UNIVERSITY OF CALIFORNIA, SAN DIEGO

Young Children's Evaluation of Sources: An Investigation of Social Context Effects

A dissertation submitted in partial satisfaction
of the requirements for the degree of Doctor of Philosophy

in

Psychology

by

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2009

The dissertation of Caroline Lee-win Gee is approved, and it is acceptable in quality and form for publication on microfilm:

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2009

DEDICATION

I dedicate this work to Kaylin and Carter. I hope you are always curious about the world around you. I encourage you to ask questions, but also to critically evaluate your sources.

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Chapter 4, in full, is being prepared for publication as it appears in Gee, C.L. & Heyman, G.D. (2009). Children's reasoning about preferences. The dissertation author was the primary investigator and author on this paper.

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ABSTRACT OF THE DISSERTATION

Young Children's Evaluation of Sources:

An Investigation of Social Context Effects

by

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Doctor of Philosophy in Psychology

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The studies contained in this dissertation examined children's reasoning about people as sources of information. Of interest was the extent to which children use social context cues to evaluate source credibility.

Chapter 2 examined children's reasoning about motives when evaluating sources. In a series of experiments (*N*=296), participants heard scenarios in which characters' motivations to reveal truthful information were systematically manipulated. Both elementary and preschool children used contextual cues to judge the credibility of what individuals say about themselves. This research also provides

evidence that children's reasoning about self-presentation may be linked to their beliefs about social acceptability norms.

Chapter 3 presents evidence of children's use of age as a social category to infer a source's knowledgeability. Two studies (*N*=112) found that elementary school and preschool children understand that age may be a cue to knowledgeability, but that expertise information takes precedence over age information when both are presented. Furthermore, participants showed an understanding of the different kinds of knowledge that an adult and a child may have.

Chapter 4 examined similarity as a source credibility cue when establishing preferences in two studies (*N*=89). Preschool children reported that it was appropriate to use gender to evaluate sources, but not shared preferences. Results from a behavioral task provide evidence of children using both shared gender and shared preferences in some contexts. Furthermore, children's responses to explicit questions were associated with individual differences in memory of that source cue, suggesting that children are better able to remember social information they view as important.

Although young children are often viewed as unsophisticated in their use of information from others, this dissertation provides evidence that, by 4 years of age, they are already using a wide range of cues, including information about the mental life of others when reasoning about this information.

CHAPTER 1

Introduction

One important way in which people learn about the world is through communication with others. This social learning has been argued to be the primary, if not only, source of transmission of history and culture (Harris & Koenig, 2006; Tomasello, 1999). Research suggests that even infants show signs of learning from other people (e.g., Klinnert, 1984; Sorce, Emde, Campos, & Klinnert, 1985). Through the preschool years, children become even more sophisticated at gathering social information, and begin to use language and other skills to effectively seek out new information (Baldwin & Moses, 1996). In order to make use of this information, children need to learn to effectively distinguish what information is reliable, and what information should be questioned.

Clearly, there are many ways in which a person can evaluate new information. Of interest in this dissertation is children's use of social context information. Although information such as previous reliability or access to correct information can be used as cues to a source's knowledge, more general social context cues such as a source's occupation or age can also give cues a source's knowledge. Social context information may be more easily accessible, as some social category information (such as age, gender, and ethnicity) can be gathered visually. Other social context cues such as occupation, goals, or preferences often come up through casual conversation or observation.

Extensive research in social psychology demonstrates adult's use of social context cues. For example, adults consider information about the speaker's personal beliefs (e.g., Lui & Standing, 1989) and gender (e.g., Eagly, & Johnson, 1990; Erickson, Lind, Johnson, & O'Barr, 1978) when deciding whether or not to believe a

statement. These social category cues, and others, can be used to infer a source's knowledge or trustworthiness, and critical evaluation of source credibility can be important so as to avoid deception or mistakes. It is unknown to what extent children use these types of cues when making judgments about sources of information (Clément, Koenig, & Harris, 2004; Dawkins, 1993).

There is evidence to suggest that children are developing the skills needed to make use of social context cues during the preschool and elementary school years. One social cue available to children is the age of the source. For example, by the time children are 3 years old, they are aware that age is often associated with greater knowledge or expertise (Jaswal & Neely, 2006; Taylor, Cartwright, & Bowden, 1991). A recent study has examined children's understanding of the different knowledge that people with different occupations may have. Lutz and Keil (2002) showed that 3-year-olds believe that a mechanic knows more about fixing a flat tire than a doctor, but do not attribute more general engineering knowledge or biological knowledge to one occupation or the other.

Information about a person's thoughts and beliefs can also be used as a cue to determine source credibility. A source's motives can reveal whether a source may have reason to distort the truth. In the few studies that have examined children's use of motive information, most suggest a development during the elementary school years (Banerjee & Yuill, 1999; Bennett & Yeeles, 1990; Heyman & Legare, 2005; Mills & Keil, 2005; Robertson & Rossiter, 1974). In particular, these studies examined children's judgments about a source's statements in light of information about the source's self-presentational motives and self-interest. For example, Heyman and

Legare (2005) found that 9- to 10-year-olds, but not 6- to 7-year-olds, were likely to be skeptical of self-reported trait information, if the trait was highly evaluative such as smart and honest. Robertson and Rossiter (1974) also show age-related increases across elementary school in children's perceptions of the persuasive intent of commercials.

Taken together, there is evidence to suggest that children are beginning to be aware of some of the cues to a source's credibility during the preschool years, but also evidence that the understanding of the possibility of distortions and deceptions continue to develop during the elementary school years. The research in this dissertation extends this work by further examining the limits of children's use of social context information to evaluate sources.

Implications

Theoretically, understanding how children think about sources of information has implications for understanding social cognitive development, and intersects several literatures including theory of mind, suggestibility, and critical thinking. Although these literatures vary in their respective goals, each addresses questions regarding children's understanding about what other people say. For example, theory of mind research explores children's ability to recognize a source's intent or beliefs, whereas suggestibility research investigates how children accept or discount new information. Children's use of social context cues to evaluate sources sheds light on the attributions children may make of different people. For instance, children may attribute certain types of knowledge to a teacher, but not a parent. The attributions children make about people in certain social categories may influence their cognitions

about, or behaviors toward them. Furthermore, children's ability to critically evaluate what to believe allows them to actively participate in the construction of knowledge, allowing them to be effective seekers of social knowledge (see Baldwin & Moses, 1996 for a discussion about the development of social information gathering).

Children's reasoning about sources is also important for practical reasons. One implication of this research is the potential to define ways to help children develop the skills necessary to critically evaluate new information. Children are often presented with many messages that are meant to persuade them, such as advertising, peer discussions, and messages from teachers and parents, yet young children are often not aware of this intent to persuade (Mills & Keil, 2005; Oates, Blades, Gunter, & Don, 2003). For example, preschool children tend to assume that television commercials are part of the program that they are watching (Atkin, 1982), and are likely to believe what they hear on television (Borzekowski & Robinson, 2001; Fox, 1996; Hogren, Choate & Brownwell, 2000). Even older children who are aware of the persuasive intent behind advertisements are still likely to believe claims made in a commercial (see Ross et al., 1984). An understanding of a source's intentions is crucial for determining the trustworthiness of a source. Examining areas in which children may be more susceptible to believing untrue statements allows researchers to find ways to decrease that vulnerability through the improvement of critical thinking skills.

A second practical implication to understanding the factors affecting persuasion is that it may help adults increase the effectiveness of their communication with children. Researchers, clinicians, teachers, and parents spend a great deal of time and effort to try to keep children stay safe and healthy. For example, many researchers

have focused on prevention and intervention strategies to help children stay away from drugs and violence (e.g., Guerra, 2003; Guerra & Williams, 2003; MacIntyre, Carr, Lawler, & Flattery, 2000). If researchers knew which sources are considered to be most influential, important messages can be delivered by those specific sources who would be most persuasive. Indeed, understanding what characteristics build trust may also prove valuable in a variety of situations. For instance, evidence suggests that children's trust in their teacher is associated with classroom achievement (Imber, 1973). Thus, children's reasoning about credibility may be informative for understanding how to increase the likelihood that children will accept a new message.

Three empirical papers

The research in the following three chapters was designed to: a) determine the types of social context cues that children use when making judgments about who to believe, b) examine age-related changes in the skepticism of sources, and c) investigate the possible mechanisms for change in development of source reasoning.

The aim of Chapter 2 was to examine the effects of different social contexts on preschool and elementary school children's evaluation of sources. Although research suggests that preschool and elementary school children possess the cognitive capacity to understand that sources can sometimes be unreliable (e.g., Ackerman, 1983; Koenig, Clément, & Harris; Koenig & Harris, 2005; Lampinen & Smith, 1995), there is also substantial evidence suggesting limitations in children's critical evaluation of sources through the late elementary school years (Aloise-Young, 1993; Banerjee, 2000, 2002; Mills & Keil, 2005). Chapter 2 investigated (1) children's understanding

that people do not always reveal true information, and (2) children's use of context cues to judge the credibility of what individuals say about themselves.

The purpose of Chapters 3 and 4 were to examine the limits of children's use of different source credibility cues. Chapter 3 focused on children's sense of the kinds of knowledge that different individuals are likely to have or not to have. Previous research suggests that children consider knowledge to be an important cue to source credibility (e.g., Koenig & Harris 2005; Lampinen & Smith, 1995; Robinson, Champion, & Mitchell, 1999; Toglia, Ross, Ceci, & Hembrooke, 1992; Whitcombe & Robinson, 2000). Chapter 3 extends this work by investigating whether children use social cues, such as source age, to infer knowledgeability. Specifically, do children understand that age is only a cue to knowledgeability, and that there may be particular topics in which a child is more knowledgeable than an adult?

Chapter 4 investigated preschool children's use of two similarity cues when establishing new preferences: shared gender and shared known preferences. Would children's preferences be influenced more by similar peers than dissimilar peers? Research suggests that adults are more likely to look to same-gender sources than opposite-gender sources (e.g., Zanna, Goethals, & Hill, 1975) and to those with similar preferences than dissimilar preferences (e.g., Silvia, 2005). Children may also be sensitive to these cues (e.g., Bussey & Perry, 1982; Fawcett and Markson, in press), but there is also reason to believe that they are not (e.g., Lumeng, Cardinal, Jankowski, Kaciroti, & Gelman, 2008). Unlike the majority of research on children's reasoning about sources which only examine their use of adult sources (e.g., Koenig & Harris, 2005; Lutz & Keil, 2002; Robinson et al., 1999; Toglia et al., 1992), this

research presents children with peer sources. Research suggests the importance of peer influences during development (e.g., Birch, 1980; DiLeo, Moely, & Sulzer, 1979; Hendy, 2002; Sagotsky & Lepper, 1982; Weber et al., 2001), and even preschool children rely on peers as sources of information (Jaswal & Neely, 2006; VanderBorght & Jaswal, in press). Thus, it may be informative to examine children's reasoning about peers as sources of information.

Together, the studies that comprise this dissertation examine children's use of a variety of social cues to determine source credibility. The studies focus on preschool and elementary school-aged children to investigate age related changes that may occur during this period.

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CHAPTER 2

Children's Evaluations of Other People's Self-Descriptions

Abstract

Children's evaluations of what people communicate about themselves were examined in 3 studies with a total of 296 participants (ages 4 to 12). Participants heard scenarios in which characters' motivations to reveal truthful information were systematically manipulated to examine (1) children's understanding that people do not always reveal true information, and (2) children's use of contextual cues to judge the credibility of what individuals say about themselves. Results from Study 1 suggest that elementary school children are quite sophisticated at reasoning with reference to motive information. Study 2 suggests that preschool children can also make use of motive information that is salient and familiar. For example, even preschool children responded that boys are less likely than girls to reveal to peers that they like to play with dolls. Study 3 suggests that children's reasoning about self-presentation is linked to their beliefs about social acceptability norms.

Children's Evaluation of Other People's Self-Descriptions

A major topic of social cognition research in the last couple of decades has been the development of theory of mind (see Wellman, Cross, & Watson, 2001). To date, much of this research has focused on children's understanding of false belief (Flavell & Miller, 1998). Despite the importance of this research, many scholars have argued that other critical aspects of the development of psychological understanding have been largely ignored (Bloom & German, 2000; Miller, 2000). For example, one important skill children need in order to function effectively in their social environment is to be able to understand that people do not always provide accurate reports of their own beliefs. The present paper focuses on one particular context in which the potential for such distortion is often evident: when individuals communicate information about themselves. There are many reasons why people may reveal untrue self-descriptions such as a lack of self-knowledge (e.g., Burton & Mitchell, 2003), a desire to present themselves in a favorable manner (e.g., Bennett & Yeeles, 1990b), and purposeful deceit (e.g., Lewis, Stanger, & Sullivan, 1989). Of interest are both children's perceptions of how people are likely to present themselves in different contexts, and how children use contextual cues to judge the credibility of what others say about themselves.

Consider that adults do not always believe what other people say. Instead, they evaluate statements in light of other information such as social context and their previous knowledge of the speaker's trustworthiness and personal beliefs (e.g., Brehm & Lipsher, 1959; Dodd & Bradshaw, 1980; Eagly, Wood, & Chaiken, 1978; Lui & Standing, 1989; Maddux & Rogers, 1980; Miller, 1999). By considering a source's

knowledge, motives, and goals, adults can critically evaluate information and actively participate in learning, as opposed to passively accepting information. Whether or not young children are capable of such critical thinking about the communications of others is subject to debate (Clément, Koenig, & Harris, 2004; Dawkins, 1993).

Children's ability to successfully reason about how people present themselves has a number of important implications. One implication concerns children's level of vulnerability to manipulation by others. For example, a child who does not evaluate statements in light of social contexts might not discount an individual's attempt to show off, and may consequently experience feelings of inadequacy (Bennett & Yeeles, 1990a). A credulous child might also be deliberately tricked or misled by others into doing something he or she doesn't want to do (Aloise & Miller, 1991), or duped into believing something patently untrue (Ceci, Ross & Toglia, 1987). Furthermore, even in situations in which children are not being manipulated, understanding how people present themselves can influence the way children interpret and respond to social information. For example, being able to utilize contextual cues when judging self-reported information helps children understand that certain communications are meant to be taken as a joke. Additionally, because many children's books and movies involve situations in which a character misrepresents himself, an awareness of this possibility for manipulation would likely enhance children's enjoyment and understanding of such stories.

There is evidence that preschool and early elementary school children possess the cognitive capacity to understand that sources can sometimes be unreliable (Ackerman, 1983; Bussey, 1992; Ceci et al., 1987; Koenig, Clèment, & Harris, 2004;

Koenig & Harris, in press; Lampinen & Smith, 1995; Lee, Cameron, Douchette, & Talwar, 2002; Robinson, Champion, & Mitchell, 1999; Robinson, Mitchell, & Nye, 1995). For instance, 4-year-olds understand that individuals sometimes say untrue statements to get what they want or to get out of trouble (Bussey, 1992; Lee et. al, 2002; Robinson et. al, 1995), and 3-year-olds are less likely to assimilate information from an adult described as "silly" than an adult who was not described that way (Lampinen & Smith, 1995).

