CHILDREN AND ADULTS EVALUATE WHAT OTHERS KNOW BY CONSIDERING
HOW THEY COMPLETE GOALS IN LANGUAGE AND ACTION

By

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CHAPTER I

INTRODUCTION

There are multiple ways to achieve goals in language and action. For example, one could water plants with a watering can or a teaspoon. In addition, one could achieve the goal of describing the location of a spatula by saying, "in the kitchen," or, "in the room where cooking and washing take place." The goals are achieved in both cases but some means may be preferred. Both infants and adults expect direct, expedient paths to a goal (e.g., Csibra, 2008; Csibra, Gergely, Biro, Koos, & Brockbank, 1999; Gergely, Bekkering, & Kiraly, 2002; Meltzoff, 1995; Racokzy, & Tomasello, 2006; Woodward, 1999), and preschoolers and adults prefer that linguistic means adhere to a set of pragmatic principles guiding conversation (e.g., Ackerman, 1981; Conti, & Camras, 1984; Eskritt, Whalen, & Lee, 2008; Siegal, 1999). One possibility is that observers may decide that someone who engages in expedient action and appropriate speech is more competent. This competence may be limited to the task at hand – actors may know more about actions and speakers may know more about language – or it may be general – people who engage in smart actions or language may also be more likely to know about many other things. The present studies investigated these possibilities by testing what children and adults prefer to learn from individuals who differ in their history of engaging in expedient goal directed actions or using pragmatically appropriate speech.

The ability to evaluate what others know improves with age (e.g., Bartsch, & Wellman, 1995; Flavell, 2000; Gopnik, & Astington, 1988; Onishi, & Baillargeon, 2005; Wellman, &

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Woolley, 1990). An understanding of what others know allows children to infer their goals and intentions. When observing someone engaged in reaching a goal, a child might expect that a person will follow the most expedient path or set of actions. For example, when watering plants, a person who uses a watering can will seem more competent than someone who uses a teaspoon (especially if a watering can is available). Children may view the unnecessarily elaborate teaspoon approach as evidence of lack of knowledge about actions and other matters. Another behavior that children may use to evaluate knowledge is how speakers convey messages in conversation. The approach that one takes to achieve effective communication may be shaped by the context of the conversation. For example, when asking a classmate for directions to a book sale it would be appropriate for them to say, "It's at the library." Yet, if one were not familiar with the campus and asked a student for directions to the book sale, a more elaborate set of directions would be required. The ability to adapt one's message in different speaking contexts may provide evidence that one is knowledgeable about appropriate language use and perhaps other things as well.

A child's conclusions about what a person is likely to know may affect the child's future interactions with the person. Research has found that children take others' previous behavior into account when deciding whether to trust new information provided by a person. In these studies, children were first familiarized with an accurate actor (e.g., labels common objects correctly) and an inaccurate actor (e.g., calls shoes bats). They were then asked to decide who is likely to know the name of a novel object. Children preferred to learn new labels from speakers who had a history of knowing the names of common objects (Koenig, Clement, & Harris, 2004; Koenig, & Harris, 2005; Pasquini ,Corriveau, Koenig, & Harris, 2007), who respond

to questions truthfully and relevantly (Vazquez, DeLisle, & Saylor, 2012), and who know about nonobvious properties of the objects (Sobel, & Corriveau, 2010). Children also prefer to learn how to play with novel objects from individuals who have a history of both knowing common labels and completing goals (Rakoczy, Warneken, & Tomasello, 2009).

The current studies investigated the inferences that children make about others based on evidence that they attain goals in the most expedient manner by using the most direct path to a goal or by using the most appropriate form of speech in conversation. This was addressed in two different studies in which children evaluated different kinds of behaviors. In the first study, 4-year-olds were introduced to individuals who take different paths to a goal. More importantly, one person completed the goal (i.e., walking across a room to place a ball in a basket) using the most direct path (i.e., a straight line toward the basket), whereas the other person used an indirect path (by walking in a curved path to the basket) to complete the goal. The two individuals then presented contrasting information about a series of objects. One prediction was that children would identify the actor who behaved expediently. Another prediction was that they would endorse future information provided by the expedient actor. For example, a person who is expedient in her goal directed actions may be trusted to provide information about other actions (e.g., which tool should be used for a specific task) and she may also be considered trustworthy when providing information about object labels.

