outside, her friend Peter came along. Peter found the ball and he played with it for a little while. When he was done he put it in the polka-dot box and then he went away to do something else. (*Move Peter to a different aside location, hidden*).

1. Where did Jill put the ball? [white box] [polka dot box]

2. Where is the ball now? [polka dot box] [white box]

A little while later, Jill came back from playing outside. She wanted to play with the ball again. (*Position Jill an equal distance from both boxes. Do not orient her towards either box*).

3. Where will Jill first look for the ball? [white box] [polka dot box]

First-order False Belief – Unexpected Contents**UNEXPECTED CONTENTS – CRAYONS**

Look at this (*show crayons box*).

1. **What's in here?** [crayons] _____

Let's open it and have a look (*Open box and show child*).

2. **What is it?** [pig] _____

Yah! A pig! That's interesting, isn't it? I just put it in this box to keep it safe. Well, let's put him back into the box now... (Put pig back in the box). Once box is closed:

3. **What's in the box?** [pig] _____

*False Belief for self:

4. **What did you think was inside the box BEFORE we opened it?** [pig]
[crayons] _____

*False Belief for other: **Tomorrow I am going to play this game with a brand new friend.**

5. **What will s/he think is inside it BEFORE s/he opens it?** [pig] [crayons]

Second-order False Belief (1)**Second-Order False Belief – Cookies**

Use plan toy dolls to act out each bullet point.

- **This is a story about a brother and sister, Molly and Andrew. (indicate Molly and Andrew).** They are doing homework in the kitchen.
- **Molly made some cookies for them to share.** Andrew wants to eat the cookies now, but Molly doesn't want to.
- **Molly needs to ask her dad a question about her homework.** She puts the plate of cookies in the fridge and leaves the room.
- **While Molly is gone, Andrew gets the plate of cookies and eats one of them.** Then he puts the plate of cookies in the cupboard. *Andrew remains standing there while Molly comes back from the other room.*
- **Molly is finished asking her dad a question and she comes back.** Stands behind Andrew. She sees Andrew putting the plate of cookies in the cupboard. Molly watches Andrew, but Andrew does not see Molly.

Comprehension Questions:

1. **Where did Molly put the plate of cookies when she left the room?** [fridge] [cupboard] [IDK]
2. **Where did Andrew put the plate of cookies?** [cupboard] [fridge] [IDK]
3. **Does Molly know where the cookies are now?** [yes] [no] [IDK]

First-order false belief:

4. **Does Andrew know [point to Andrew] that Molly [point to Molly] saw him [motion from Molly to John]?** [yes] [no] [IDK]

Story Continues:

- **A little while later, Molly tells Andrew that they can eat the cookies. She is going to get them.** [Move Molly so that she is equal distance from the two locations]

Second-order false belief:

5. **Where does Andrew think [pointing to Andrew] that Molly [point to Molly] will look for the cookies?** [fridge] [cupboard] [IDK]

Second-order False Belief (2)

Second-Order False Belief – John’s Book

Use playmobil dolls to act out each bullet point.

- This is a story about two friends, John and Sarah (*indicate John and Sarah*).
- John has a new book that he just got. Sarah wants to read John’s new book, but he does not want her to.
- John’s mum calls him to go downstairs. He puts the book under his blanket and goes downstairs.
- While John is gone, Sarah takes the book and reads it. Then she puts it in John’s toy box. *Sarah remains standing there while John comes back from being with his mom.*
- John is finished with his mum and comes back. *Stands behind Sarah. He sees Sarah putting the book in his toy box. John watches Sarah, but Sarah does not see John.*

Comprehension Questions:

6. Where did John put the book before he went downstairs? [bed] [toy box] [IDK]
7. Where did Sarah put the book? [toy box] [bed] [IDK] _____
8. Does John know where the book is now? [yes] [no] [IDK] _____

First-order false belief:

9. Does Sarah know [point to Sarah] that John [point to John] saw her [motion from John to Sarah]? [yes] [no] [IDK] _____

Story Continues:

- A little while later, John tells Sarah that she can read his new book. He is going to get the book for her. [*Move John so he is equal distances from the two locations*]

Second-order false belief:

10. Where does Sarah think [pointing to Sarah] that John [point to John] will look for the book? [bed] [toy box] [IDK] _____

Appendix E: Working Memory Tasks Protocol

Working Memory (Listening Recall)

Listening Recall

We're going to play a different game! First, I'm going to tell you some sentences and I want you to tell me if they're right or wrong. Ready?

Practice:

- Mice drink tea.....T/F (if no response, "is that right or wrong?")
 - If "wrong": You're right! That sentence is wrong.
 - If "right": Let's try again, listen carefully.

Now I'm going to say the same thing again, but this time I want you to tell me the last word of the sentence. Let's try!

- Mice drink tea _____
 - If "tea": You're right! Tea was the last word in the sentence.
 - If no response: Remember, tell me the last word of the sentence.
 - If incorrect: Remember, tell me the last word of the sentence, listen carefully.
(repeat)

So now we're going to play another way. I'm going to tell you the sentence again, but this time I want you to do both of those things. After the sentence, tell me if it's right or wrong and then, when I'm all done, I'll point to you so you can tell me the last word. Remember to wait until I point to you. Ready?