However, there is also substantial evidence suggesting that until the late elementary school years, there are limitations in the extent to which children are able to critically evaluate what others say about themselves. For example, children in early elementary school often fail to appreciate that individuals may adapt their own communication in response to their audience, or that they may have associated self-presentational motives for doing so (Aloise-Young, 1993; Banerjee, 2000, 2002b; Bennett & Yeeles, 1990a). Along these lines, Banerjee & Yuill (1999a) found that young children often fail to incorporate social cues in accounting for what people say about themselves. In this research, they presented 6- to 11-year-old children with stories in which a character tells a group of other children untrue information about herself (e.g., falsely claiming not to be hurt or scared). Participants were then asked why the character said what she said. The 6- and 7-year-old children were significantly less likely than the older children to give an explanation that referred to the character's intent to manipulate the other children's evaluation of her.

One critical component of understanding that individuals may distort what they say about themselves is the appreciation that individuals may wish to present

themselves in a socially desirable manner. Some evidence suggests that certain social evaluative concerns do not emerge until around age 8 (Bigelow & La Gaipa, 1975; Heyman & Legare, 2005; Vasey, Crnic, & Carter, 1994). Vasey and colleagues (1994) asked elementary school children to generate possible reasons why a character might be worried in different settings. Younger participants were less likely than children over 8 years of age to list threats of social evaluation as one of their worries. If young children do not think that others are concerned with social evaluation, it may mean that they are unlikely to take such concerns into account when evaluating people's claims about themselves. Moreover, Heyman and Legare (2005) found that there was a substantial shift between the ages of 7 and 10 in children's appreciation of motives to appear socially desirable. They found that, unlike 6- and 7-year-olds, 10- and 11-year-olds appreciated that individuals might lie when reporting their own highly evaluative traits, such as how honest and smart they are. Such findings would suggest that children in early elementary school may have difficulty understanding that individuals could be motivated to distort what they say about themselves.

Another critical aspect of recognizing that people may distort what they say about themselves is an appreciation that skepticism may be necessary when evaluating claims people make when an ulterior motive is present. Several studies suggest that it is also around age 8 that children show a tendency to engage in such discounting (e.g., Miller & Aloise, 1990; Mills & Keil, 2005). Mills and Keil (2005) found that children around this age begin to show skepticism of statements that are aligned with an individual's self-interests. This evidence of relatively late development suggests that

early elementary school children may not effectively take into account motives and social context when evaluating other people's statements.

Of interest in the present research is whether early elementary school children might show such sophisticated reasoning if cognitive task demands were kept to a minimum. This possibility would be consistent with other findings that children demonstrate more sophisticated social reasoning in familiar social contexts (Miller & Aloise, 1990; Kassin & Lepper, 1984) and in conditions that minimize information processing demands (Aloise & Miller, 1991; Banerjee & Yuill, 1999b; Lampinen & Smith, 1988).

In the present research, scenarios were developed to assess children's understanding that individuals might be motivated to say different things about themselves in different contexts. This understanding was investigated by examining both their predictions of what individuals might reveal about themselves and their evaluations of the credibility of other people's self descriptions in different contexts.

We included scenarios that would be salient and familiar to early elementary school children. One social context that may be highly salient to younger children is gender role behavior. Research has shown that even preschool children have formed gender schemas (e.g., Bem, 1981) and are aware of the possibility that certain activities are associated with a particular gender (Eichstedt, Serbin, & Poulin-Dubois, 2002; Killen, Pisacane, Lee-Kim, Ardila-Rey, 2001; Martin, 1989; Martin & Halverson, 1981; Poulin-Dubois, Serbin, Eichstedt, Sen, & Beissel, 2002; Serbin, Poulin-Dubois, & Eichstedt, 2002; Urberg, 1982). For example, even preschool-aged

children believe dolls are generally considered feminine toys and would prefer to include a female, rather than a male, into a doll-playing group (Killen, et al., 2001).

Another example of a salient context with which young children may be familiar is deception, either to avoid getting in trouble or to get out of doing something that they don't want to do. This is suggested by evidence that by age 3, children spontaneously engage in deceptive behavior, such as lying to conceal a misdeed, for their own benefit (Chandler, Fritz & Hala, 1989; Lewis, et al., 1989; Polak & Harris, 1999).

Study 1

The aim of Study 1 was to investigate the development of elementary school children's reasoning about what people say about themselves based on motive and social context information. Of interest was children's understanding that individuals may be motivated to conceal information about themselves in some contexts. Also of interest was whether children judge information as less credible when provided by someone with a clear motive to distort. The age range of 6 to 12 years was selected as a starting point for investigation because of prior work suggesting a substantial developmental change in reasoning about self-presentation during this age range (Aloise-Young, 1993; Banerjee, 2000, 2002b; Banerjee & Yuill, 1999a; Bennett & Yeeles, 1990a, 1990b; Heyman & Legare, 2005).

Method

Participants

A total of 72 children participated, with 24 in each of 3 age groups: 6- to 7-year-olds (10 boys, 14 girls; *M* = 7y 1m), 8- to 9-year-olds (9 boys, 15 girls; *M* = 9y 1m), and 10- to 12-year-olds (12 boys, 12 girls; *M* = 11y 9m). The children were recruited from elementary schools in a large southwestern U.S. city. Participants were 71% Caucasian, 21% Hispanic, 6% Asian American, and 3% African American.

Procedure

Participants were interviewed individually in a quiet area at their school. Children were presented with two sets of scenarios, one that concerned what story characters would say about themselves, and one that examined children's judgments of the credibility of story characters' statements. In the former set of scenarios, which we refer to as the Self-Presentation Prediction Scenarios, participants predicted whether a story character would reveal particular information about themselves, and in the latter set of scenarios, which we refer to as the Credibility Judgment Scenarios, participants evaluated the credibility of statements characters made about themselves. Within each set of scenarios, information about the characters was manipulated in ways that relate to possible motives to distort information.

Self-Presentation Prediction Scenarios

Two groups of self-presentation scenarios were developed to investigate children's understanding that individuals may be differentially motivated to conceal or reveal different information about themselves in different contexts. Within each of these groups of scenarios, contextual variables were systematically manipulated to create high conflict and low conflict self-presentation demands.

Gender Context. Participants were presented with four scenarios in a random order in which they were asked to predict how the main character (the character) would present himself or herself based on gender information about the other children (the audience). This set of scenarios examining children's reasoning about a character's self-disclosures of an activity stereotypically aligned with the female gender (doll playing) was specifically selected in order to be familiar to participants in the age group of interest. The four scenarios included all possible combinations of character and audience genders. For example, in the scenario of a male character and a female audience, children were told, "I know a boy who likes to play with dolls. If some girls asked him if he likes to play with dolls, what would he tell them?" All participants responded to this question with an affirmative response (that the character would answer "yes, he likes to play with dolls"), a negative response (that the character would answer "no"), or an uncertain response ("I don't know" or "it depends"), and the data was coded categorically.

Academic Context. Participants were asked two questions in a random order, designed to assess their predictions about whether characters would modify their communication about unsuccessful academic performance based upon the audience's performance. The two contexts varied in the possible motivation for a character to reveal truthful information. In this, and the following two measures, participants only heard characters that were either all males or all females. In a low conflict question, they were asked, "If a girl had trouble at school and all of her friends also had trouble at school, do you think she would talk to her friends about it?" They were also asked a high conflict question in which the character's situation was different from the

audience's situation: "If a girl had trouble at school and none of her friends had trouble at school, do you think she would talk to her friends about it?" All participants responded to this question with an affirmative, a negative, or an uncertain response.

Credibility Judgment Scenarios

Two measures were presented to examine children's reasoning about the effect of motives in relation to perceived credibility: a Camp Context measure and a Music Context measure. Within each measure, participants were asked to make credibility judgments about the statements of two characters, one of whom had an obvious motive to distort information about him or herself (*high motive*) and one of whom had a *low motive* to distort.

Camp Context. Participants heard two scenarios that described a character who reported feeling sick. The characters' motives differed across scenarios: in the low motive scenario, the character was described as wanting to go to camp, and in the high motive scenario, the character was described as not wanting to go to camp. For both scenarios, participants are asked to evaluate the credibility of the character's report of feeling sick. The following is an example of what participants were presented in the high motive scenario:

> Olivia hates going to camp and does not want to go today. Olivia knows that she won't be allowed to go to camp if her mom thinks she feels sick. When Olivia's mom asks her if she feels sick, she says, "Yes, I do feel sick." Do you think that Olivia really does feel sick?

Music Context. Participants heard two scenarios in which children were asked to make credibility judgments about a character's reports of their music preferences. In the low motive scenario, the goal is for "other kids to find out about the kind of music

she likes," and in the high motive scenario, the goal is to get "other kids to think that she likes the same kind of music." For both scenarios, the character gives information about herself and participants are asked to evaluate the credibility of the statement. The following is an example of what participants were presented with in the high motive scenario: "Teresa really wants other kids to think that she likes the same kind of music that they like. If Teresa told you that she likes a certain song, how much would you believe her?"

Participants were trained before the start of the interview session to make credibility judgments using a 7-point scale (7 squares of increasing size) in which "not believe at all" was coded as 1 and "totally, completely believe" was coded as 7. This scale was only used for the Music Context.

Scenarios were presented in a random order that was determined separately for each participant. In all scenarios except the Gender Context, half of the participants heard the characters described as being of the same gender as themselves (e.g. girls heard about female characters), and half heard characters described as being of the opposite gender (e.g. girls heard about male characters). For the scenarios in which characters were identified by name, each participant had character names drawn at random from a set of masculine and feminine names. This name assignment procedure was intended to minimize the possibility that children's responses could be systematically influenced by any associations children might have with particular names (see Kasof, 1993).

Results and Discussion

Self-presentation Prediction Scenarios

One question of interest in Study 1 was children's perceptions about the effect of gender on what people would reveal about themselves. To that end, participants' categorical responses regarding whether or not characters would reveal their doll playing enjoyment were examined using loglinear analyses, and the data of the Gender Context are presented in Table 1. The general pattern of responses across the three age groups appeared relatively similar, although there was a main effect of age, $G^2(2) = 16.73$, $p < .005$, such that, across all scenarios, younger participants were more likely then older children to say that a character would reveal doll playing tendencies.

As hypothesized, children gave different responses based on information about gender: responding that boys would be less likely than girls to admit that they liked dolls (effect of character gender: $G^2(1) = 142.93$, $p < .001$) and that both boys and girls would likely hide the fact that they like dolls when asked by an audience of boys (effect of audience gender: $G^2(1) = 16.51$, $p < .001$). There was also a significant interaction of age and character gender such that there was the sensitivity to the character gender information increased with age, $G^2(2) = 11.17$, $p < .05$. Despite the differences across age, children in all age groups significantly differentiated between the likelihood that male versus female characters would disclose playing with dolls (6- to 7-year-olds: $G^2(1) = 29.55$, $p < .001$; 8- to 9-year-olds: $G^2(1) = 62.52$, $p < .001$; 10- to 12-year-olds: $G^2(1) = 58.55$, $p < .001$, all adjusted for Bonferroni post-hoc analyses).

Although there was no age by audience gender interaction, analyses of each age group separately revealed that only the oldest group showed a significant effect of

audience gender ($G^2(1) = 10.90$, $p < .05$, after Bonferroni adjustment). Specifically, for the 10- to 12-year-olds, there was a significant effect of audience gender for female characters ($G^2(1) = 24.06$, $p < .001$, after Bonferroni adjustment) but not male characters ($G^2(1) = 1.82$, $p > .4$) .

In sum, the results from this measure suggest that even young elementary school children have an understanding of the effect of both character gender and audience gender on the information that a person will reveal about themselves, although these effects were stronger in older children. It is notable that the present study finds a main effect of audience on children's reasoning about self-presentation. This result is consistent with evidence that young children will also modify the communication of their own gender-related behaviors depending on the nature of their audience (Banerjee & Lintern, 2000). The lack of an interaction effect between character gender and audience gender suggests that young children do not expect girls and boys to show different patterns of adapting their behavior to their audience as might be predicted based on evidence that children behave differently when around same-sex peers and opposite-sex peers (Maccoby, 1990).

In the second Self-Presentation Prediction Scenario measure, participants were presented with scenarios in which the character's motivation to reveal truthful information was manipulated. The number of participants in the Academic Context who responded that the character would tell others that she did poorly on her schoolwork is presented in Table 2. Participants were more likely to predict that the character in the high conflict condition would distort the truth than the character in the low conflict information ($G^2(1) = 15.75$, $p < .001$). Although the 6- to 7-year-olds did

not differentiate between the high conflict and low conflict conditions ($G^2(1) = 5.961$, $p > .05$), there was no significant effect of age.

Results also indicate that the children in the two older age groups, but not the 6- to 7-year-olds, expected individuals to adapt their communication based on information about their audience's performance, as shown by a significant age by conflict condition interaction effect ($G^2(2) = 14.41$, $p < .01$). Specifically, older children were more likely to expect characters to reveal their poor performance to others who also performed poorly as compared to others who had been successful. These results parallel those by Quatman and Swanson (2002) indicating that high students show greater willingness to disclose information about their academic performance and goals to peers with comparable performance histories. The interaction with age suggests that this sensitivity to audience increases over time and is consistent with other findings of age-related increases in sophistication in reasoning about self-presentation (Banerjee, 2000, 2002b; Bennett & Yeeles, 1990a).

Credibility Judgment Scenarios

Children's evaluations of credibility were made in both the Camp and Music Contexts in which characters' motives for distortion were manipulated. Participants' responses of belief of the characters' claims to be sick in each of the Camp Context scenarios are presented in Table 3. Children systematically used motive information when judging the credibility of the characters: they were less likely to believe that a character was sick if she did not want to go to camp than if she did want to go to camp ($G^2(1) = 79.23$, $p < .001$). The 8- to 9-year-olds and the 10- to 12-year-olds had stronger condition effects than the youngest age group, leading to a significant

interaction effect of participant age and motive condition ($G^2(2) = 10.19$, $p < .05$). As can be seen from Table 1, sensitivity to motivation increases with age, but even the 6- to 7-year-olds significantly differentiate between the two motive conditions ($G^2(1) = 10.68$, $p < .05$).

For the Music Context measure, children's belief judgments of the two characters with either a low motive (the character really wants other kids to learn more about her) or a high motive to distort (character really wants to be like the other kids) were compared. As shown in Table 4, participants were more likely to rate a character in the low motive condition as credible than a character in the high motive condition (M = 5.34 vs. 3.13, $F(1,69) = 83.12$, $p < .001$), which was the only significant effect in the model. Furthermore, even the youngest children responded to this credibility measure in a similar manner to the older children..

In sum, both Credibility Judgment measures show that even 6- to 7-year-olds can take into account motives when evaluating what people say about themselves. The Camp Credibility measure also provides evidence that this capacity continues to develop over the course of the later elementary school years.