The second study, investigated children and adults' inferences about speakers who differ in their adherence to conversational norms. When engaged in conversation, the primary goal of interlocutors is to convey information. To achieve this most effectively, speakers need to adhere to the conversational norms of their language group. Members of a linguistic

community have expectations about what is considered appropriate language use in conversation. To adhere to linguistic conventions, speakers need to take the linguistic context of a conversation into account when deciding how to express their ideas. Because expectations about elaboration in conversation differ across language groups (e.g., English and Spanish) and across contexts within a language (e.g., whether the conversation involves a child or an adult), evaluations of which speaker is most pragmatically competent should take into account the context of the interactions. For example, in the second study, participants were introduced to two speakers who differed in their use of conversational norms. In particular, one speaker used an elaborate form of speech while the other adhered to a more concise form of expression. As in the first study, the types of information that participants seek from the two different speakers was investigated. The prediction was that participants would trust labels provided by the actor who adhered to the appropriate set of norms for each situation.

In what follows, I will discuss two ways that children may judge goal achievement when observing others' actions and language. I will first describe research on children's understanding of actions as it relates to the research question for Study 1. In this study, I investigated the inferences that children make about others' knowledge states based on their ability to use the most expedient means to achieve goals. I will then review the literature on the development of children's ability to judge pragmatic competence in others. This examination of prior research provides the background for Study 2, which consisted of three experiments testing whether children and adults take linguistic context into account when judging whether others are using the most appropriate speech.

Evaluating Expediency in Action

To decide if someone is using the most expedient means when performing an action, the person's ultimate goal should be considered. Then, the way the goal was achieved can be evaluated. For example, there are many ways to fill a bag with marbles. However, if you want to place the marbles in a bag quickly, the most expedient approach would be to grab a handful at a time and drop the marbles in the bag. A less expedient approach would be to put the marbles in one by one. To decide that the person who is placing the marbles in one by one is behaving inexpediently one needs to be aware that the other approach is available. In other words, the approach taken to attain the goal can be compared to other available approaches to determine if the most expedient one was used.

The first step in this task, goal attribution, is one that infants can accomplish when observing humans and nonhuman agents with a history of humanlike behavior (e.g., Csibra, 2008; Johnson, 2003; Luo, & Baillargeon, 2005; Meltzoff, 2010; Song, Baillargeon, & Fisher, 2005; Woodward, 1999). In one study, six-month-old infants observed a hand repeatedly grasp one of two objects. Then the objects' locations were switched. Infants expected that the hand would grasp the original object in a new location rather than a new object in the old location. This demonstrates that infants understood that the grasping action was directed at the object (Woodward, 1999). Children also attribute goals to nonhuman agents who engage in anthropomorphic behavior (e.g., Csibra, 2008; Johnson, 2003; Meltzoff, 2010). For example, Meltzoff (2010) found that 18-month-old infants follow the gaze of a robot that interacted

contingently with an experimenter, indicating that they may have attributed intentionality to the robot.

To evaluate the expediency with which a person attains a goal, children may need to make inferences about an actor's goal before it is completed. There is evidence that infants can attribute goals to agents even when an actor's goal is not demonstrated explicitly. For example, after observing an adult's failed attempt to complete a goal, 18-month-old infants will complete the goal through new means rather than imitating the adult's ineffective approach (Meltzoff, 1995). In some instances a goal can be completed more expediently with the use of tools. In one study, 27-month-old infants used tools to successfully complete the goal of an adult's failed attempt (Racokzy, & Tomasello, 2006). This research suggests that when observing adults as they perform actions, infants and toddlers can create representations of alternate approaches that may be more expedient paths to the ultimate goal. They can then follow these alternate paths when imitating failed attempts to achieve the goal.

To distinguish between agents who differ in the expediency with which they perform actions, infants must also be able to compare different means to a goal. There is evidence that infants and toddlers recognize when agents use unnecessarily elaborate and inexpedient means (e.g., Csibra, 2008; Csibra, Gergely, Biro, Koos, & Brockbank, 1999; Gergely, Bekkering, & Kiraly, 2002, Meltzoff, 1995). In one study, infants observed an animate box use a curved path to approach a goal in two different settings. In one setting there was an obstruction between the agent and the goal that prevented the use of a straight path, while in the other setting there was no obstruction. Six-month-old infants were surprised when the box took a curved path and there was no obstruction but they were not surprised when the curved path occurred around

the obstruction (Csibra, 2008). Infants' ability to judge the efficiency of observed actions is also evident in their imitations of some simple goal-directed behaviors. For instance, fourteen-month-olds will use a more expedient method than that used by an adult when imitating a simple task. However, when it is clear that part of the goal is to perform the more elaborate actions, children will imitate the full set of actions demonstrated by the adult. Gergely, Bekkering, & Kiraly (2002) showed infants a person turning on a light with her forehead in two different contexts. In one context, she was covered by a blanket and could not use her hands and in the other, her hands were free but she still used her forehead to turn on the light. When asked to imitate the action, children who had seen the person with the blanket used their hands to turn on the light, showing that they understood the goal and could achieve it more expediently. When imitating the person whose hands were free during the demonstration, children used their foreheads, showing that they understood that her goal was to turn the light on with her forehead.