- Mice drink tea.....T/F
 - If correct: That's right! It's wrong and the last word is tea! Good Job!
 - If no response: Remember, I'm going to say the sentence and you tell me if it's right or wrong and when I'm all done, you tell me the last word
 - If T/F only: Good, you told me if its right or wrong, but remember, after you tell me if it's right or wrong, then you tell me the last word.
 - If last word only: Good, you told me the last word, but remember, *first* tell me if it's right or wrong, *then* you tell me the last word

Alright, let's try it again but this time I'm going to say 2 sentences. Remember, I'm going to tell you some sentences and after each sentence, you tell me if it's right or wrong and after all of my sentences, I'll point to you and you tell me the last words. Remember to wait until I point to you.

- Penguins are green.....T/F
- Dogs have ears.....T/F

Green, ears _____

 - If correct: Good job, you told me if they were right or wrong and you said the last words of the sentences.
 - If no response: Remember, after each sentence you tell me if it's right or wrong and when I'm all done, you tell me the last words. Let's try again. (repeat)
 - If only T/F: Good, you told me if they're right or wrong but you forgot to tell me the last words. Let's try again. (repeat)
 - If only last words: Good, you told me the last words, but you forgot to tell me if they were right or wrong. Let's try again. (repeat)

I think you know how to play my game now, so first I'll tell you one sentence at a time, and then I'll tell you two, you get the idea! Let's try! (no feedback)

[Finish testing when all three words are not recalled in a set (in correct order)]

[Finish with easier set after task is ended]

[If child starts before point "Remember to wait until I point"]

1. a) Horses eat grass..... T/F
grass —
 b) Snow is warm..... T/F
warm —
 c) Dogs have wings..... T/F
wings —

2. a) Cars are fast..... T/F
 Broccoli tastes sweet..... T/F
fast, sweet —
 b) Clouds have feet..... T/F
 Ants are small..... T/F
feet, small —
 c) Cats have tails..... T/F
 Bananas are blue..... T/F
tails, blue —

3. a) Elephants are bigT/F
 Oranges are round..... T/F
 Grass is redT/F
big, round, red —
 b) Fire is cold..... T/F
 Sharks have legs..... T/F
 Scissors are sharp..... T/F
cold, legs, sharp —
 c) Thunder is loud..... T/F
 People eat socks..... T/F
 Rain is wet..... T/F
loud, socks, wet —

4. a) Houses have doors..... T/F
 Turtles are slow..... T/F
 Snails read books..... T/F
 Couches bake cakes..... T/F
doors, slow, books, cakes —
 b) Dogs have fur..... T/F

Lizards use soap..... T/F
Trees have leaves..... T/F
Babies drive cars..... T/F
fur, soap, leaves, cars __

c) Kittens ride bikes..... T/F
Chairs use pens..... T/F
Pigs like mud..... T/F
Monkeys climb trees..... T/F

bikes, pens, mud, trees __

Working Memory (Backward Word)

Backward Word Span

I'm going to show you some cards with some pictures on them. I want you to name the picture on each card and say what it is, aloud. Once you've looked at all of the pictures, I want you to tell me the names of them, but in backwards order.

So if I show you a cake [show cake and then place face down] and a ball [show ball and place face down beside cake], I want you to tell me ‘ball [pointing to back of ball] and ‘cake [pointing to back of cake].

1. Let's try one:

Show cat. If child does not spontaneously name it: **What's this? [cat]**
[other]

- Place card face down in a new row (below cake). Accept any reasonable answer.

Show grapes. If child does not spontaneously name it: **And what's this?**
[grapes] [other]

- Place card face down in a new row (below ball). Accept any reasonable answer.

Tell me the names of those pictures in backwards order: Point as they name.
[grapes – cat] ____ (✓ or x)

If correct: **Good job, that's right!**

If incorrect: **Remember to tell me the pictures in backwards order.**

You saw “cat” then “grapes” so you need to tell me “grapes, cat”.

2. Let's try another one!

Show tree. If child does not spontaneously name it: **What's this? [tree]**
[other]

- Place card face down in a new row (below cat). Accept any reasonable answer.

Show pig. If child does not spontaneously name it: **And what's this? [pig]**
[other]

- Place card face down in a new row (below grapes). Accept any reasonable answer.

Tell me the names of those pictures in backwards order: *Point as they name.*

[**pig – tree**] ____ (\checkmark or x)

If correct: **Good job, that's right!**

If incorrect: **Remember to tell me the pictures in backwards order.**

You saw “pig” then “tree” so you need to tell me “pig, tree”.

Test Trials: DO NOT point to the back of pictures during test trials. For each new trial, place the cards in a row beneath the last trial – placing cards from left to right.

1. **Dog – Bus** ____ (\checkmark or x)

2. **Hand – Snail** ____ (\checkmark or x)

3. **Fox – Shoe – House** ____ (\checkmark or x)

4. **Spoon – Book – Fish** ____ (\checkmark or x)

5. **Bee – Sock – Kite – Leaf** ____ (\checkmark or x)

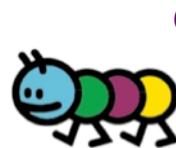
6. **Cup – Bird – Drum – Plant** ____ (\checkmark or x)

7. **Frog – Star – Barn – Chair – Corn** ____ (\checkmark or x)

8. **Horse – Bed – Hat – Car – Heart** ____ (\checkmark or x)

Appendix F: Orders of Story Type by Story Content

Combination	Napkin Story	Candy Story	Game board Story	Paint Story	Book Story	Juice-Box Story
1	Dual	Dual	Single-Neutral	Single-Neutral	Single-Negative	Single-Negative
2	Single-Negative	Single-Negative	Dual	Dual	Single-Neutral	Single-Neutral
3	Single-Neutral	Single-Neutral	Single-Negative	Single-Negative	Dual	Dual

Appendix G: Informed Consent Form for Parents or Guardians (Daycares)

**Children's Representational
Development Lab**
www.carleton.ca/cndl

Winter/Spring 2015

Dear parent(s) or guardian(s),

As part of a current project on children's cognitive development, we are talking to children to learn about their developing ability to use intention information in their moral judgements. The study has been approved by the Carleton University Psychology Research Ethics Board (approval number #15-048) and it involves no physical or psychological risks for the children who take part in it. In this letter, we will describe the project and request your permission for your child to participate. The purpose of an informed consent is to ensure that you understand the purpose of the study and the nature of your child's involvement.