Study 2

The results of Study 1 indicated that even the 6- to 7-year-olds showed sensitivity to context and character motivation in their expectations about self-presentation and in their credibility judgments. They were also able to differentiate between contexts in which characters had either lower or higher motivation to distort information. In fact, few age-related differences were found. These results are

consistent with research suggesting that even early elementary school children are able to reason about self-presentation in some situations (Banerjee & Yuill, 1999b; Josephs, 1994).

Study 2 examines whether preschool-aged children might also have some capacity to consider social context and motives when evaluating what people say about themselves. Such a possibility is plausible in light of recent evidence indicating that children as young as 4 years of age systematically take into account a source's prior color identification performance when determining whose claims to believe about the color of an unseen object (Clèment et al., 2004). Similarly, evidence also suggests even 5-year-olds show a developing sense of skeptism when presented statements aligned with a person's self-interest (Mills & Keil, 2005).

Method

Participants

A total of 50 children participated, with 25 in each of 2 age groups: 4-year-olds (13 boys, 12 girls; *M* = 4y 6m) and 5-year-olds (13 boys, 12 girls; *M* = 5y 4m). Participants were 72% Caucasian, 18% Hispanic, 6% African American, and 4% Asian American.

Procedure

The procedure and materials were the same as Study 1, with three exceptions. First, the Academic Context measure was deleted for this younger set of participants, because 6- and 7-year-olds in Study 1 did not differentiate their responses based upon the manipulation of motivation to deceive. Second, when presenting the two Credibility Judgment measures, the key story manipulation was repeated twice. Third,

in preparation for the Music Context measure, participants were given more hands-on training on the rating scale for information that children could observe to be true (e.g. that a green folder was in fact green) and for information that is highly implausible (e.g. that the experimenter is 2 years old). The exercise was repeated with different examples until correct use of the scale was demonstrated.

Results and Discussion

Self-presentation Prediction Scenarios

The number of participants in the Gender Context asserting that girls and boys would reveal enjoyment of playing with dolls to an audience of boys and to an audience of girls is presented in Table 1. Overall, preschool children showed differentiation in their responses to the four different conditions, and there were no significant differences between the 4- and 5-year-olds. Specifically, both age groups were more likely to claim that a female character would reveal that she likes to play with dolls, compared to a male character ($G^2(1) = 8.57$, $p < .05$), and were more likely to claim that both boys and girls would reveal liking to play with dolls to a female audience than a male audience ($G^2(1) = 8.32$, $p < .05$). These results parallel the results of Study 1 and demonstrate that preschool children, like elementary school children, have an idea that people may not always be motivated to describe themselves truthfully to others, and that this understanding emerges early in the context of salient gender roles.

Despite preschool children's systematic reasoning about gender on this measure, large differences are seen when comparing the results across Studies 1 and 2, indicating a stronger differentiation between scenario conditions for the elementary

school children, as seen in Table 1. This age difference was confirmed by a 2 (*age:* preschool-aged, elementary school-aged) by 2 (*character gender:* male, female) by 2 (*audience gender:* male, female) loglinear analysis which included the participants in both studies, in which there was a main effect of age ($G^2(1) = 34.48$, $p < .001$). This analysis also confirmed main effects of character gender ($G^2(1) = 89.33$, $p < .001$) and audience gender ($G^2(1) = 28.90$, $p < .001$), as previously reported in each separate Study. There were two significant interaction effects. First, there was an interaction between character gender and audience gender ($G^2(1) = 10.00$, $p < .005$). Follow up analyses suggests that the effect of audience gender is stronger for female characters ($G^2(1) = 32.71$, $p < .001$) than male characters ($G^2(1) = 5.81$, $p > .05$). Second, there was a significant effect of age by character gender ($G^2(1) = 16.94$, $p < .001$), such that the effect of character gender was stronger in the elementary school children in Study 1 ($G^2(1) = 127.04$, $p < .001$) than the preschool children in Study 2 ($G^2(1) = 9.33$, $p < .05$).

Credibility Judgment Scenarios

The results of the Camp Context measure, shown in Table 3, suggest that preschool children were more likely to think that a character was sick if she had a low motive to distort than if a character had a high motive to distort ($G^2(1) = 4.05$, $p <. 05$). Both 4- and 5-year-olds responded similarly to the two conditions, and there was no effect of age.

Results also suggest limitations in young children's reasoning about credibility. This was seen in comparing responses across the Camp Contexts in the two studies: despite preschool children’s significant differentiation of responses between the low

motive and high motive to distort scenarios, their responses were different from the elementary school-aged participants in Study 1. Consistent with analyses of each individual study, there was a main effect of context ($G^2(1) = 53.05$, $p < .001$). Results also indicated that preschool children were less likely to be skeptical than elementary school children when there was a high motive to falsely claim illness (main effect of age: $G^2(1) = 13.94$, $p < .001$) and were also less sensitive to the context manipulations than older children (age by motive interaction: $G^2(1) = 19.35$, $p < .001$).

Limitations in young children's reasoning were also seen in the Music Context measure, shown in Table 4, in which participants did not systematically respond to the two scenarios as the older children did in Study 1. One possible explanation of the children's differential responses to the two Credibility Judgment measures may be because of the greater inferential leap that is required to understand the characters' motivation to distort information in the Music Context. Taken together, results of the two Credibility Judgment measures suggest that preschool children are already beginning to use social context to evaluate credibility, but they also undergo considerable development after this point.

Study 3

The results of Studies 1 and 2 indicated that, by the time they reach preschool age, children clearly understand that individuals might possess different motivations to reveal information about themselves, and that this understanding continues to develop into the elementary school years. One context in which this was seen was in children's reasoning about whether individuals would reveal that they like to play with dolls.

Although the preschool children in Study 2 systematically distinguished between the different gender conditions, they were significantly more likely than the elementary school children in Study 1 to respond that a boy would admit that he plays with dolls to a male audience (across all participants in Study 2, 64% responded that a boy would admit doll playing to a male audience, as compared with 7% across all participants in Study 1). One possibility is that these age differences may be a function of children's growing appreciation that individuals are able to manipulate self-presentation by selectively revealing or concealing information about themselves as they choose. This possibility is consistent with the research suggesting considerable changes in children's understanding of self-presentation across development (e.g., Aloise-Young, 1993; Banerjee, 2000, 2002b; Bennett & Yeeles, 1990a). However, it is also possible that such results reflect changes in awareness about what kinds of information others might be motivated to hide. For example, it is possible that young children may not think doll playing to be a violation of gender roles, and thus are less likely to be aware that individuals may wish to hide the fact they like to play with dolls. An association between children's reasoning about social norms and children's beliefs about what another person will disclose about themselves could help explain development in self-presentation reasoning. Study 3 investigates whether differences in such judgments of social acceptability norms contribute to age-related differences in self-presentation judgments, and as well as to individual differences in these ratings seen within age groups.

Method

Participants

A total of 75 children participated, with 25 children in each of 3 age groups: 4-year-olds (15 boys, 10 girls; *M* = 4y 8m), 5-year olds (13 boys, 12 girls; *M* = 5y 6m), and a comparison group of 8-year-olds (9 boys, 16 girls; *M* = 8y 6m). Participants were 72% Caucasian, 23% Hispanic, 4% African American, and 1% Asian American.

Procedure

To examine the relationship between children's reasoning about the social acceptability of a behavior and their judgments of how a person might present themselves concerning that behavior, participants were presented the *Gender Acceptability Norms* measure. This measure, which contained 4 scenarios in random order, was adapted from the Gender Context measure in the previous two studies. Scenarios varied in a 2 (*character gender:* male, female) by 2 (*audience gender:* male, female) within subjects design, such that the four scenarios included all possible combinations of character and audience genders. Following each scenario, participants were asked two questions.

Participants were first asked a *Social Acceptability (SA)* question that asked them to predict how the main character would feel in that particular situation (e.g., "How do you think Tracy would feel if some boys found out that she likes to play with dolls?"). Participants chose from a series of five faces: a large frown representing "very unhappy" (coded as 1), a small frown representing "a little unhappy" (coded as 2), a neutral face representing "not happy nor sad" (coded as 3), a small smile representing "a little happy" (coded as 4), and a large smile representing "very happy" (coded as 5).

Participants then responded to a *Self-presentation (SP)* question that asked them to predict whether the character would reveal the truth (e.g., "If some boys asked Tracy if she likes to play with dolls, do you think she would say, 'Yes, I do play with dolls' or would she maybe say 'No, I don't play with dolls.'"). Responses were coded categorically.

Results and Discussion

As shown in Table 5, for the SA questions, children of all ages were more likely to say that it would be more upsetting for a male to have peers who were aware that he likes to play with dolls than for a female to have peers who were aware that she likes to play with dolls. Children of all ages also responded that characters of either gender character would be more upset if male peers rather than female peers discovered the character enjoyed doll playing. This was confirmed by a 3 (*age:* 4-year-olds, 5-year-olds, 8-year-olds) by 2 (*character gender:* male, female) by 2 (*audience gender:* male, female) repeated measures ANOVA that revealed a significant effect of age ($F(2,288) = 16.30$, $p < .001$). Post-hoc tests found that the SA rating difference between the 8-year-olds and both the 4- and 5-year-olds to be significant ($F(1,198) = 20.79$, $p < .001$ and $F(1,198) = 24.66$, $p < .001$, respectively). There was also a significant effect of character gender ($F(1,288) = 33.87$, $p < .001$) and audience gender ($F(1,288) = 12.76$, $p < .001$). Results from the SA questions suggest that preschool children are more likely overall than the older comparison group to think that it is socially acceptable to like playing with dolls.

Results for the SP question, in which participants were then asked to predict whether a character in the scenario would reveal liking to play with dolls, are shown in

Table 6. The results generally replicate those from Studies 1 and 2, indicating that even 4- and 5-year-olds made use of character gender when deciding whether the characters would tell others that he or she liked to play with dolls, and that there are age-related changes in self-presentation prediction from preschool to elementary school. Results from a 3 (*age:* 4-year-olds, 5-year-olds, 8-year-olds) by 2 (*character gender:* male, female) by 2 (*audience gender:* male, female) loglinear analysis revealed a significant effect of age ($G^2(2) = 23.81$, $p < .001$), and a significant effect of character gender ($G^2(2) = 44.49$, $p < .001$). Follow-up pairwise contrasts for age revealed that the responses of the 8-year-old group was significantly different than the responses of the 4- and 5-year-old groups ($G^2(1) = 23.579$, $p < .001$ and $G^2(1) = 11.13$, $p < .005$, respectively), suggesting that preschool children were more likely overall than elementary children to respond that a character would reveal liking to play with dolls. No other effects were significant.

We also wanted to examine whether individual differences in SA ratings predict participant's SP predictions. Because there were no significant effects of audience gender in the SP question, children's responses were collapsed across audience gender, creating an *SA Rating Score* and an *SP Prediction Score* for the two main character genders. Using the SA Rating Scores and the SP Prediction Scores, we found age to be predictive of SP Prediction Scores only for male characters ($F(1,73) = 18.28$, $p < .001$) and not for female characters ($F(1,73) = 0.54$, $p > .4$). A mediation analysis was then conducted to examine whether SA Rating Scores could account for the age-related changes in SP Prediction Scores for the male characters (Sobel, 1982; 1986). When SA Rating Scores are added into the model of age predicting SP

Prediction Scores, the ability of age to predict SP Prediction Scores is greatly reduced (z = -2.248, $p < .05$). Log linear analyses conducted on the uncollapsed data also suggest similar findings.

These results suggest that children's reasoning about social norms plays a role in explaining age-related changes seen in children's reasoning about how people talk about themselves.

General Discussion

The aim of this paper was to investigate children's evaluation of other people's self-disclosures. This was assessed both through their predictions concerning what information individuals would reveal about themselves and through their judgments about the credibility of others people's claims. Results from Studies 2 and 3 indicate that even preschool children have the cognitive capacity to evaluate what people say about themselves when presented with familiar contexts in which possible motives for distortion are likely to be salient. This capacity was evident when 4- and 5-year-olds used character and audience gender information to predict whether a character will reveal an enjoyment of playing with dolls. This capacity was also evident when children showed greater skepticism of a character's claim to be sick if children were informed that the character was motivated to get out of going to camp.

These results are consistent with other evidence of early competence in children's understanding that things are not always as they appear, and to apply that understanding to their reasoning about what people say (Flavell, Green, & Flavell, 1986; Koenig et al., 2004; Wellman et al., 2001). One reason for the sophisticated

performance seen in young children in some prior research may be that these assessments focus on familiar situations. For example, it is likely that children would have observed someone lying to get out of doing something undesirable, or at least have read about such a possibility in a book. Similarly, the salience of deception may play a role in demonstrations of early competence. Research suggests that children's understanding of deception strategies in game-like contexts may help them focus better when reasoning about the mental processes of others (Chandler, Fritz, & Hala, 1989; Chandler & Hala, 1994; Wellman, 2001).

Results from the present studies also suggest change during the elementary school years in how children evaluate self-disclosure. Older children took into consideration the audience's successful or unsuccessful performance to a greater extent than did younger children when predicting whether the character would disclose unsuccessful academic performance. In addition, older children were more likely than younger children to take into account motives for fitting in when evaluating a character's claim about liking a particular song. Study 3 also suggests age-related changes in what is considered to be socially appropriate. This awareness is associated with children's predictions of what others will reveal about themselves and offers one possible explanation for the developmental change across early childhood in reasoning about the communications of others.

Although our studies show early sensitivities in many of our measures, children under age 8 still showed limitations in their reasoning as compared to older children. This pattern of age-related change evident in the present research is consistent with other evidence suggesting that children under the age of 8 still have

difficulty in evaluating what others communicate about themselves in some types of situations (e.g., Banerjee, 2000; Banerjee & Yuill, 1999a; Bennett & Yeeles, 1990a, 1990b; Heyman & Legare, 2005; Mills & Keil, 2005). Taken as a whole, this body of research suggests that, across the elementary school years, children are acquiring sensitivity to the kinds of contexts in which individuals are likely to manipulate what they say about themselves. The present work contributes to this research by providing evidence that this learning includes the ability to apply skeptical thinking across a wider range of contexts, including those in which significant inferential leaps are required to determine the motivations of individuals making claims. Our results also suggest that children's understanding of social acceptability is changing over these years and that this understanding of social acceptability is closely associated with how children assess claims when individuals might have an interest in presenting themselves in a socially desirable way.

Implications

The present research has implications for children's developing understanding of gender roles by suggesting that their understanding about gender affects their reasoning about how people talk about themselves. Children as young as 4 showed an appreciation for the ways in which gender may affect people's motivation to conceal information about themselves. Results from Study 3 suggest that learning about social norms is closely intertwined with the development of self-presentation, implying that young children may already feel pressure to hide information about themselves when it violates gender roles. Indeed, other research indicates that changes across childhood in what children choose to disclose about their sex-typed play preferences vary with

their changing schemas of gender stereotypes (Banerjee & Lintern, 2000). Therefore, not only are children changing what they choose to reveal about themselves dependent on the gender of the audience, but children are aware of the fact that other people may also selectively reveal information about themselves.

The present work also suggests that young children's familiarity with a context may bootstrap their ability to make more sophisticated judgments. This suggests that children can be taught critical evaluation skills by first highlighting the potential for distortion in more familiar domains, or by highlighting salient motives for distortion. Such a possibility is generally consistent with other evidence indicating that it is possible to foster young children's critical thinking by directing their attention to sources of information (Giles, Gopnik, & Heyman, 2002).

Future directions

One important issue to further explore is the association between children's developing beliefs about social acceptability and its effects on their perceptions of self-presentation. If children's beliefs about normative and counter normative behavior guide their reasoning about self-presentation, then it suggests that self-presentation is dependent upon context and can possibly be changed. Although this study shows the relation between children's reasoning about social norms and their reasoning about self-presentation, further experimental work is needed to determine whether increased knowledge of social norms can directly lead to more sophisticated reasoning about what people say about themselves.

Another important future consideration is to assess children's evaluation of sources involving children's reasoning in real world contexts. In real life situations,

children are potentially faced with many source characteristics which may be used to make inferences regarding the motivation, reliability, and truthfulness of their sources. Children are able to use credibility cues such as the speaker's knowledge, occupation, and the child's own history of interactions with the speaker. One difficulty with these circumstances is that it may be complicated to evaluate which of the cues is most important. For example, it may be difficult to determine a speaker's credibility, because speakers can have more than one motivation for disclosing information. Even adults have difficulty judging source motivation (e.g., Berndt, 2005; Eagly et al., 1978). Examining which characteristics children deem to be important when making credibility judgments would be useful for situations in which parents, teachers, and other authority figures want to change the beliefs or behaviors of a child.

Conclusions

When making judgments about the communication of others, young children showed sophistication in contexts where motivations were salient and familiar. The results of the current research also suggest that children take into account their knowledge of similar situations and their knowledge of what is socially acceptable when evaluating people's self descriptions. These results suggest that even preschool-aged children are not as credulous as they are sometimes made out to be (Dawkins, 1993).

Chapter 2, in full, is a reprint of material as is appears in Gee, C.L. & Heyman, G.D. (2007). Children's evaluations of other people's self-descriptions. *Social Development, 16,* 800-818. The dissertation author was the primary investigator and author on this paper.

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Chapter 2, Table 1. Number of Participants from Studies 1 and 2 Responding that the Character Would Tell the Audience about Playing with Dolls

	Female Character		Male Character	
Age Group	Female Audience	Male Audience	Female Audience	Male Audience
		Study 1		
6- to 7-year-olds	19	18	9	4
8- to 9-year-olds	22	15	3	1
10- to 12-year-olds	21	8	1	0
		Study 2		
4-year-olds	24	15	18	15
5-year-olds	23	17	17	17

Chapter 2, Table 2. Number of Participants Responding that the Character Would Tell Others that He Did Poorly in School for Study 1

	Conflict	
Age group	Low	High
6- to 7-year-olds	9	10
8- to 9-year-olds	17	5
10- to 12-year-olds	16	5

Chapter 2, Figure 3. Number of Participants Responding in Belief that the Character was Sick in Camp Credibility Measure from Studies 1 and 2

	Motivation to Distort	
Age group	Low	High
	Study 1	
6- to 7-year-olds	13	4
8- to 9-year-olds	17	1
10- to 12-year-olds	19	0
	Study 2	
4-year-olds	14	11
5-year-olds	16	9

Chapter 2, Table 4. Mean Credibility Ratings for Music Preference Measure from Studies 1 and 2

	Motivation to Distort	
Age group	Low	High
	Study 1	
6- to 7-year-olds	5.08 (1.90)	2.67 (1.83)
8- to 9-year-olds	5.42 (1.67)	3.36 (1.67)
10- to 12-year-olds	5.56 (1.38)	3.08 (1.38)
	Study 2	
4-year-olds	3.64 (3.10)	4.60 (2.78)
5-year-olds	4.60 (2.72)	3.84 (2.78)

Note. Ratings are on a 7-point scale, with a rating of 1 indicating that the participant did not believe and a rating of 7 indicating that the participant fully did believe the character. Standard deviations are shown in parentheses.

Chapter 2, Table 5. Mean Ratings of Social Acceptability in Study 3

	Female Character		Male Character	
Age Group	Female Audience	Male Audience	Female Audience	Male Audience
4-year-olds	4.52 (1.05)	3.36 (1.73)	3.24 (1.67)	2.72 (1.74)
5-year-olds	4.08 (1.41)	3.48 (1.78)	3.44 (1.53)	3.04 (1.51)
8-year-olds	3.40 (1.41)	2.96 (1.14)	2.00 (0.24)	1.56 (0.87)

Note. Mean ratings for the Social Acceptability measure for each of the four gender conditions are shown, with standard deviations in parentheses. Ratings are on a 5-point scale, with 1 indicating that the character would be "very unhappy" and 5 showing that the character would be "very happy" if others found out about liking to play with dolls.

Chapter 2, Table 6. Number of Participants Responding the Character Would Reveal Liking Doll Playing in the Self-Presentation Question in Study 3

	Female Character		Male Character	
Age Group	Female Audience	Male Audience	Female Audience	Male Audience
4-year-olds	22	19	14	16
5-year-olds	24	23	18	16
8-year-olds	21	17	6	4

Note. The numbers of children responding that the character would reveal liking to play with dolls in the Self-Presentation measure are shown.

CHAPTER 3

Cues to a Source's Knowledge: Age and Expertise

Abstract

Children's reasoning about the relative importance of knowledge and age was examined in two studies (total N=112). Preschool and elementary school-aged children were presented with scenarios that systematically manipulated the age and knowledgeability of the source. Participants reported that knowledge was more important than age, and even preschool children cited that a knowledgeable child was a better source than an unknowledgeable adult. Furthermore, children in all age groups reported that there were questions best addressed to another child, and other questions best addressed to an adult. Responses also indicated a greater differentiation between sources through the elementary school years. The significance of examining differences in reasoning about peers and adults as sources of information is discussed.

Cues to a Source's Knowledge: Age and Expertise

Other people are potentially very rich sources of information for children, allowing them to learn a great deal without the need for direct observation or experience. Direct observation or experience is a powerful method for learning. Unfortunately, is it not always the most practical way of learning new information; social communication is the only way for us to learn about things that we cannot observe first-hand, such as some aspects of history, science, and religion (see Harris & Koenig, 2006). In order to effectively seek out and make use of this information, children must have a sense of the kinds of knowledge that different individuals are likely or unlikely to have. Although we know a great deal about children's capacity to understand that people can hold false beliefs (see Wellman, Cross, & Watson, 2001), and we know some about children's understanding of the basic processes that can lead to knowledge (Gopnik & Graf, 1988; O'Neill, 1996; Wellman et al., 2001), we know relatively little about children's understanding of which types of sources are generally the most knowledgeable for different kinds of situations.

Evidence suggests that children are aware that some people are more knowledgeable than others. Early in life, children show signs of an emerging awareness for some of the different means in which an individual gains knowledge. Two-year-olds will offer their mothers more information about the location of a hidden object if the mother's eyes were closed when the experimenter hid the object than if the mother's eyes were open (O'Neill, 1996). By the age of 5, children begin paying attention to how others come to know what they know (e.g., Lutz & Keil,

2002; Pillow, 1989; Wimmer, Hogrefe & Perner, 1988). This type of awareness is necessary for children to make sophisticated judgments about a person's knowledgability.

This reasoning about source knowledgeability is sometimes used to help children evaluate whether to believe or question a source (Koenig, Clément & Harris, 2004; Koenig & Harris 2005; Lampinen & Smith, 1995; Robinson, Champion, & Mitchell, 1999; Robinson & Witchombe, 2003; Toglia, Ross, Ceci, & Hembrooke, 1992; Whitcombe & Robinson, 2000). In studies of suggestibility, 3 to 6 year olds are less sensitive to misleading post-event information when it is presented by an adult claiming to be knowledgeable about the subject than an adult who claims to be unfamiliar with the subject (Toglia et al., 1992). Recent evidence suggests that young children are even able to infer source knowledge based on previous reliability. For example, 4-year-old children are more likely to learn a new word from an adult who previously named objects correctly than from an adult who previously named objects incorrectly (Koenig et al., 2004). Collectively, these studies suggest that preschool and elementary school children are beginning to use information about a source's knowledge and previous reliability as cues to credibility, when these cues are explicitly made available.

An alternative means to determining source credibility is to make generalizations about knowledge and reliability based on a person's social category. For example, information about a person's profession suggests the type of general knowledge or training that he or she may have had. In one study specifically examining this issue, Lutz and Keil (2002) found that even 3-year-olds appreciate the

fact that doctors know more about medically related issues than car mechanics. Results also suggest development across the preschool years in the understanding of expertise. When children understand the different types of knowledge different people may have, they may make more sophisticated judgments about how to make effective use of the sources of information that are available to them.

In addition to occupation, another social category that may play a role in children's credibility judgments is gender. Perhaps children consider one gender to be more credible than the other, or perhaps they consider the gender of a source making gender-related statements. Consistent with the latter possibility, Gee and Heyman (2007) found that preschool and early elementary school children use gender as a cue to credibility when the source is discussing gender-related information. In this research, participants were presented with scenarios in which a character who likes to play with dolls is directly asked by a group of peers whether or not he likes the play with dolls. Results indicated that participants were more skeptical that a male character would truthfully reveal his doll playing enjoyment than a female character.

Of interest in the present study is children's use of age as a general cue to credibility. Traditionally, many psychologists have viewed children as believing adults to be all knowing and omniscient (Piaget, 1959; Mossler, Marvin & Greenberg, 1979; Wimmer et al, 1988). Piaget (1959) posited that 4-year-olds fall into an "intellectual submission (p. 250)" to adults, in which children believe that an adults' knowledge is better than their own. Similarly, Dawkins (1993) argued that young children's tendency to unquestioningly accept others' statements may even serve an evolutionary function of helping children learn a great deal of information in an efficient manner.

There is also empirical evidence suggesting that young children often assume that adults have substantial expertise (Piaget, 1959; Taylor, Cartwright & Bowden, 1991; Wimmer et al., 1988). Preschool children cite adults as being more knowledgeable than themselves, even about topics in which the children are actually more knowledgeable (Burton & Mitchell, 2003). Other work suggests that it is even later in development when children begin moving away from the assumption that parents would always be the most knowledgeable on a range of topics (Bar-tal, Raviv, Raviv & Brosch, 1991; Raviv, Bar-tal, Raviv, & Houminer, 1990; Raviv, Bar-tal, Raviv, & Peleg, 1990). Bar-tal et al. (1991) asked children to choose the definitive expert for certain domains such as pastimes, social relations, personal feelings, and science. Fourth grade children consistently cited a parent as the definitive expert, whereas older (eighth and twelfth grade) children did not. The results showed an age-related increase in the tendency to select siblings, peers, and the self, as opposed to parents, to be the most knowledgeable in these topics.

Research examining the development of skepticism about the testimony of others also suggests that young children are more likely than older children to trust what an adult says (Ackerman, 1983; Lee, Cameron, Doucette, & Talwar, 2002). For example, Ackerman (1983) presented 6- to 7-year-olds, 9- to 10-year-olds, and college-aged students with contradictory statements from an adult source that varied in knowledgeability within the context of the story and from another source that was described as either an adult or a child. Results showed that the 6- and 7-year-old children were less likely than older children to discount information from an adult

speaker. Even early elementary school-aged children are not always sophisticated in their evaluation of sources.

Despite the research suggesting children's blanket belief in adults' knowledge, there is also evidence suggesting that children have some understanding about the knowledge that adults are likely or unlikely to have. For instance, number of studies have found that young children sometimes discount information from adults (Pea, 1982; Robinson, Mitchell, & Nye, 1995; Whitcombe & Robinson, 2000). Even 2- and 3-year-olds will say, "No" in response to an adult that tells them a truck is a ball (Pea, 1982). Three- and four-year-olds are also likely to discount statements from an adult regarding the contexts of a box if the statement was inconsistent with the participant's own assumptions about its contents (Robinson, et al., 1995). Clearly, these are instances in which children do not believe adults to be infallible. Furthermore, research suggests that preschool children sometimes take note when a source behaves in a manner inconsistent with his or her particular social category. Even young children are likely to discount information from an adult and instead rely on a child if the adult has been shown to be previously unreliable (Jaswal & Neely, 2006), or if the adult's credibility has been questioned (Lampinen & Smith, 1995). However, the extent to which children might sometimes infer relatively less knowledge from a child source than an adult source is yet unknown.

The goal of the present study is to more clearly define the scope of children's perceptions of the limits of adult knowledge. Specifically, this research investigates the issue that age, as a social category, is not always directly correlated with knowledge. For example, in today's information technology culture, there are some

children who may know more about computers, the Internet, and some electronics than their parents. Moreover, it is likely that peers may have more similar preferences and social experiences than others who are either much older or much younger. It is possible that there are instances in which a peer may be a better source of information than an adult, such as preferences of certain toys or events that occur in a classroom. This question has been explored in one recent study by VanderBought and Jaswal (in press) in which preschoolers were more likely to choose a child as the best source of information about how a toy worked, and an adult for information about how foods help our bodies. These results provide evidence of one instance in which children use age as a cue in determining the best source of different types of information. The present study follows up on this research to see if the results extend to other situations, such as one in which children are making the same kinds of selections but with different goals in mind. Would they attribute adults and children as being the better sources for different types of goals?

Study 1

The extent of developmental changes in children's use of age and knowledge as cues to evaluate a source is currently unknown. Study 1 was designed to determine whether elementary school children place a greater emphasis on age information or knowledge information when reasoning about sources. The goals of the Study 1 were twofold. Our first aim was to assess children's understanding of the relationship between age and knowledge. To this end, we examined whether children truly believed adults to always be the best source and more knowledgeable than children in

all situations. Most previous research suggests that children understand that adults are generally more knowledgeable (Ackerman, 1983; Burton & Mitchell, 2003; Piaget, 1959; Taylor et al., 1991). While knowledge and age are strongly correlated in real life, we experimentally separated these two factors to investigate whether children understand that the key to source choices should be knowledge, not just adulthood. This set of questions was designed as a parallel to the real life instances in which children are more knowledgeable than adults in subject areas such as chess, dinosaurs, and Pokemon (Chi & Koeske, 1983; Johnson & Mervis, 1994; Levin, Gelman, & Galotti, 2001; Schneider, Gruber, Gold, & Opwis, 1993). By presenting participants with scenarios in which a child knows more than an adult, we are able to examine whether children believe age to be consistently tied to knowledge, or if they consider it only important because it is a proxy to inferring a source's knowledge.

The second aim of Study 1 was to investigate the division of knowledge that children attribute to sources of different ages and build on recent evidence suggesting that young children are aware of the limitations of an adult's knowledge. The present study seeks to extend these findings by presenting children with questions about how adults and children may differ in their knowledge regarding a particular item. It is also possible that children and adults take a different perspective on the same topic, such as a child focusing on the entertainment value of a game and an adult focusing on the educational value of the same game. In a series of questions, children's understanding of the different knowledge that a peer and an adult may have is assessed.