Children will hear a number of stories involving one character or two characters who sometimes accidentally break something or make a mess (e.g., spill paint). Children will then be asked about the story characters (e.g., whether they did something good or bad, or should get in trouble for what they did). We are interested in whether children are better able to think about the story characters' intentions (that the damage was an accident) when they can compare two characters in the same story, when both of them did the same thing, but something went wrong for one of them (through no fault of their own). We will also play games that measure related skills such as working memory and vocabulary. Children usually enjoy these kinds of activities and will be given stickers as thanks (even if they stop playing part-way through). We will also provide enough stickers for all children in the participating classrooms to the daycare, so that all children get some, even if their parents have not consented to their participation.

We will meet with each child twice, for approximately 25 minutes each time. Participation in this experiment is completely *voluntary*. Children will be asked if they want to participate, and if they don't, they will not be pressured into participating. Children can stop playing at any time during the session and will still receive their stickers.

The information collected in this study is confidential and will be coded such that a child's name is not associated with their responses. The information provided will be used for research purposes only, and will only be accessible to the researchers directly involved in the project. The consent form will be kept separate from the data in a locked cabinet and

will be destroyed after 2 years. The datafile and hard-copies of data, though they do not include identifying information, are stored on a password protected computer (the datafile) and in a locked room (the hard copies). As soon as we have finished talking with all of the children that will be participating in the study, we will remove the file linking the children's names to their identification numbers used in the datafile. In other words, it will no longer be possible to identify an individual child's responses (the data will be anonymized).

Should you wish to participate in future research and consent to be contacted about the children who you have provided information about within the next five years, any contact information provided along with the names and birth dates of your child and other children in the family, will be kept in a password protected database and will only be available to researchers in our lab. We request the children's birthdates so that we know which families to contact as our studies involve different age groups. Once your children are older than twelve years, their information will be removed from our database. Future participation is completely voluntary and you can ask to be removed from our database at any time.

The research supervisor of this project is Dr. Deepthi Kamawar and she may be reached at 613-520-2600, ext. 7021 or deepthi_kamawar@carleton.ca. The primary researcher involved in this project is Katherine Andrews, M.A. Candidate and she can be reached by email at corrie.vendett@carleton.ca. If you have any ethical concerns about this study, please contact Dr. Shelley Brown (Chair, Carleton University Psychology Research Ethics Board, 613-520-2600 ext. 1505 or shelley.brown@carleton.ca). The ethics protocol number for this study is 15-048. Should you have any other concerns about this study, please contact Dr. Joanna Pozzulo (Chair, Dept. of Psychology, 613-520-2600 ext. 1412 or joanna.pozzulo@carleton.ca).

Your consent is required for your child's participation in this project. Kindly sign the attached consent form indicating whether your child may participate in this research and return it to your child's daycare. If you would like a summary of the research results once the study is completed, please contact Katherine Andrews. However, please note that individual feedback regarding the children cannot be provided.

Thank you for your consideration.

Sincerely, Deepthi Kamawar, PhD

Katherine Andrews, M.A. Candidate

Carleton University Study – Preschoolers’ Development of Intent-Based Moral Judgement

I have read the attached description of the study on cognitive development (Preschoolers’ Development of Intent-Based Moral Judgement) and I understand the conditions of my child’s participation.

- I consent to my child’s participation in the current study **[please fill out the next page]**
- I do not consent to my child’s participation in the current study

Child’s Name (please print): _____

Parent’s/Guardian’s Name (please print):

Signature: _____ Date: _____

Participant Information

If you have consented to your child participating on the previous page, please provide us with the following information about your child. If you have not provided consent, please do not fill out this page.

Please note: your child's name and birth date will be kept separate from their data and consent form, and only researchers directly involved in this project will have access to this information.

Child's Date of Birth: year _____ month _____ day _____

Please indicate the language(s) spoken at home and then please circle the ones that your child is

fluent in: _____

Participation in Future Research at the Children's Representational Development Lab

In our lab we conduct many other studies that children find quite enjoyable (usually in the form of games and stories). We provide free parking and a small 'thank-you' gift to the children (a book).

May we contact you in the future to see if you are interested in having your child participate in other projects? All participation would be completely voluntary and you would be under no obligation to participate if we contact you. We will not share your personal information with anyone and we will remove children from our database once they are 12 years old.

_____ Yes If yes, please provide phone number or email:

_____ No

Other Children in the family:

Child's Name: _____

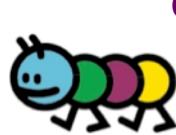
Date of Birth: year _____ month _____ day _____

Child's Name: _____

Date of Birth: year _____ month _____ day _____

Child's Name: _____

Date of Birth: year _____ month _____ day _____

Appendix H: Informed Consent for Daycare Coordinator

**Children's Representational
Development Lab**
www.carleton.ca/crdl

Winter/Spring 2015

Dear Program Coordinator,

As part of a current project on children's cognitive development, we are talking to children to learn about their developing ability to use intention information in their moral judgements. The study has been approved by the Carleton University Psychology Research Ethics Board (approval number #15-048) and it involves no physical or psychological risks for the children. In this letter, we will describe the project and request your permission for your centre's participation.