Method

Participants

A total of 72 children participated, with 24 in each of 3 age groups: 6- to 7-year-olds (10 boys, 14 girls; *M* = 7y 1m), 8- to 9-year-olds (9 boys, 15 girls; *M* = 9y 1m), and 10- to 12-year-olds (12 boys, 12 girls; *M* = 11y 9m). The children were recruited from elementary schools in a large southwestern U.S. city. Participants were 71% Caucasian, 21% Hispanic, 6% Asian-American, and 3% African-American.

Procedure

Participants were interviewed individually in a quiet area at their school. The interview consisted of two sets of questions examining perceptions of the relative knowledge of children versus adults.

Expertise. One set of questions investigated children's understanding of the relative importance of source knowledge. Participants were presented with three *Expertise* questions concerning seeking out information about chess in which age and knowledgeability were systematically varied. In each question, participants were told, "If you really wanted to know how good you are at chess, who would it be better to ask?" and given three response options. In one question, children were asked to choose who to ask based on *Age* alone (an adult, a kid the same age as you, or it wouldn't make a difference); in a second, they were asked to choose based on *Knowledge* alone (someone who can beat most people at chess, someone who has never played chess before, or it wouldn't make a difference); in the third, they were asked to choose based on information about both *Age and Knowledge* (an adult who just learned to play chess, a kid who can beat most adults at chess, or it wouldn't make a difference). For each question, the first two response options were presented in a random order, and "it wouldn't make a difference" always appeared last.

Division of Knowledge. The second set of questions examined whether children appreciate that children and adults might have different kinds of expertise. In order to address this issue, participants were asked two *Division of Knowledge* questions concerning children's choice of sources of information about video games. In the *Fun Advice* condition, participants were asked, "If you really wanted to know which video game would be the most fun, who would you ask?" In the *Learn Advice* condition, they were asked, "If you really wanted to know which video game would help you learn the most, who would you ask?" The order of the first two response options, "an adult" and "a kid the same age as you," were randomized, and "it wouldn't make a difference" always appeared last.

Question set order, as well as item order within question sets were determined randomly for each participant. When gender was specified in scenarios, half of the participants heard the characters described as being the same gender as themselves (e.g. girls heard about female characters), and half heard characters described as being the opposite gender (e.g. girls heard about male characters). All questions are described below as they were asked for female characters. For the scenarios in which characters were identified by name, names were drawn at random for each participant (see Kasof, 1993).

Results

Preliminary Analyses

Preliminary analyses indicated no significant effects of participant gender or character gender, so these variables were excluded from subsequent analyses.

Expertise

In order to examine children's understanding of the importance of the knowledge of a source, participant's responses to questions systematically comparing age versus knowledge information were analyzed. As seen by the distribution of responses by age for each question in Table 1, no effect of age was evident for any of the questions (all $p > .4$), so responses were collapsed across age. Across all 3 groups of children, when asked to pick the best source for information about a game based on the source's *Age* alone, participants were more likely to choose an adult (33%) over a child (15%), which is significantly different than expected by chance, $G^2(2)=14.87$, $p<.001$. When asked the best source for information based on information about the source's *Knowledge* alone, participants were more likely to choose a knowledgeable expert (55%) than a novice who has never played before (8%), which is significantly different from chance, $G^2(2)=28.39$, $p<.001$. When asked the best source for information based on the both the source's *Age and Knowledge*, participants were more likely to cite the child who could beat most adults as more reliable (63%) than an adult who has never played before (7%), which is significantly different from excepted by chance, $G^2(2)=37.06$, $p<.001$. The results suggest that children between 6 and 12 years of age view knowledge as more important than age in determining the degree to which a source of information should be believed.

Division of Knowledge. To examine children's reasoning about adults' omniscient knowledge, participants' responses for the main source for different knowledge bases in the two questions were compared. Participant's responses are shown in Figure 1. When asked who they would go to for advice concerning which video game was most fun, 46% of 6- and 7-year-olds, 63% of 8- and 9-year-olds, and

79% of 10- to 12-year-olds chose to ask a child, as opposed to choosing an adult or saying that it did not. When asked who they would go to for advice concerning which video game would help them learn the most, 29% of 6- and 7-year-olds, 17% of 8- and 9-year-olds, and 12% of 10- to 12-year-olds chose to ask a child, as opposed to choosing an adult or saying that it did not matter.

A 2 (condition: Fun, Learn) x 3 (participant age: younger, middle, older) loglinear analysis conducted on participant's choice of source revealed a main effect of question type, $G^2(1)=60.02$, $p<.001$, such that participants responded differently based on the two situations. There was a marginally significant effect of age, $G^2(2)=8.84$, $p<.10$, such that the difference by age in source choice was greater for the *Fun Advice* condition than in the *Learn Advice* condition, $G^2(2)=14.05$, $p<.01$. These results suggest that elementary school-aged children make differentiations between the types of knowledge that adults and children are likely to have. Older children were more likely than younger children to cite that a child would be a better source for information about fun video games, but even the 6- to7-year-olds responded differently to the two advice questions.

Study 2

Despite previous research suggesting that even elementary school-aged children may show a superfluous trust in adults, Study 1 found that even 6- and 7-year-olds are relatively sophisticated in their use of knowledge information. Like older children, even 6- to 7-year-olds showed an understanding of the importance of knowledge over age, and also used age as a cue to differentiate between the types of

questions to ask an adult and the types of questions to ask a child. However, this differentiation increased with age. Collectively, these results suggest that elementary school-aged children do not believe adults to be omniscient, at least not in situations in which a child clearly knows more than an adult.

The findings of Study 1 are consistent with the recent findings suggesting that even preschool-age children may have an understanding of the importance of knowledge over age (Jaswal & Neely, 2006; Taylor et al., 1991, VanderBought & Jaswal, in press). The goal of Study 2 was to further investigate children's reasoning about knowledge in a younger population. Thus, the two question sets in Study 1 were adapted for use with younger children.

Method

Participants

Forty 4- and 5-year-olds participated (20 boys, 20 girls; M = 4y 11m). The children were recruited from preschools in a large southwestern U.S. city. Participants were 80% Caucasian, 10% Hispanic, 5% African-American, and 5% Asian-American.

Procedure

The procedure and materials were the same for Study 2 as those for Study 1 with the following two changes. First, pilot testing with preschool children suggested that most preschool children were unfamiliar with chess. Thus, Study 2 devised a different set of questions to examine preschool children's understanding of expertise and age. Participants were presented with a four *Spelling Expertise* questions that included information about both age and knowledge information. The four questions, which appeared in random order, included each possible combination of age (adult or

child) and knowledge (high or low). For example, in the question involving a child with high knowledge and an adult with low knowledge, participants were told, "Let's say you needed to spell a big word. Who is it best to ask: a kid who is good at spelling or a grown up who is not good at spelling?" The order of the two response options was randomized for each participant. Second, before asking children the *Division of Knowledge* questions, participants were told, "Do you know what video games are? Those are games you can play on a computer."

Results and Discussion

Preliminary Analyses

Preliminary analyses indicated no significant effects of participant gender or character gender, so these variables were excluded from subsequent analyses. There were no significant differences between the 4- and 5-year-olds, and the responses for the two age groups was collapsed.

Spelling Expertise

The Spelling Expertise questions were designed to systematically examine young children's beliefs about the importance of age and expertise when evaluating sources. In two scenarios, participants were presented with one source that was more knowledgeable than the other, and the results for the four questions are shown in Figure 2. As expected, the participants were more likely to select an adult who was good at spelling than a child who was not good at spelling (88% vs 12%, $\chi^2(1)=22.5$, $p<.0001$). Of particular interest was children's source choice when the child was considered to be more knowledgeable than the adult. Participants thought that a child

who was good at spelling would be a better source of information about spelling than an adult who was bad at spelling (93% vs 7%, $\chi^2(1)=28.9$, $p<.0001$).

The other two Spelling Expertise questions concerned both an adult and a child of equal knowledge. Participants did not make a statistically significant differentiation in their selection of sources when both were good at spelling (58% selected the child source and 42% selected the adult source), nor when both were bad at spelling (40% selected the child source and 60% selected the adult source). In fact, 15% of the participants initially declined to choose a source, claiming that they were both equal. For example, one participant claimed, "You should ask both! They are both good at spelling."

Division of Knowledge

Participants were asked to select the best source of information for which video game would be more fun and which video game would help children learn the most. As seen in Figure 1, in the *Fun Advice* condition, 48% selected a child. In comparison, in the *Learn Advice* condition, only 22% of the participants selected a child. Consistent with Study 1, even 4- and 5-year-olds showed a significant differentiation between the two learning types, and were more likely to choose a child source when asking about *Fun Advice* than *Learn Advice* ($G^2(1)=6.18$, $p<.05$).

If responses from 4- and 5-year-olds in Study 2 are added to the responses in Study 1, older children are more likely than younger children to seek Fun Advice from a peer and Learn Advice from an adult ($G^2(4)=27.25$, $p<.001$). These results suggest that older children are more likely than younger children to seek *Fun Advice* from a peer and *Learn Advice* from an adult. Together, these results suggests that even

preschool children are beginning to be aware of individual differences in knowledge based no their social category of age. It is important to note that, when comparing across Studies 1 and 2, the range of ages of the participants is quite large (4- to 12-years of age).

General Discussion

By including both elementary school and preschool participants, the two studies reported here were able to examine both the limits of children's reasoning about knowledge and age at different ages, and also changes across development during this period. In contrast to theories suggesting children's blind belief of all adults (e.g., Dawkins, 1993; Piaget, 1959), both elementary school and preschool children evaluated both the age and knowledge of sources. Participants of all ages also recognized the relative importance of knowledge rather than age when considering sources and cited that a child who was knowledgeable would be a better source than an adult who was not. Furthermore, even preschool participants differentiated between the types of knowledge that adults and children may have, but results indicated that a significantly larger number of older elementary school children than younger children were aware of this difference.

These results are consistent with previous results finding early sophistication in reasoning about the knowledgeability of sources. Results from Koenig and colleges (Koenig et al., 2004; Koenig & Harris, 2005) suggest that children are able to use previous knowledgeability to determine future knowledgeability. Similarly, the results in the present study are consistent with findings that young children differentiate

between the types of information which are better obtained from an adult and the types of information which are better obtained from a child (VanderBrought and Jaswal, in press). The present study builds on this work by finding that the present research found that children cited adults and children as best sources for different aspects of the same topic – video games. It suggests that children are not simply associating video games only with adults or with children, but that they differentiate between the types of information each may know. Taken together, these studies suggest that preschool children seem to understand the importance of age in determining knowledge, but do not think it is the only determinant of a source's knowledge.

In addition to evidence that young children are beginning to understand the relative importance of age and knowledge, there was also evidence of developmental change in children's use of age of these cues. The older elementary school children in Study 1 were more likely than the younger elementary school children to differentiate between the types of knowledge that adults and peers would be likely to know. Furthermore, when evaluating a source, older children were also more likely than younger children to consider the relative importance of knowledge rather than age. This suggests that although young children may show some sophistication in the understanding of knowledge, they may still not use this knowledge in the same way as older children. It may be important for future research to determine whether the age related shifts in peer conceptions have to do with participant age, peer age, or both.

It is important to further examine the limits of children's use of age when reasoning about sources of information. Previous research suggests that children are likely to seek information from adults, such as parents, on topics that the child should

know best (e.g., Burton & Mitchell, 2003). One possible explanation is that children consider familiar sources differently than unfamiliar sources. Perhaps children do not think all adults are knowledgeable, just some specific adults. Specific experiences with specific people may have influenced children to think that some people have more knowledge than others. For example, if a child has repeated positive experiences in which their mother seemed to know the answer to a lot of questions, he may think that she is more knowledgeable than she really is. This possibility has been posited by Lutz and Keil (2002), who suggested that young children may consider teachers are experts in many areas, presumably because preschool and elementary teachers teach more than just one discipline.

Understanding how best to evaluate sources of information is an important skill necessary for accurately navigating the world. The costs of learning incorrect information from an incredible source can be very costly. It is evident that even adults may occasionally have difficulty determining the best source, but the present study provides evidence that preschool children are already developing some of the skills necessary to evaluate sources, and these skills continue to develop into the elementary school years.

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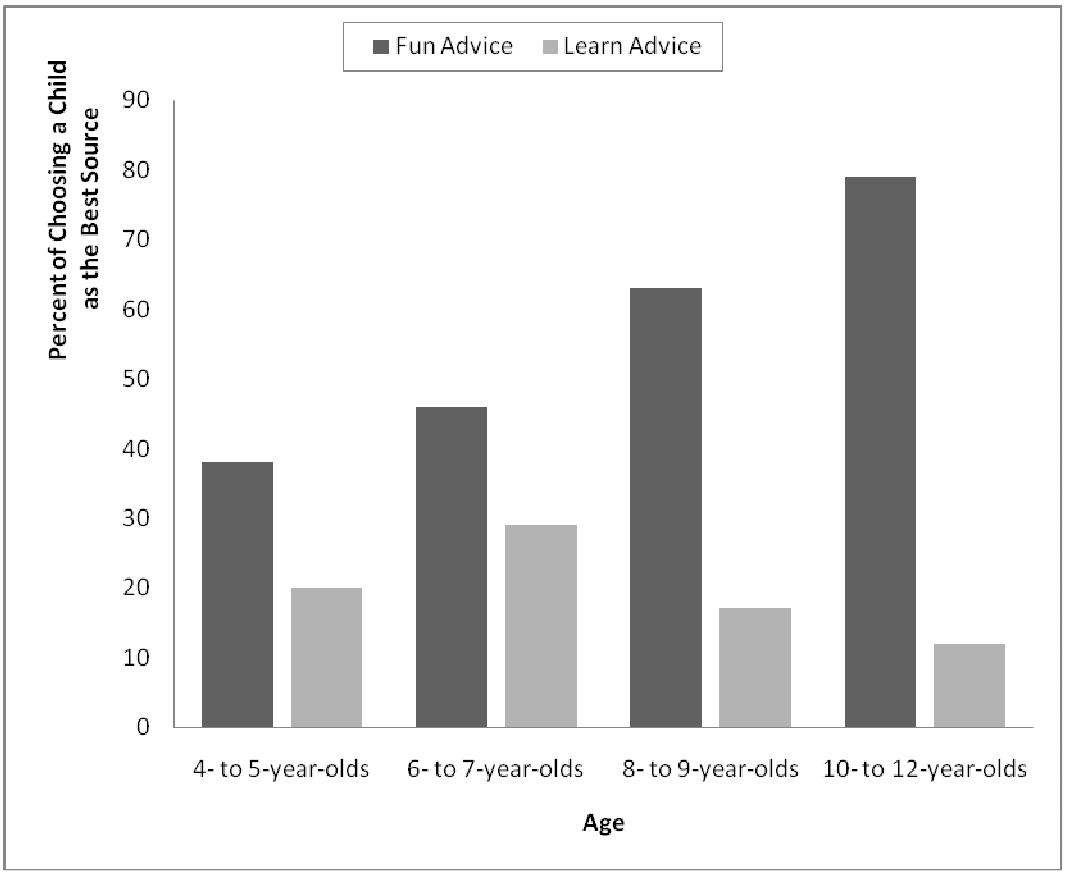
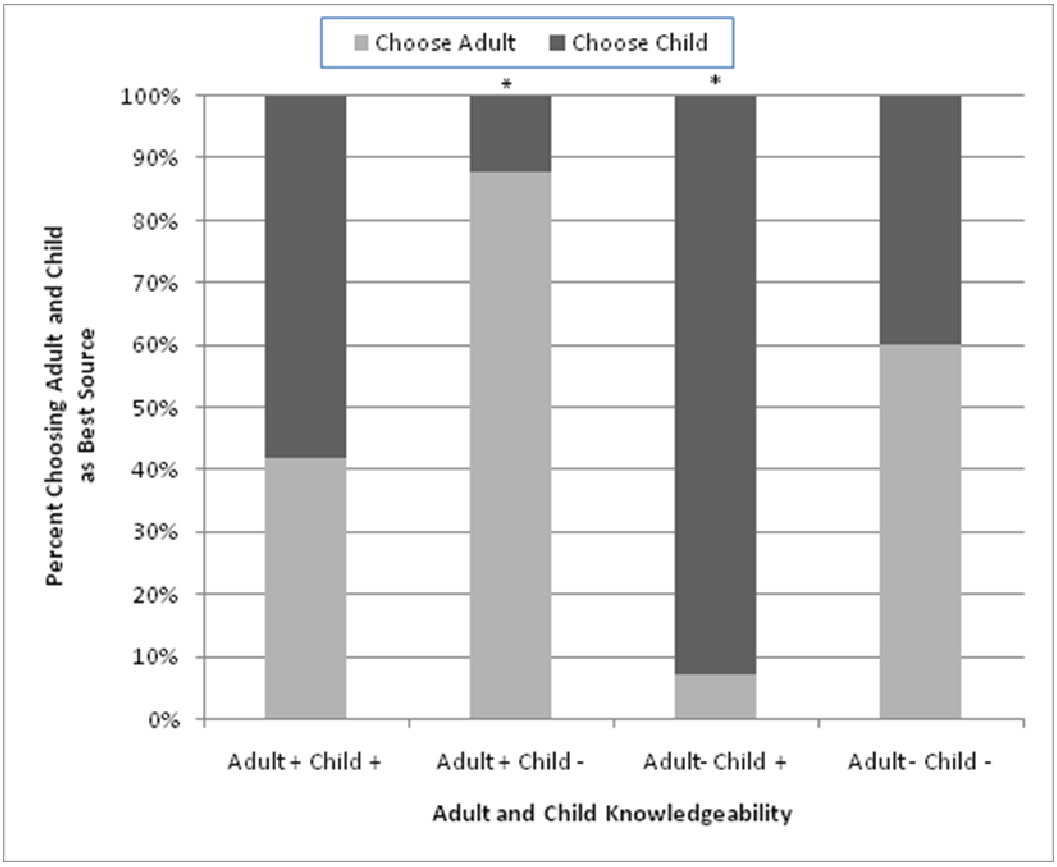
Chapter 3, Table 1. Participants' Distribution of Responses When Presented With Each of the Three Expertise Measures in Study 1

Response	6-7 years	8-9 years	10-12 years
Age alone			
Adult	42%	25%	33%
Child	17%	17%	13%
Does not matter	42%	58%	54%
Knowledge alone			
Expert	58%	46%	63%
Non expert	4%	17%	4%
Does not matter	38%	38%	33%
Age with Knowledge			
Adult non expert	4%	8%	8%
Child expert	58%	58%	71%
Does not matter	38%	33%	21%

Note. The table is divided by responses for each of the three questions, shown as percentages and divided by age group. Rounding of figures caused some cells not to add up to 100%.



Chapter 3, Figure 1. Percentage of Children Choosing a Child as the Best Source in the Fun Advice Condition and the Learn Advice Condition in Studies 1 and 2.



Chapter 3, Figure 2. Percentage of Children Choosing a Child as the Best Source in the Fun Advice Condition and the Learn Advice Condition in Studies 1 and 2.

CHAPTER 4

Children's Source Reasoning about Preferences

Abstract

Preschool children's use of unfamiliar peers as sources to establish new preferences was examined in two studies (total $N = 89$). Of primary interest was whether children were influenced by the source similarity cues of shared preferences and shared gender. Participants in both studies agreed that it was appropriate to use shared gender but not shared preferences as a cue. Study 2 provides evidence of children following the recommendation of a source with similar gender as well as similar known preferences. Furthermore, children's responses to explicit questions were associated with individual differences in memory of that source cue, suggesting that children are better able to remember social information they view as important.

Children's Source Reasoning about Preferences

Although there are a variety of ways in which a child can learn about the world, one important way is through verbal communication (Harris & Koenig, 2006). Recent research has made clear that by 4 years of age, children are often already selective when it comes assessing (e.g., Heyman, 2008) and remembering (e.g., Lampinen & Smith, 1995) factual information. However, much less is known about their selective acceptance of *subjective* information (see Banerjee et al., 2007 and Flavell, Flavell, Green, & Moses, 1990 concerning distinctions in children's reasoning of facts versus opinions). Of interest in the present research is whether preschool children show selective acceptance of their peers' expressed opinions when establishing their own preferences. Examining the nature of any such selectivity should provide insight into young children's use of heuristics to process social information and into the nature of peer influences. Understanding the establishment of preferences is of particular interest because such preferences are likely to influence how children spend their time, what they come to value, and how they learn to view themselves.

Research on children's assessment of factual information provides evidence of a number of heuristics that children use when deciding whom they should trust. One such heuristic is to rely on individuals who have been accurate in the past more than those who have not. Evidence suggests that even preschool children are more likely to learn a new word from a previously reliable source than from a previously unreliable one (e.g., Jaswal & Neely, 2006; Koenig & Harris, 2005) or from a source expressing certainty as compared to one expressing uncertainty (Sabbagh & Baldwin, 2001;

Sabbagh, Wdowiak, & Ottaway, 2003). Additionally, children may choose to rely on individuals with greater knowledge of the situation, as well as those who are likely to accurately convey that information. Preschool children tend to learn factual information from individuals who have perceptual access to the knowledge in question (Robinson, Champion, & Mitchell, 1999), and from individuals with occupations suggesting they have expertise in the domain in question (Ackerman, 1983; Lutz & Keil, 2002). In some situations, preschool children will discount information from individuals who make statements that promote their own self-interest (Gee & Heyman, 2007; Mills & Keil, 2005), suggesting that they are aware that some people may be motivated to distort information even if they are knowledgeable about it. For example, Gee and Heyman (2007) found that preschool children were unlikely to believe a source claiming to be sick if the participant also knew that the source wanted to get out of going to camp that day (but see Mills & Keil, 2005 and Heyman & Legare, 2005 for limitations in this understanding during the early elementary school years).

Children also appear to use a number of cues to selectively remember factual information. Some of these cues relate to the known or inferred knowledge of sources, and research suggests that children are less vulnerable to the suggestions of those who are perceived to be relatively less knowledgeable. For example, young children were less likely to be misled about the contents of a story by an adult who claimed to be unfamiliar with the story than by an adult who claimed to know the story well (Toglia, Ross, Ceci, & Hembrooke, 1992). Similar findings have also been shown when age information is manipulated: young children are less vulnerable to suggestion by a child source rather than an adult source (Ceci, Ross, & Toglia, 1987; Lampinen &

Smith, 1995), presumably because adults are generally assumed to be more credible than children. Lampinen and Smith (1995) further suggest that children's memory can be affected by information about the general personal characteristics of sources. They found that labeling sources as "silly" led 3-year-old participants to show greater resistance to the sources' misleading suggestions. Collectively, these studies suggest that even young children are aware of some of the cues that can be used to evaluate sources.

Although the majority of previous research on children's reasoning about sources has focused on the use of sources providing factual information, sources can also be used to help people make other kinds of judgments. In the present study, we seek to examine whether children are sensitive to cues about source similarity when faced with preference information. Classic psychological research notes the importance of similarity as a cue to judge ourselves and others (e.g., Festinger, 1954). When evaluating credibility and trustworthiness, adults are more likely to trust sources with similar characteristics as themselves (e.g., Berscheid, 1966; Mills & Kimble, 1973; Pornpitakpan, 2004; Tormala & Clarkson, 2007). For example, McGarry and Hendrick (1974) presented college students with a persuasive speech about student voting rights from speakers that varied in similarity to the student. The college students were more likely to trust another student, as opposed to a non-student adult. Clearly, there are numerous cues an individual can use to define him or herself as similar or dissimilar to another person. The present study focuses on two cues that are likely to be highly salient to children, as suggested by prior research: the gender of the source and the known preferences of the source.

To examine the use of these two cues in preference formation, the present study focuses on peer influences. Previous research has focused on children's use of adults as sources of information, which may be particularly useful when examining how children evaluate factual information. However, influences from peers are also likely to play an important role in children's evaluations, especially when determining preferences (e.g., Birch, 1980; DiLeo, Moely, & Sulzer, 1979; Hendy, 2002; Sagotsky & Lepper, 1982; Weber et al., 2001). Although peer influences tend to increase with age (Raviv, Bar-Tal, Raviv, & Houminer, 1990; Raviv, Bar-Tal, Raviv, & Peleg, 1990), even preschool children rely on peers as sources of information (see Chapter 3; Jaswal & Neely, 2006; VanderBorght & Jaswal, in press). For example, VanderBorght and Jaswal (in press) found that preschoolers consistently cited another child as a being better source than an adult for factual information such as how to operate a toy and where best to play with a toy. The present study extends this work by examining children's selective use of peer sources to establish new preferences.

Gender Cues

One possible dimension of similarity is a source's gender. Previous research suggests that gender is a very salient cue to young children. By the time children are 3 years of age, they begin to form gender schemas, and information about gender appears to play an important role in children's reasoning about people (e.g., Bem, 1981; Huston, 1985; Martin & Halverson, 1983). Even young children are aware of the possibility that certain activities, possessions, and physical appearances are associated with a particular gender (Eichstedt, Serbin, & Poulin-Dubois, 2002; Etaugh & Duits, 1990; Killen, Pisacane, Lee-Kim, Ardila-Rey, 2001; Martin, 1989; Martin &

Halverson, 1983; Poulin-Dubois, Serbin, Eichstedt, Sen, & Beissel, 2002; Serbin, Poulin-Dubois, & Eichstedt, 2002; Urberg, 1982). For example, preschool-aged children believe dolls are generally considered feminine toys and would prefer to include a female, rather than a male, in a doll-playing group (Killen, et al., 2001). Children's gender schemas also affect their evaluation of others' toy choices, traits, and playmates (e.g., Heyman & Legare, 2004; Lam & Leman, 2003; Martin, 1989).

Given that gender is a salient category for young children, it seems reasonable to ask whether they will use gender similarity as a cue in differentiating among sources. Findings from social psychology provide evidence that adults consider same-sex sources to be more informative than opposite-sex sources when evaluating subjective information. For example, when asked to participate in a new task, adults are more likely to judge ability by referring to others of the same-sex than of the opposite-sex (Zanna, Goethals, & Hill, 1975), and to find a same-sex role model more inspiring than an opposite-sex one (Lockwood, 2006).

There are reasons to believe that children may consider same-sex peers as better sources of information. Given that elementary school children evaluate same-sex peers more positively than peers of the opposite-sex (Etaugh, Levine, & Mennella, 1984; Yee & Brown, 1994), it would not be surprising if they rely more on same-sex peers as sources of information. Consistent with this possibility, 4- and 5-year-olds are more likely to join an activity in which same-sex peers are also involved (Shell & Eisenberg, 1990). Children are also more likely to imitate behaviors they observed same-sex peers completing (Perry & Bussey, 1979) and avoid behaviors they observed opposite-sex peers completing (Bussey & Perry, 1982; Ruble, Balaban, & Cooper,

1981). Clearly, their behaviors are influenced by other children's gender. Recent evidence further suggests that gender may be used as a cue to evaluating source credibility (Gee and Heyman, 2007). Specifically, 4- and 5-year-olds were more skeptical that a male character would truthfully reveal how much he likes to play with dolls than a female character.

Known Preference Cues

The second similarity cue of interest is the known preferences of a source. For example, an individual might be particularly likely to accept book recommendations from another individual who shares his or her interest in science fiction.

Prior research suggests that adults are sensitive to cues of known preferences when forming opinions. For example, an adult is more likely to agree with a persuasive message if the opinion essay was written by a source with similar beliefs than if it was presented by a source with dissimilar beliefs (Silvia, 2005). Similar results have also been found with adolescents. For example, high school students developed better eating habits if they believed that a nutrition message was presented by a source with similar snack preferences, as opposed to dissimilar preferences (Feldman, 1984).

Very young children may also be sensitive to known preferences, as is suggested by recent findings by Fawcett and Markson (in press) that 2-year-olds were more likely to follow the toy recommendation of an adult who had similar toy preferences than one with dissimilar preferences. However, there is also research suggesting that young children do not always use known preference information when reasoning about sources. Lumeng, Cardinal, Jankowski, Kaciroti, and Gelman (2008)

asked preschool children to taste a variety of jellybeans and then allowed them to pick new jellybeans to take home. Participants were just as likely to follow the recommendations of an adult source with similar jellybean taste preferences as a source with dissimilar jellybean taste preferences. Thus, the extent to which children use shared known preference cues is unclear.

Study 1

Study 1 was designed as a preliminary exploration of whether preschool children's preferences are influenced to a greater extent by similar peers than dissimilar peers. Similarity was manipulated with reference to gender and to known preferences. Consistent with the design of many studies examining cues to a source's reliability of factual knowledge (e.g., Koenig, Clément, & Harris, 2004; Koenig & Harris, 2005), participants were presented with two sources who provided different recommendations.

By manipulating the gender and known preferences information about the sources, we examined children's use of these cues when establishing preferences. Of primary interest was whether preschool children would report that it would be more appropriate to follow the recommendations of similar sources than dissimilar sources and whether they would actually be more likely follow the recommendations from similar sources than dissimilar sources.

Method

Participants

A total of 37 children participated (21 boys, 16 girls; M = 4 years 4 months). The children were recruited from preschools in a large southwestern U.S. city. Participants were 76 percent White, 11 percent Hispanic, 8 percent Asian-American, and 5 percent African-American.

Procedure

Participants were interviewed individually in a quiet area at their school. The interview consisted of two measures created to examine children's beliefs about and use of source gender and known preference cues. In the explicit task, participants were presented with a hypothetical character and asked which source the character should listen to, and in the behavioral task, participants were presented with the opportunity to follow or reject a peer's recommendation.

Measures

Explicit tasks. To examine children's beliefs about whether information about similarity in gender or known preference should be used to determine the best source, participants were presented with two pairs of questions in which they were explicitly asked which of two sources would be best for finding out about toy choices. Within each pair, one question was about a male character and the other was about a female character. In the *Gender Belief* condition participants were asked whether it would be more appropriate for each character to listen to a source of the same or opposite gender. For example, in the female character scenario, participants were told, "This is Teresa, she is a girl. She wants to find out which toy will be most fun for her. Should she listen to a boy or a girl?"