Should you wish to participate in the current project, we will provide you with individual informed consent letters to distribute to the parent(s) or guardian(s) of the four- and five-year-old children in your centre. Once consent letters have been returned to you from parents, we will arrange a convenient time for you to have our researchers at your center to conduct the study. The researchers are university students with current police record checks, and they will be sensitive to the children at all times.

Children will hear a number of stories involving one character or two characters who sometimes accidentally break something or make a mess (e.g., spill paint). Children will then be asked about the story characters (e.g., whether they did something good or bad, or should get in trouble for what they did). We are interested in whether children are better able to think about the story characters' intentions (that the damage was an accident) when they can compare two characters in the same story, when both of them did the same thing, but something went wrong for one of them (through no fault of their own). We will also play games that measure related skills such as working memory and vocabulary. Children usually enjoy these kinds of activities and will be given stickers as thanks (even if they stop playing part-way through). We will also provide enough stickers for all children in the participating classrooms to the daycare, so that all children get some, even if their parents have not consented to their participation.

We will meet with each child twice, for approximately 25 minutes each time. Participation in this experiment is completely *voluntary*. Children will be asked if they want to participate, and if they don't, they will not be pressured into participating. Children can stop playing at any time during the session and will still receive their stickers.

The information collected in this study is confidential and will be coded such that a child's name is not associated with their responses. The information provided will be used for research purposes only, and will only be accessible to the researchers directly involved in the project. The consent form will be kept separate from the data in a locked cabinet and will be destroyed after 2 years. The datafile and hard-copies of data, though they do not include identifying information, are stored on a password protected computer (the datafile) and in a locked room (the hard copies). As soon as we have finished talking with all of the children that will be participating in the study, we will remove the file linking the children's names to their identification numbers used in the datafile. In other words, it will no longer be possible to identify an individual child's responses (the data will be anonymized).

The research supervisor of this project is Dr. Deepthi Kamawar and she may be reached at 613-520-2600, ext. 7021 or deepthi.kamawar@carleton.ca. The primary researcher involved in this project is Katherine Andrews, M.A. Candidate, and she can be reached by email at katherine.andrews@carleton.ca. If you have any ethical concerns about this study, please contact Dr. Shelley Brown (Chair, Carleton University Psychology Research Ethics Board, 613-520-2600 ext. 1505 or shelley.brown@carleton.ca). The ethics protocol number for this study is 15-048. Should you have any other concerns about this study, please contact Dr. Joanna Pozzulo (Chair, Dept. of Psychology, 613-520-2600 ext. 1412 or joanna.pozzulo@carleton.ca).

Your consent is required for your centre's participation in this project. Kindly sign the attached consent form indicating whether we may provide you with individual consent forms for parents or guardians of children within this age range in your centre. If you would like a summary of the research results once the study is completed, please contact Katherine Andrews. However, please note that individual feedback regarding the children cannot be provided.

Thank you for your consideration.

Sincerely,

Deepthi Kamawar, PhD
Candidate

Katherine Andrews, M.A.

Carleton University Study – Preschoolers' Development of Intent-Based Moral Judgement

I have read the attached description of the study on cognitive development and I understand the conditions of my centre's participation.

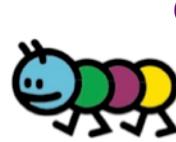
We understand that the study will require two 25-minute testing sessions, with children of appropriate ages, whose parents/guardians have given written consent for their children's participation in the research project.

Name of Centre: _____

Address: _____

Signature: _____ Date: _____

Name & Title: _____

Appendix I: Informed Consent Form for Parents or Guardians (Schools)**Children's Representational
Development Lab**

Winter/Spring 2015

Dear parent(s) or guardian(s),

As part of a current project on children's cognitive development, we are talking to children to learn about their developing ability to use intention information in their moral judgements. The study has been approved by the Carleton University Psychology Research Ethics Board (approval number #15-048) and has been approved by the Ottawa-Carleton Research and Evaluation Advisory Committee and the Principal of the school. It involves no physical or psychological risks for the children who take part in it. In this letter, we will describe the project and request your permission for your child to participate. The purpose of an informed consent is to ensure that you understand the purpose of the study and the nature of your child's involvement.

Children will hear a number of stories involving one character or two characters who sometimes accidentally break something or make a mess (e.g., spill paint). Children will then be asked about the story characters (e.g., whether they did something good or bad, or should get in trouble for what they did). We are interested in whether children are better able to think about the story characters' intentions (that the damage was an accident) when they can compare two characters in the same story, when both of them did the same thing, but something went wrong for one of them (through no fault of their own). We will also play games that measure related skills such as working memory and vocabulary as well as their ability to think about others' beliefs. Children usually enjoy these kinds of activities.

We will meet with each child individually twice, for approximately 25 minutes each time. Participation in this experiment is completely *voluntary*. Children will be asked if they want to participate, and if they don't, they will not be pressured into participating. Children can stop playing at any time during the session. Children will participate during regular class time that will be scheduled at the teacher's convenience in order to minimize interference with daily routines. While the children are participating, they will be within view of the teaching staff at all times. Should the parent or child decline to participate, that child will participate in the regularly scheduled class activities.

The information collected in this study is confidential and will be coded such that a child's name is not associated with their responses. The information provided will be used for research purposes only, and will only be accessible to the researchers directly involved in the project. Therefore, the study results will not appear in any school records. Additionally, no information will be collected from files or records of individual students. The consent form will be kept separate from the data in a locked cabinet and will be destroyed after 2 years. The datafile and hard-copies of data,

though they do not include identifying information, are stored on a password protected computer (the datafile) and in a locked room (the hard copies). As soon as we have finished talking with all of the children that will be participating in the study, we will remove the file linking the children's names to their identification numbers used in the datafile. In other words, it will no longer be possible to identify an individual child's responses (the data will be anonymized).

The research supervisor of this project is Dr. Deepthi Kamawar and she may be reached at 613-520-2600, ext. 7021 or deepthi.kamawar@carleton.ca. The primary researcher involved in this project is Katherine Andrews, M.A. Candidate and she can be reached by email at katherine.andrews@carleton.ca. If you have any ethical concerns about this study, please contact Dr. Shelley Brown (Chair, Carleton University Psychology Research Ethics Board, 613-520-2600 ext. 1505 or shelley.brown@carleton.ca). The ethics protocol number for this study is 15-048. Should you have any other concerns about this study, please contact Dr. Joanna Pozzulo (Chair, Dept. of Psychology, 613-520-2600 ext. 1412 or joanna.pozzulo@carleton.ca).

Your consent is required for your child's participation in this project. Kindly sign the attached consent form indicating whether your child may participate in this research and return it to your child's school. If you would like a summary of the research results once the study is completed, please contact Katherine Andrews. However, please note that individual feedback regarding the children cannot be provided.

Thank you for your consideration.

Sincerely,

Deepthi Kamawar, PhD

Katherine Andrews, M.A. Candidate

Carleton University Study – Preschoolers’ Development of Intent-Based Moral Judgement

The information collected for this project is confidential and protected under the Municipal Freedom of Information and Protection of Privacy Act, 1989.

I have read the attached description of the study on cognitive development (Preschoolers’ Development of Intent-Based Moral Judgement) and I understand the conditions of my child’s participation.

I consent to my child’s participation in the current study [**please fill out the next page**]

This form is to be completed and returned **ONLY** if I consent to my child participating in this research

Child’s Name (please print): _____

Parent’s/Guardian’s Name (please print): _____

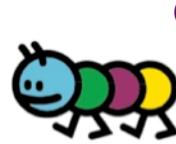
Signature of Parent/Guardian: _____ Date: _____

Participant Information

If you have consented to your child participating on the previous page, please provide us with the following information about your child. If you have not provided consent, please do not fill out this page.

Please note: Please note: your child's name and birth date will be kept separate from their data and consent form. Date of birth will be used to calculate children's age in months and only this information will be included with their data. Only researchers directly involved in this project will have access to this information.

Child's Date of Birth: year _____ month _____ day _____

Appendix J: Informed Consent Form for Principal**Children's Representational
Development Lab**

Winter/Spring 2015

Dear Principal,

As part of a current project on children's cognitive development, we are talking to children to learn about their developing ability to use intention information in their moral judgements. The study has been approved by the Carleton University Psychology Research Ethics Board (approval number #15-048) and has been approved by the Ottawa-Carleton Research and Evaluation Advisory Committee and it involves no physical or psychological risks for the children. In this letter, we will describe the project and request your permission for your school's participation.

Should you wish to participate in the current project, we will provide you with individual informed consent letters to distribute to the parent(s) or guardian(s) of the four- and five-year-old children in your school. Once consent letters have been returned to you from parents, we will arrange a convenient time for you to have our researchers at your school to conduct the study. The researchers are university students with current police record checks, and they will be sensitive to the children at all times.

Children will hear a number of stories involving one character or two characters who sometimes accidentally break something or make a mess (e.g., spill paint). Children will then be asked about the story characters (e.g., whether they did something good or bad, or should get in trouble for what they did). We are interested in whether children are better able to think about the story characters' intentions (that the damage was an accident) when they can compare two characters in the same story, when both of them did the same thing, but something went wrong for one of them (through no fault of their own). We will also play games that measure related skills such as working memory and vocabulary as well as their ability to think about others' beliefs. Children usually enjoy these kinds of activities.

We will meet with each child individually twice, for approximately 25 minutes each time. Participation in this experiment is completely *voluntary*. Children will be asked if they want to participate, and if they don't, they will not be pressured into participating. Children can stop playing at any time during the session. Children will participate during regular class time that will be scheduled at the teacher's convenience in order to minimize interference with daily routines. While the children are participating, they will be within view of the teaching staff at all times. Should the parent or child decline to participate, that child will participate in the regularly scheduled class activities.

The information collected in this study is confidential and will be coded such that a child's name is not associated with their responses. The information provided will be used for research purposes

only, and will only be accessible to the researchers directly involved in the project. The consent form will be kept separate from the data in a locked cabinet and will be destroyed after 2 years. The datafile and hard-copies of data, though they do not include identifying information, are stored on a password protected computer (the datafile) and in a locked room (the hard copies). As soon as we have finished talking with all of the children that will be participating in the study, we will remove the file linking the children's names to their identification numbers used in the datafile. In other words, it will no longer be possible to identify an individual child's responses (the data will be anonymized). Therefore, the study results will not appear in any school records. Additionally, no information will be collected from files or records of individual students.

The research supervisor of this project is Dr. Deepthi Kamawar and she may be reached at 613-520-2600, ext. 7021 or deepthi.kamawar@carleton.ca. The primary researcher involved in this project is Katherine Andrews, M.A. Candidate, and she can be reached by email at katherine.andrews@carleton.ca. If you have any ethical concerns about this study, please contact Dr. Shelley Brown (Chair, Carleton University Psychology Research Ethics Board, 613-520-2600 ext. 1505 or shelley.brown@carleton.ca). The ethics protocol number for this study is 15-048. Should you have any other concerns about this study, please contact Dr. Joanna Pozzulo (Chair, Dept. of Psychology, 613-520-2600 ext. 1412 or joanna.pozzulo@carleton.ca).