The two *Known Preference Belief* condition questions asked whether it would be more appropriate for each character to listen to an individual with similar or dissimilar known preferences but held gender of the sources constant. For example, in the female character scenario, participants were told, "This is Rachel; she is a girl. She wants to find out which toy will be most fun for her. Should she listen to a girl who usually likes the same types of toys as Rachel or a girl who usually likes different types of toys from what Rachel likes?"

The responses to both pairs of questions were coded for whether the participant chose a source with similar gender or known preferences as the character. The order of the four questions was randomly selected for each participant.

Behavioral tasks. Also of interest was whether children actually considered similarity when presented with their own choice of sources. In order to address this question, participants were presented with sources that varied in similarity of gender and known preferences. To manipulate similarity of known preferences, participants were first asked their preferences in several categories (e.g., favorite sea creature; favorite food). These categories were specifically chosen to be gender-neutral preferences. This information was then used to manipulate the similarity of known preferences of the source, for example, "Dave likes whales, just like you!" or "Sarah does not like macaroni and cheese. Instead, she likes very different kinds of things from you!"

The behavioral tasks examined whether participants would generalize information about gender or known preferences in one category to help determine whether or not to follow the recommendation of a course when establishing new

preferences about DVDs. Participants were presented with non-descript DVDs and asked to choose which ones they would like to watch. The DVDs were blank DVD-Rs that were identical in every way except for the letter ("A" or "B") written on them, with letter selection counterbalanced. This was done to insure that the only information children had about the videos was that provided in the video taped recommendations. The peer sources all wore white shirts and were filmed in front of a plain white background to insure that the differences in choice would be due to the manipulated gender and known preference cues instead of any specific cues (such as a blue shirt or pink necklace) of the peer source.

The experimenter introduced each source by describing either the sources' gender or the source's preferences, following the same logic as the explicit tasks. In the *Gender Choice* condition, participants were presented with one male and one female source. In the *Known Preference Choice* condition, participants were presented with two sources of the same gender that differed only in similarity of preferences – one source liked the same item as the participant, and the other source liked very different things than the participant. The following is an example of a Gender Choice scenario:

> Here are two kids who watched both Video A and Video B. Let's see what video they liked best. This is Richard; he is a boy. *Participants shown video clip of a boy saying, "I like B!"*
>
> This is Alexis; she is a girl. *Participants shown video clip of a girl saying, "I like A!"*

So Richard is a boy, and he liked Video B. Alexis is a girl, and she liked Video A. Which video do you want to watch?

The choice measure was coded as +1 each time participants followed a peer recommendation and 0 each time they did not.

Children saw each peer source only once, and the videos were randomized for each participant to prevent any systematic responses based on visual cues of the peer source. The Gender Choice condition came before the Known Preference Choice condition, but the two trials within each condition were randomized.

In order to help insure that responses to the behavioral tasks did not reflect an attempt to be consistent with explicit beliefs, the behavioral tasks always appeared before the explicit tasks. For each participant, the names of the characters in the questions were drawn at random from a list of masculine and feminine names (see Kasof, 1993).

Results and Discussion

Explicit tasks

One question of interest was children's explicit beliefs about the importance of similarity of gender and preferences when choosing between sources, and the results are shown in Figure 1. In the two Gender Belief trials, participants responded that a character should listen to a source of the same gender an average of 1.27 times, which is significantly different from chance (SD=0.73; $t(36)$=2.24, p<0.05). In contrast, participants responded at chance when asked to choose between a source similar in known preferences and a source dissimilar in known preferences. These results

suggest that young children believe source gender similarity, but not source known preference similarity, is an important cue to use when establishing new preferences.

Behavioral tasks

A second question of interest was children's actual use of gender and preference information when presented with recommendations from two sources. Results indicated that participants did not systematically use similarity of gender or known preferences when determining which DVD to watch.

Study 2

Results from Study 1 indicated that preschool children considered gender to be a salient cue with which to evaluate peer sources' recommendations. Specifically, they claimed that others should follow the recommendations of a same gender peer to a greater extent than an opposite gender peer. Nonetheless, they showed no systematic tendency to make use of gender similarity information just as they showed no systematic tendency to make use of known preference similarity information.

One possible explanation for children's lack of use of similarity cues and for the lack of relation between their use of these cues is that they may have had difficulty keeping track of the characteristics and preferences of the two different individuals providing recommendations. Consequently, Study 2 reduced the information processing demands of the task by presenting participants with only one source's recommendation that they could choose to accept or to reject.

A second possible explanation is that the sources' known preferences in Study 1 were not closely related to the recommendation. It is possible that information about

a source's favorite food may not be generalized to preferences of DVDs. This possibility is consistent with evidence that children use similarity of preferences only in particular conditions (Fawcett & Markson, in press, but see Lumeng et al., 2008). As such, Study 2 manipulated a known preference cue that was more similar to the choice task.

In an additional attempt to examine children's use of cues to evaluate sources, Study 2 included a new condition to investigate children's acceptance of sources with masculine versus feminine play preferences. Previous research suggests that young children are sensitive to others' cross-gender play (e.g., Banjerjee & Lintern, 2001; Langlois & Downs, 1980). The present study included a Stereotyped Play measure to examine whether preschool children consider source conformity to gender sterotypes when determining whether to accept a recommendation.

Study 2 also examines relations between children's explicit beliefs and the way they process social information in light of prior evidence that these beliefs can sometimes serve to guide the way children interpret and respond to social information (Heyman & Diesendruck, 2002; Heyman & Dweck, 1998). In order to examine these relations, we added memory measures as a means to assess children's information processing (Greenhoot, 2000; Heyman, Gee, & Giles, 2003; Martin & Halverson, 1983).

Method

Participants

A total of 52 4- and 5-year-old children participated (27 boys, 25 girls; M = 4 years 11 months). The children were recruited from preschools in a large southwestern

U.S. city. Participants were 86 percent White, 8 percent Asian-American, 4 percent Hispanic, and 2 percent African-American.

Procedure

Participants were interviewed individually in a quiet area at their school. The interview consisted of three sets of measures created to examine children's beliefs about and use of source gender and known preference cues.

Measures

Explicit tasks. Participants were presented with the same four explicit task questions from Study 1.

Behavioral tasks. As in Study 1, participants were presented with a behavioral task with a total of eight trials. On each trial they were asked to choose between two DVDs after being presented with a recommendation of one peer that was shown be videotape. Gender similarity and known preference similarity were manipulated on the first four trials; gender similarity and stereotyped play preferences were manipulated on the last four trials. The order of the trials within each condition was counterbalanced.

In Study 1, information about known preferences was presented in the form of food, animal, and activity, preferences. Arguably these kinds of preferences are not closely related to DVD preferences, and it may be that children might make use of more closely related information. Consequently, in Study 2 we presented known preference information in the form of video preferences. This was done by first assessing children's video preferences by showing them a set of video clips. Some had content targeted to children (e.g., cartoons), and some had content targeted to adults

(e.g., news conferences). Participants were asked to indicate which ones they liked and which ones they disliked for the purpose of manipulating the similarity of known video preferences of sources. Although the majority of participants preferred the videos with child-friendly content, 19% of the participants indicated preference for one of the two videos targeted to adults, and 2% of the participants preferred both of the videos targeted to adults.

Similarity of known preferences was manipulated by stating that the source liked or disliked the types of videos the participant claimed to have liked earlier. For example, in the scenario with the similar gender and dissimilar known preferences source, male participants were told, "This is Greg. He is a boy, and he does not like the same types of videos as you. Instead, he likes very different types of videos. He watched both these two videos. Let's see which of these videos he liked best."

Of additional interest in Study 2 was whether peer influence might differ as a function of whether peers have gender stereotypical play preferences. This was addressed through scenarios that included information about the gender of the source as well as information about his or her preference for toys associated with gender stereotypes. For example, in the similar gender, masculine play scenario, male participants were told: "Here are two videos. This is Steve. He is a boy and he likes to play with trucks and trains. He has seen both of these two videos. Let's see which video he likes best."

After watching each of the eight peer recommendations (four in which gender and known preferences were manipulated and four in which gender and stereotyped play were manipulated), participants where asked which of the two DVDs they wanted

(the choice measure), and were asked to recall gender and preference information in a forced choice task (the memory measure).

The choice measure was coded as +1 each time participants followed a peer recommendation and 0 each time they did not and these scores were used to compute variables of key theoretical interest as described below:

One question of interest in the behavioral task was whether children used information about the gender of the source. In order to assess whether children were more likely to follow the recommendation of a same-sex source than an opposite-sex source, a *Gender Similarity Score* was computed for each participant. This score was created by subtracting a participant's individual responses for the four opposite-gender characters from the four characters of similar-gender in the eight scenarios.

A second question of interest was children's use of shared known preferences. Using the four questions in the known preferences condition, a *Known Preferences Similarity Score* was created to examine whether children were more likely to follow the recommendation of a source with similar known preferences than dissimilar known preferences. This score was computed by subtracting a participant's individual responses in the two dissimilar known preferences scenarios were subtracted from the two similar known preferences sources.

A third question of interest was whether children considered gender stereotype conformity important when evaluating sources. A *Stereotyped Play Score* was created by subtracting participant's responses to sources with counter stereotyped toy choices (males playing with feminine toys and females playing with masculine toys) from

responses to sources with gender stereotyped toy choices (males playing with masculine toys and females playing with feminine toys).

Further description of the creation of the scores can be found in the Appendix. Because there were a different number of scenarios that made up each of the scores, the scores were normalized by dividing Gender Similarity Scores by 4, and the Known Preference Similarity and Stereotyped Play Scores by 2. Thus, the possible scores for each score ranged from -1 to +1. Positive scores meant that the participant was more likely to follow the recommendation of a character that matched the participant in gender, a character with similar known preferences, or a character with gender stereotype consistent toy choices, respectively.

Memory measures were coded for accuracy of memory, and were given a score of +1 for each correct memory of a cue, and a score of 0 for each incorrect memory of the cue. The Memory measure always came after the Choice measure, but the order of the specific memory questions was determined randomly.

As in Study 1, the videotaped peer sources were seen only once and were counterbalanced for all participants. Character names were drawn from a random list of names and the choice and memory measures were presented before the explicit tasks.

Results and Discussion

Explicit tasks

Figure 1 shows the results of the Belief measures. Consistent with Study 1, participants of both genders were significantly more likely to respond that a male character should listen to a male source rather than a female source, and a female

character should listen to a female source rather than a male source in the two Gender Belief questions (M=1.59, SD=0.60, t(51)=7.09, p<.0001). This finding is consistent with the findings from Study 1, in which participants also reported that others should use gender as a cue.

Also consistent with findings from Study 1, participants did not view it as more appropriate to accept recommendations from sources with similar known preferences than from those with dissimilar known preferences. This provides further support that preschool children believe that it is important to consider shared gender, but not shared known preferences when evaluating source recommendations.

Behavioral tasks

Choice Measure. The choice measure examined whether participants would follow the recommendation of a peer source to determine which DVD to choose. Children's use of gender cues was evaluated by comparing the rate of acceptance of the recommendations made in the trials with same-gender peers and opposite-gender peers. The mean Gender Similarity Score was significantly higher than expected by chance (M=0.46, SD=1.42; t(51)=2.34, p<.05), which suggests that children use shared gender to evaluate sources when establishing new preferences.

Also of interest was whether children are more likely to follow the recommendation of source with similar rather than dissimilar known preferences. The mean Known Preference Similarity Score was significantly higher than expected by chance (M=0.52, SD=0.98, t(51) = 3.82, p<.0005), which suggests that preschool children systematically used the known preferences of a source. These results finding that children use both gender and known preferences are in contrast to findings in

Study 1, where participants used neither gender nor known preferences as cues. This difference may be due to the modification in presentation of the behavioral scenarios in Study 2, specifically that participants were only presented with one source at a time, instead of two sources, which may have decreased task demands.

An additional set of analyses examined whether children were more likely to follow the recommendation of gender-stereotype consistent peers than gender-stereotype inconsistent peers. Results of the mean Stereotyped Play Scores found no evidence of this (M=0.13, SD=0.82, $t(51)$=1.19, p>.20). These results are consistent with findings that young elementary school children focus more on gender information and less on individual play preferences than older elementary school children (Lobel, Bar-David, Gruber, Lau, & Bar-Tal, 2000). Follow up analyses found that male participants were more likely than female participants to accept the recommendation from a masculine source ($F(51,1)$=6.81, p<0.05). Neither male nor female participants systematically followed the recommendation of a feminine source. Other research also suggests that there may be significant differences in the ways males and females reason about masculinity (e.g., Lobel, Gerwitz, Pras, Shoeshine-Rokach, & Ginton, 1999).

Memory Measures. Study 2 also investigated participants' memory of the cues presented for each peer source. Across the 16 memory questions, participants correctly remembered the source cue 88% of the time. This high level of performance suggests that participants had good memories of the experimental manipulations. Mean memory scores for each type cue is presented in Table 1.

Of primary theoretical interest was whether participants' memories were associated with their beliefs about the importance of these source cues. Results indicated that children who said characters should use gender information were more likely to remember the gender of the source in the behavioral task (r=0.35, p<0.05). Similarly, participants who claimed characters should use known preferences as a cue were more likely to remember the known preferences of the sources in the behavioral task (r=0.43, p<0.005). These results suggest that children's explicit beliefs are systematically associated with how they remember source information.

In sum, Study 2 provides evidence that preschool children consider gender to be an important source cue when determining preference information. As in Study 1, children claimed that characters should listen to same-sex sources. Unlike Study 1, children used both gender and known preferences in a simplified behavioral task. The results also provide evidence of the relationship between young children's explicit beliefs about the importance of similarity cues and with their responses to these cues. In particular, children who explicitly believe that gender should be used as an important cue have a better memory for gender.

General Discussion

A major goal of the present research was to examine children's use of similarity cues to evaluate peer sources when determining preference information. In two studies, participants were explicitly asked whether they thought a character should listen to a source of similar gender and whether they thought a character should listen to a source of similar known preferences. Participants were also presented with a

behavioral task in which they could choose to listen to sources that also varied in similarity of these same cues. Study 2 also included a memory task to examine differences in memories of these source cues.

Children's Beliefs about and Use of Source Cues

In both studies, participants systematically claimed that individuals should be more accepting of the advice from same-sex peers than from opposite-sex peers. This result is consistent with other findings suggesting young children think it is important to attend to gender information (Gee & Heyman, 2007; Heyman & Legare, 2004; Lam & Leman, 2003; Levy, Sadovsky, & Troseth, 2000; Serbin, Powlishta, & Gulko, 1993). However, in the explicit tasks, participants' responses did not differentiate between sources with similar and dissimilar known preferences. When reasoning about others, children do not seem to consider known preferences to be important when assessing recommendations.

In addition to children's explicit beliefs about the use of similarity to evaluate sources, the present study examined children's actual use of similarity cues when presented with recommendations from a peer source. In Study 1, in which participants were presented with conflicting information from two peer sources via video, there was no evidence that either similarity cue had a systematic effect on children's behavior. However, in Study 2, in which participants only received one recommendation that they could choose to accept of reject, participants were significantly more likely to follow the recommendation of a same-sex source than an opposite-sex source and a source with similar known preferences than a source with dissimilar known preferences.