Your consent is required for your school's participation in this project. Kindly sign the attached consent form indicating whether we may provide you with individual consent forms for parents or guardians of children within this age range in your school. If you would like a summary of the research results once the study is completed, please contact Katherine Andrews. However, please note that individual feedback regarding the children cannot be provided.

Thank you for your consideration.

Sincerely,

Deepthi Kamawar, PhD

Katherine Andrews, M.A. Candidate

**Appendix K: Informed Consent Form for Adult Participants Recruited via
Word-of Mouth**



**Children's Representational
Development Lab**
www.carleton.ca/cndl

In this letter, we will describe the project and request your consent to participate. The purpose of an informed consent is to ensure that you understand the purpose of the study and the nature of your involvement. The informed consent must provide sufficient information such that you have the opportunity to determine whether you wish to participate in the study.

Present study: The Development of Intent-based Moral Judgements and the Role of Theory of Mind

Research Personnel. The following people are involved in this study, and may be contacted at any time if you have questions or concerns: Katherine Andrews (katherine.andrews@carleton.ca), and Dr. Deepthi Kamawar (Faculty Sponsor, e-mail: deepthi.kamawar@carleton.ca).

Concerns. If you have any ethical concerns about this study, please contact Dr. Shelley Brown (Chair, Carleton University Psychology Research Ethics Board, 613-520-2600 ext. 1505 or shelley.brown@carleton.ca). The ethics protocol number for this study is 15-048. Should you have any other concerns about this study, please contact Dr. Joanna Pozzulo (Chair, Dept. of Psychology, 613-520-2600 ext. 1412 or joanna.pozzulo@carleton.ca).

Purpose. As part of a current project on children's cognitive development, we are talking to children to learn about their developing ability to use intention information in their moral judgements. In order to compare these results to the way that adults respond, we are also collecting data from an adult population.

Task Requirements. You will hear a number of stories involving either one or two characters who perform a variety of actions. You will then be asked to evaluate the characters in the stories. We are interested in examining the factors that are considered when making these decisions. The testing session will last for approximately 30 minutes.

Benefits/compensation. Participation in this experiment is completely *voluntary*. You will receive \$5 Tim Horton's gift card as compensation for your participation. You can

stop participating at any time during the session, or omit any questions that you would rather not answer, and will still receive your compensation.

Potential risk/discomfort. The study involves no physical or psychological risks for those who take part in it.

Anonymity/Confidentiality. The information collected in this study is confidential and will be coded such that a participant's name is not associated with their responses. The information provided will be used for research purposes only, and will only be accessible to the researchers directly involved in the project. The consent form will be kept separate from the data in a locked cabinet and will be destroyed after 2 years. The datafile and hard-copies of data, though they do not include identifying information, are stored on a password protected computer (the datafile) and in a locked room (the hard copies). As soon as we have finished collecting information from all of the participants, we will remove the file linking the participant's names to their identification numbers used in the datafile. At this point, it will no longer be possible to identify an individual participant's responses (i.e., the data will be anonymized).

Right to withdraw. Your participation in this study is entirely voluntary. At any point during the study, you have the right to not complete certain questions, or to withdraw without penalty. If you withdraw, you have the right to require that your data be deleted. In all of these cases, you will still receive the gift card.

This study has been approved by the Carleton University Psychology Research Ethics Board (approval number 15-048).

Your consent is required for your participation in this project. Kindly sign the attached consent form indicating whether you consent to participate in this research. If you would like a summary of the research results once the study is completed, please contact Katherine Andrews. However, please note that individual feedback cannot be provided.

Thank you for your consideration.

Sincerely,

Deepthi Kamawar, PhD

Katherine Andrews, M.A. Candidate

Signatures

I have read the above form and understand the conditions of my participation. My participation in this study is voluntary, and I understand that if at any time I wish to leave the experiment, I may do so without having to give an explanation and with no penalty whatsoever. Furthermore, I am also aware that the data gathered in this study are confidential and anonymous with respect to my personal identity. My signature indicates that I agree to participate in this study.

Participant's Name: _____

Participant's signature:

Researcher's Name: _____

Researcher's signature:

Date: _____

**Appendix L: Informed Consent Form for Adult Participants Recruited via
SONA system**



In this letter, we will describe the project and request your consent to participate. The purpose of an informed consent is to ensure that you understand the purpose of the study and the nature of your involvement. The informed consent must provide sufficient information such that you have the opportunity to determine whether you wish to participate in the study.

Present study: The Development of Intent-based Moral Judgements and the Role of Theory of Mind

Research Personnel. The following people are involved in this study, and may be contacted at any time if you have questions or concerns: Katherine Andrews (katherine.andrews@carleton.ca), and Dr. Deepthi Kamawar (Faculty Sponsor, e-mail: deepthi.kamawar@carleton.ca).

Concerns. If you have any ethical concerns about this study, please contact Dr. Shelley Brown (Chair, Carleton University Psychology Research Ethics Board, 613-520-2600 ext. 1505 or shelley.brown@carleton.ca). The ethics protocol number for this study is 15-048. Should you have any other concerns about this study, please contact Dr. Joanna Pozzulo (Chair, Dept. of Psychology, 613-520-2600 ext. 1412 or joanna.pozzulo@carleton.ca).

Purpose. As part of a current project on children's cognitive development, we are talking to children to learn about their developing ability to use intention information in their moral judgements. In order to compare these results to the way that adults respond, we are also collecting data from an adult population.

Task Requirements. You will hear a number of stories involving either one or two characters who perform a variety of actions. You will then be asked to evaluate the characters in the stories. We are interested in examining the factors that are considered when making these decisions. The testing session will last for approximately 30 minutes.

Benefits/compensation. Participation in this experiment is completely *voluntary*. You will receive 0.5% credit towards your PSYC 1001, PSYC 1002, PSYC 2001, or PSYC

2002 grade as compensation for your participation. You can stop participating at any time during the session, or omit any questions that you would rather not answer, and will still receive your 0.5% credit toward your psychology course.

Potential risk/discomfort. The study involves no physical or psychological risks for those who take part in it.

Anonymity/Confidentiality. The information collected in this study is confidential and will be coded such that a participant's name is not associated with their responses. The information provided will be used for research purposes only, and will only be accessible to the researchers directly involved in the project. The consent form will be kept separate from the data in a locked cabinet and will be destroyed after 2 years. The datafile and hard-copies of data, though they do not include identifying information, are stored on a password protected computer (the datafile) and in a locked room (the hard copies). As soon as we have finished collecting information from all of the participants, we will remove the file linking the participant's names to their identification numbers used in the datafile. At this point, it will no longer be possible to identify an individual participant's responses (i.e., the data will be anonymized).

Right to withdraw. Your participation in this study is entirely voluntary. At any point during the study, you have the right to not complete certain questions, or to withdraw without penalty. If you withdraw, you have the right to require that your data be deleted. In all of these cases, you will still receive course credit.

This study has been approved by the Carleton University Psychology Research Ethics Board (approval number 15-048).

Your consent is required for your participation in this project. Kindly sign the attached consent form indicating whether you consent to participate in this research. If you would like a summary of the research results once the study is completed, please contact Katherine Andrews. However, please note that individual feedback cannot be provided.

Thank you for your consideration.

Sincerely,

Deepthi Kamawar, PhD

Katherine Andrews, M.A. Candidate

Signatures

I have read the above form and understand the conditions of my participation. My participation in this study is voluntary, and I understand that if at any time I wish to leave the experiment, I may do so without having to give an explanation and with no penalty whatsoever. Furthermore, I am also aware that the data gathered in this study are confidential and anonymous with respect to my personal identity. My signature indicates that I agree to participate in this study.

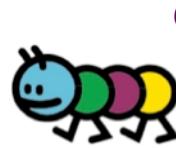
Participant's Name: _____

Participant's signature:

Researcher's Name: _____

Researcher's signature:

Date: _____

Appendix M: Debriefing Letter for Parents or Guardians (Daycare)

**Children's Representational
Development Lab**
www.carleton.ca/crdl

Winter/Spring 2015

Dear Parent(s) or Guardian(s),

Recently we contacted you to invite your child to participate in our study on Preschoolers' Development of Intent-Based Moral Judgement. Thank you for agreeing to allow your child to participate – we had a lot of fun!

The purpose of our current research program is to gain a better understanding of how children develop the ability to use intention information in their moral reasoning. We read a number of different stories with your children and asked them questions about the characters that unintentionally produced either neutral or negative outcomes. The stories were designed to examine whether children are better able to take into account the characters' intentions and make more mature moral evaluations when they are given the chance to compare the characters' within a single story, compared to when they hear about the characters in different stories. Children were asked questions about whether the character did things on purpose (or by accident), whether it was good or bad that the character did what she/he did, and whether the character should get in trouble for what they did (even if it was by accident). We also played games that measured related skills such as working memory and vocabulary. Your child's answers to these questions will help us to understand how children begin to take into account other's intentions when making moral evaluations.

We are very excited to start investigating the results of our study. For more information about our findings, or for a summary of the project once it is complete, please contact Katherine Andrews by email at katherine.andrews@carleton.ca or 613-520-2600, ext. 2885.

If you have any ethical concerns about this study, please contact Dr. Shelley Brown (Chair, Carleton University Psychology Research Ethics Board, 613-520-2600 ext. 1505 or shelley.brown@carleton.ca). The ethics protocol number for this study is 15-048. Should you have any other concerns about this study, please contact Dr. Joanna Pozzulo (Chair, Dept. of Psychology, 613-520-2600 ext. 1412 or joanna.pozzulo@carleton.ca).

The information collected in this study is confidential and will be coded such that a child's name is not associated with their responses, and the information provided will be used for research purposes only, and will only be accessible to the researchers directly involved in the project. We cannot provide any information about an individual child,

only about the study as a whole. If you have any concerns about any aspect of your child's development, we suggest that you consult with your family doctor or pediatrician.

If you would like to participate in future projects in our lab at Carleton University, please contact us at the Children's Representational Development Lab by email at crdl@carleton.ca or by phone at 613-520-2600 ext. 2885.

Thank you,

Deepthi Kamawar, PhD

Katherine Andrews, M.A. Candidate

Appendix N: Debriefing Letter for Parents or Guardians (Schools)

Winter/Spring 2015

Dear Parent(s) or Guardian(s),

Recently we contacted you to invite your child to participate in our study on Preschoolers' Development of Intent-Based Moral Judgement. Thank you for agreeing to allow your child to participate – we had a lot of fun!