If gender and known preferences information can influence behavior, why was this influence only seen in Study 2 and not Study 1? One obvious possibility is that the simplified design of Study 2, in which participants only had to keep track of information from one source. In fact, we designed Study 2 with this possibility in mind. However, there is also another methodological difference between the studies that may account for the difference found in the use of known preferences: the nature of the manipulation of the similarity. The known preference topics in Study 1 (favorite foods and ocean animals) were less closely related to the specific recommendation (DVD preferences) than the known preference topics in Study 2 (whether they liked videos with adult or child-friendly content). Other research also suggests the importance of having known preference topics to be closely related to the choice measure. For example, 2-year-old children are unlikely to use information about similarity of toy preferences as a cue to deciding whether to follow a source's recommendation about a book preference (Fawcett & Markson, in press). This suggests that even young children do not treat all kinds of known preference information as equivalent.

The differences between Studies 1 and 2 also suggest that children may not use similarity cues in all contexts. Because the experimental controls removed many of the typical associations with each of the cues, it is possible that there may be stronger cues in the natural environment that may influence behavior. For example, perhaps children rely on a source's clothing style to determine the source's gender and children's behavior is influenced more by clothing style than gender labels. Thus, these cues in

and of themselves are unlikely to be major determinants of behavior among preschool children.

It is notable that children used known preference information to guide their behavior despite claiming that others should not use it. It is possible that children are able to make distinctions between source cues before they are able to reflect on them. This possibility is consistent with evidence that young children will use a particular technique before they can use it when reasoning about others or articulate the rule. For example, although children as young as 3 will try to hide their disappointment of a gift, it is not until they are 6 that they can detect this same false emotion in others (e.g., Cole, 1986; Gross & Harris, 1988; Josephs, 1994). Similarly, it has been posited that children can use grammar rules without being able to explicitly describe them (e.g., Pinker, 1984).

Another key set of findings in the present research is that children who thought that gender was an important cue in the explicit task were more likely to remember the gender of the sources advising them, and children who thought that known preferences was an important cue were more likely to remember the known preferences of the sources advising them. These results contribute to a range of findings suggesting children's beliefs can influence their memories of an event (e.g., Greenhoot, 2000; Heyman, Gee, & Giles, 2003; Martin & Halverson, 1983). Although further research will be needed to pinpoint the mechanism of the memory effects in the present study, including whether they relate to encoding, retrieval, or both, these results suggest that preschool children are better at learning social information when they explicitly believe the information should be used to guide behavior.

Use of Peer Sources

One key element of the design in the present study was the use of peer sources. Investigating children's evaluation of peer sources is significant because of the importance of peers across development (e.g., Kruger & Tomasello, 1986; Sullivan, 1953). The behavioral tasks in Study 2 found that children were about as likely to accept as to reject the recommendations of their peers. This is somewhat surprising since the recommendation was essentially the only information available to them when making the selection. Peer influence has long been considered an important aspect of children's social lives (e.g., Banerjee & Dittmar, 2007; Gottman & Parker, 1986; Parker & Gottman, 1989), and has been shown to influence children's television viewing (e.g., Anderson, Lorch, Smith, & Bradford, 1981). One possibility is that sources were not particularly influential because they did not explicitly tell children which choice to make. It may be that if children were told "pick this one" rather than "I like this one" they would have been substantially more likely to follow recommendations. Another possibility is that children are less influenced by peers that they see on video than peers that they see in person. This possibility would be generally consistent with recent evidence of a video deficit, in which young children tend to learn better from people face-to-face than by video (Troseth, 2003; Troeseth, Saylor, & Archer, 2006).

It will be important for future research to examine how our findings might generalize to adult sources. During the preschool years, children come to appreciate the different knowledge that different sources may have (e.g., Lutz & Keil, 2002, Miller, 2000). Although young children generally recognize that adults are more

knowledgeable than children, research suggests that they are also aware of the possibility that an adult can be less knowledgeable (Jaswal & Neely, 2006; VanderBought & Jaswal, in press) or less credible (Lampinen & Smith, 1995) than a child. Recent studies have examined children's evaluations of adult sources (Fawcett & Markson, in press), as well as of peer sources (Gee & Heyman, 2007; Mills & Keil, 2005), but few have directly compared evaluations of peers and adults, and it will be important to do so in future research.

In conclusion, the present results suggest that preschool children show some tendency to preferentially follow the recommendations of others of the same gender and of those who share their preferences. This suggests that efforts to influence children's preferences, such as their food preferences, may benefit from emphasizing the ways in which children are similar to those with the desired preferences. Additionally, results of links between explicit beliefs and memory suggest that individual differences in beliefs about the importance of different forms of social information have important implications for information processing.

Chapter 4, in full, is being prepared for publication as it appears in Gee, C.L. & Heyman, G.D. (2009). Children's reasoning about preferences. The dissertation author was the primary investigator and author on this paper.

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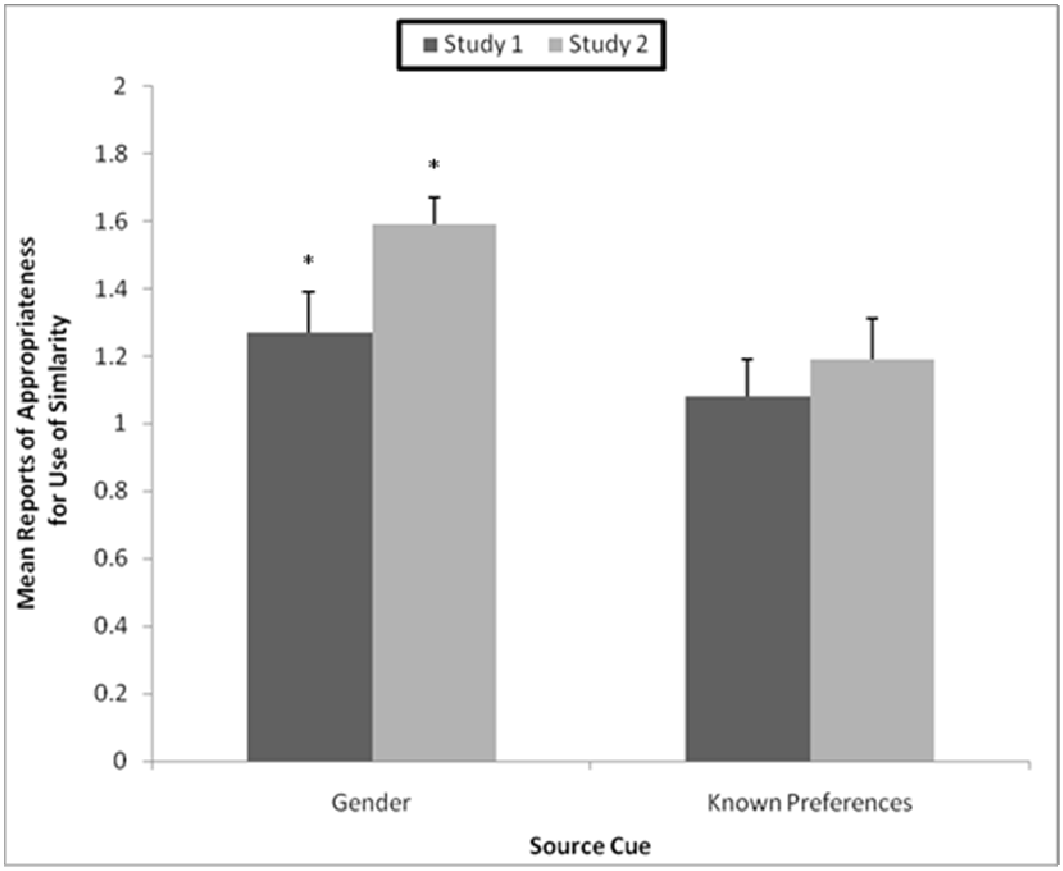
Chpater 4, Table 1. Mean Memory Scores for Each of the Three Source Cues in Study 2

Memory Cue	Mean	Standard Deviation
Gender	7.60	0.95
Known Preferences	2.98	0.74
Stereotyped Play	3.56	0.12

Note. The Gender cue had 8 memory trials, and the Known Preferences and Stereotyped Play cues each had 4 memory trials.



Chapter 4, Figure 1. Mean Reports of Appropriateness of Use of Each Similarity Cue in Studies 1 and 2.

Appendix

Study 2 behavioral task scenarios and the creation of each participant's choice scores

Gender and Known Preferences

1) Male Source with Similar Known Preferences

2) Male Source with Dissimilar Known Preferences

3) Female Source with Similar Known Preferences

4) Female Source with Dissimilar Known Preferences

Gender and Play Preferences

5) Male Source with Masculine Play

6) Male Source with Feminine Play

7) Female Source with Masculine Play

8) Female Source with Feminine Play

Scoring

Responses following the source's recommendation were coded as +1, and responses not following the recommendation were coded as 0.

Gender Similarity Score, male participant: (1+2+5+6)-(3+4+7+8)

Gender Similarity Score, female participant: (3+4+7+8)-(1+2+5+6)

Known Preferences Similarity Score: (1+3)-(2+4)

Stereotyped Play Score: (5+8)-(6+7)

CHAPTER 5

General Discussion

The studies presented in this dissertation investigated children's evaluation of sources of information in three empirical studies. This research adds to a growing body of work examining children's reasoning about people in general.

Possible social context cues

A primary goal of the present work was to determine the types of social context cues that young children use when making judgments about who to believe. Although previous research has found that preschool children are aware of the importance of knowledge and trustworthiness of a source (e.g. Ceci, Ross, & Toglia, 1987; Koenig & Harris, 2005; Lampinen & Smith, 1995; Lutz & Keil, 2002), there may be instances in which children may not be directly given credibility information. Instead, they may need to rely on social context cues to critically evaluate sources. The studies in the present research examined whether children use source cues such as age, gender, preferences, and motives to infer knowledge and trustworthiness.

Results from Chapter 2 provide evidence of children using source motives to determine credibility of a source. Indeed, even preschool children were more skeptical of a source with a high motive to distort the truth. For example, children were less likely to believe a source who was asked about cross-gender stereotyped play behavior than a source who was asked about play behavior stereotypically associated with the source's gender.

Chapter 3 examined a different social context cue: age. Preschool children were significantly more likely to rely on knowledge than age, suggesting that they are developing an understanding of the relative importance of the two cues. Consistent with recent research finding children may be aware of the different types of

knowledge that adults and children may have (e.g., VanderBorght & Jaswal, in press), preschool and elementary school children in Chapter 3 referred to an adult for the educational value of a video game, but to a peer for the preference value of a video game. This appreciation of the types of knowledge that people of different ages have may be one important way for children to evaluate source credibility.

Chapter 4 extended the findings from of children's use of gender information in Chapter 2 by examining children's beliefs about and use of gender cues. Preschool children claimed that gender was an important source cue when evaluating preference information. Study 2 also provided evidence of children systematically using gender as a cue to determine whether or not to follow the recommendation of a source.

It is notable that children's use of source cues may not directly match up to their beliefs about the importance of these cues. Chapter 4 presented children with both explicit and behavioral measures. Although children were more likely to accept the recommendation from a source with similar known preferences than a source with dissimilar known preferences, they claimed that others should not use known preferences as a source cue. This finding suggests that it may be difficult to draw inferences from explicit beliefs to their actual use of sources, and vice versa.

Despite the significance of these findings, it is worth mentioning that social psychology research has extensively investigated *adult's* reasoning of source cues (e.g. Berndt, 2005; Cialdini & Goldstein, 2004; Eagly, Wood, & Chaiken, 1978; Hemsley & Doob, 1978; Petty, Wegener, & Fabrigar, 1997; Smith & Shaffer, 1991; Tesser & Schaffer, 1990). It may be of interest for future research to link the developmental research with the adult social psychology literature. Can theories used

to explain adults' reasoning about sources be applied to that of children's? Using approaches taken from adult social psychology research may provide an interesting theoretical background to systematically investigate children's reasoning of source cues.

Age related changes

The second aim was to examine age-related changes in skepticism of sources. This research provides evidence of even young children making critical evaluations of new information. The findings show that even young children were skeptical of sources with a high motive to distort information in familiar contexts. For instance, children were less likely to believe a character that claimed to be sick if they knew he did not want to go to camp, than if they knew that he did want to go to camp. Despite evidence of young children's critical evaluation, results in Chapters 2 and 3 also showed that older elementary school children were more likely than the younger elementary school and preschool children to be skeptical of sources with a high motive to distort their statements.

Through interviews with both preschool and elementary school children, this dissertation provides evidence of important differences in children's reasoning about sources throughout early childhood. Taken together, these studies suggest that young children have begun to appreciate and use cues to source credibility. These skills may continue to be refined through the elementary school years, and even into adulthood.

Possible mechanisms for change

How does source evaluation develop? One possibility posited in the present work is that children's developing understanding of social contexts may play a role in

children's reasoning about sources. As children experience different situations in which people are not truthful, children may learn to be more skeptical when faced with that scenario again. Findings from Chapter 2 suggest that young children who were aware that cross-gender play behavior may not be socially desirable were also more likely to be skeptical of sources that were asked about cross-gender play behavior, which suggests that children's skepticism of sources may be associated with their beliefs about the kinds of contexts in which a person may want to lie. This research is consistent with evidence suggesting that social knowledge may be an important aspect in understanding manipulative intent (Aloise & Miller, 1991; Kassin & Lepper, 1984). For instance, children with older siblings are better able to detect lies (Perner, Ruffman, & Leekam, 1994), presumably because these children have had more experience with being deceived themselves.

Consistent with the premise that social understanding affects how children react to sources, Heyman, Fu, and Lee (2008) examined whether cross cultural differences affect children's reasoning about what others say. If social experience affects children's reasoning about sources, then children growing up in very different social environments might show different patterns of age related change. Six- to seven- and ten- to eleven-year-old children from the U.S. and China were asked whether self-reported information was a good way to find out about evaluative characteristics of a person, such as honesty and smartness. The older group of children raised in China were more skeptical of self-report than the older age group of children raised in the U.S. Heyman and colleagues argue that Chinese children's increased exposure to situations in which people might distort information about themselves

may then increase their likelihood to consider the circumstance when determining that type of information from a source.

Theoretically, it would be useful for future research is exactly how social knowledge affects source reasoning. To date, it is unknown whether these associations are causally related. It is unknown whether social experience simply makes children more aware of motives or if it increases children's cognitive skills to use their knowledge of these motives. It is possible that both of these things take place concurrently, and it may be difficult to tease apart these effects. Social experience may be teaching children both the concept of manipulation as well as the importance of the motives of a speaker. An understanding of the ways in which social experience affects children's reasoning about sources would be informative for the development of skepticism.

Summary

The results of the papers presented herein suggest that even preschool children are beginning to use social context cues to evaluate sources. Despite claims of children's gullibility (Dawkins, 1993), this research provides evidence of situations in which young children do not blindly accept information from others. Instead, they will critically evaluate knowledgeability and trustworthiness when determining whether to accept or reject new information through the use of social context cues. The present work also provides evidence that this ability continues to develop through the elementary school years, as evidenced by the results of significant developmental change.

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