The purpose of our current research program is to gain a better understanding of how children develop the ability to use intention information in their moral reasoning. We read a number of different stories with your children and asked them questions about the characters that unintentionally produced either neutral or negative outcomes. The stories were designed to examine whether children are better able to take into account the characters' intentions and make more mature moral evaluations when they are given the chance to compare the characters' within a single story, compared to when they hear about the characters in different stories. Children were asked questions about whether the character did things on purpose (or by accident), whether it was good or bad that the character did what she/he did, and whether the character should get in trouble for what they did (even if it was by accident). We also played games that measured related skills such as working memory and vocabulary as well as their ability to think about others' beliefs. Your child's answers to these questions will help us to understand how children begin to take into account other's intentions when making moral evaluations.

We are very excited to start investigating the results of our study. For more information about our findings, or for a summary of the project once it is complete, please contact Katherine Andrews by email at katherine.andrews@carleton.ca or 613-520-2600, ext. 2885.

If you have any ethical concerns about this study, please contact Dr. Shelley Brown (Chair, Carleton University Psychology Research Ethics Board, 613-520-2600 ext. 1505 or shelley.brown@carleton.ca). This study received ethics approval from the Research Ethics Board of Carleton University and has received approval from the Ottawa-Carleton Research and Evaluation Advisory Committee and the school Principal. The ethics protocol number for this

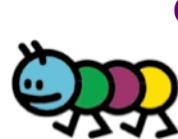
study is 15-048. Should you have any other concerns about this study, please contact Dr. Joanna Pozzulo (Chair, Dept. of Psychology, 613-520-2600 ext. 1412 or joanna.pozzulo@carleton.ca).

The information collected in this study is confidential and will be coded such that a child's name is not associated with their responses, and the information provided will be used for research purposes only, and will only be accessible to the researchers directly involved in the project. Your child's participation will have no impact on their school results. We cannot provide any information about an individual child, only about the study as a whole. If you have any concerns about any aspect of your child's development, we suggest that you consult with your family doctor or pediatrician.

Thank you,

Deepthi Kamawar, PhD

Katherine Andrews, M.A. Candidate

Appendix O: Debriefing Letter for Adult Participants

**Children's Representational
Development Lab**
www.carleton.ca/cndl

Winter/Spring 2015

Dear Participant,

Thank you for participating in our study on Preschoolers' Development of Intent-Based Moral Judgement.

The purpose of our current research program is to gain a better understanding of how children develop the ability to use intention information in their moral reasoning. We are collecting information from adult participants as well in order to compare children's responses to those of adults. The stories you heard were about characters that unintentionally produced either neutral or negative outcomes. The stories were designed to examine whether children are better able to take into account the characters' intentions and make more mature moral evaluations when they are given the chance to compare the characters' within a single story, compared to when they hear about the characters in different stories. Therefore, questions are asked about the characters following each story (e.g., whether the character did things on purpose (or by accident), whether it was good or bad that the character did what she/he did, and whether the character should get in trouble for what they did). Your answers to these questions will help us understand how children's responses compare to those of adults.

We are very excited to start investigating the results of our study. For more information about our findings, or for a summary of the project once it is complete, please contact Katherine Andrews by email at katherine.andrews@carleton.ca or 613-520-2600, ext. 2885.

If you have any ethical concerns about this study, please contact Dr. Shelley Brown (Chair, Carleton University Psychology Research Ethics Board, 613-520-2600 ext. 1505 or shelley.brown@carleton.ca). The ethics protocol number for this study is 15-048. Should you have any other concerns about this study, please contact Dr. Joanna Pozzulo (Chair, Dept. of Psychology, 613-520-2600 ext. 1412 or joanna.pozzulo@carleton.ca).

The information collected in this study is confidential and will be coded such that a participant's name is not associated with their responses, and the information provided will be used for research purposes only, and will only be accessible to the researchers directly involved in the project. We cannot provide any information about an individual participant, only about the study as a whole.

Thank you,
Deepthi Kamawar, PhD

Katherine Andrews, M.A. Candidate

Appendix P: Example of False Belief Task Stimuli**First-Order False Belief****Second-Order False Belief**

Appendix Q: Approval Form from School Board**Ottawa-Carleton Research and Evaluation Advisory Committee (OCREAC)**

April 9, 2015

Katherine Andrews
[REDACTED]Re: Preschoolers' understanding of intent-based moral judgments and the role of theory of mind

Dear Ms. Andrews,

The Ottawa-Carleton Research and Evaluation Advisory Committee has reviewed your application and is granting you approval pending revisions to conduct your research in this academic year. This approval is for the Ottawa Catholic School Board and the Ottawa-Carleton District School Board. However, please note that final approval to participate in the study *must* come from the individual principal.

In your application, you have included Appendices H to K: Theory of mind tasks. However, in the information letters to parents and principals as well as the debriefing, you did not refer to these tasks. These documents reference the story tasks (Appendices F and G) and the working memory and vocabulary tasks (Appendices L to N). Therefore, please revise these documents to include reference to the theory of mind tasks.

Once the requested revisions have been completed, please send them to me at the Ottawa Catholic School Board (lauren.figueroedo@ocsb.ca or 613-224-4455 ext. 2341). When the revisions have been approved, a letter of approval from OCREAC will be provided containing instructions on how to proceed. On behalf of the Ottawa-Carleton Research and Evaluation Advisory Committee, we thank you for approaching the Ottawa-Carleton area school boards as a venue for your study.

Sincerely,



Lauren Figueredo, Ph.D.
Research Officer, Student Success – Leading & Learning
Ottawa Catholic School Board
613-224-4455 ext. 2341
lauren.figueroedo@ocsb.ca

On behalf of the Ottawa-Carleton Research and Evaluation Advisory Committee



Ottawa Catholic School Board
570 Hunt Club Road West • Nepean • Ontario • K2G 3R4
Ottawa-Carleton District School Board