Taken together, the studies described above show that young children can attribute goals to people and humanlike agents and they can evaluate the means by which others' attain their goals. They differentiate between expedient and inexpedient paths when a goal is achieved through different means, and they approach goals in a more expedient manner after observing failed attempts by adults. One question is whether children can make inferences about what others know by considering the expediency of their actions. Children may consider expedient actors knowledgeable about actions and perhaps other things.

In one study, four- and five-year-olds were familiarized with two puppets: one who achieved goals successfully (e.g., drawing with a working pen) and one who failed to achieve

goals (e.g., attempting to draw with a broken pen). The two puppets then taught children

different rules for playing a game. Children preferred to follow the rules taught to them by the

previously successful puppet (Racokzy et at., 2009). This finding suggests that children may

make inferences about who is likely to know about conventions (i.e., game rules) by evaluating

their history of action performance. However, one aspect of the study design makes it difficult

to determine if children's preferences were solely determined by the puppets' previous actions.

During the familiarization phase, the unsuccessful puppet was also shown to mislabel common

objects, while the successful puppet provided accurate labels. Therefore, children's tendency to

endorse the rules described by the successful puppet may have been influences by their history

of also providing accurate labels.

A remaining question is whether children can make inferences about what others know

in situations where only evidence of competence in action performance is provided and actions

are evaluated in terms of expediency rather than successful completion of a goal. For example,

the same size hole may be dug by hand or with a shovel. Even though the end result is the

same, one of the two means should be considered more expedient. The experiments in Chapter

II will investigate if children are able to use evidence of expediency to decide what else

someone may know.

Evaluating Pragmatic Competence

Linguistic proficiency involves more than vocabulary and grammatical knowledge. To

communicate efficiently, children need to understand the underlying rules of conversation.

There are different ways to convey information and achieve a communicative goal. However,

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the ways in which information can be conveyed may be constrained by the conversational norms of a linguistic community. These norms establish how one should formulate utterances across different situations. Among other things, knowledge of the pragmatic subtleties of a language allows one to contribute meaningfully to a conversation and to accurately interpret what others say. For instance, it is usually expected that speakers will make contributions that are relevant to the topic of conversation. However, this rule may be broken if a speaker wishes to convey some other meaning, such as implying that they are uncomfortable with a topic. A listener who understands that the conversation partner who just mentioned an irrelevant topic knows this implicit rule, will be motivated to interpret the irrelevant information as an attempt to convey something different from the literal meaning of what was said (i.e., "Let's talk about something else.").

Grice (1957, 1975) proposed that conversation is guided by a set of assumptions and rules that are shared between conversation partners. Interlocutors assume that their conversation partners are following the cooperative principle, an understanding that speakers are making meaningful and appropriate contributions to a conversation. Interlocutors are also expected to adhere to the following maxims: quality (be truthful), relation (be relevant), quantity (provide as much information as is required) and manner (be unambiguous, brief and orderly). These maxims may be violated as long as a speaker remains cooperative. That is, a speaker may violate a maxim (e.g., violating the quality maxim by saying that it's a thousand degrees outside) to convey a nonliteral message (in this case an instance of hyperbole). It is also possible to violate the maxims uncooperatively. For example, if a speech partner violates a maxim without the intention of conveying some other meaning, then s/he is being

uncooperative. The ability to differentiate between cooperative and uncooperative maxim violations begins to emerge in the preschool years and continues to develop throughout childhood (Ackerman, 1981; Conti & Camras, 1984; Eskritt, et al., 2008; Siegal, 1999; Vázquez et al., 2012).

One aspect of pragmatic competence is an understanding of how the rules of conversation apply in different contexts. As they become more pragmatically competent, children also become aware of appropriate forms of address in different conversational settings. Monolingual children modify their speech when talking to younger children (Shatz,& Gelman, 1973) and bilingual two-year-olds change the relative amount of each language used depending on the language spoken by an interlocutor (Paradis,& Nicoladis, 2007). They also become aware that others communicate in different ways. In a study where 5-year-olds were asked to imitate different members of their family, utterance length was greater for imitations of their mothers than their fathers, and utterance length for fathers was greater than that for other children in the family (Andersen, 1986). Likewise, two-year-olds in Samoa use different request types depending on the social rank of their target audience (Platt, 1986).

The previous research demonstrates that as they enter into the preschool period, children already use situation appropriate speech across contexts. As a result, it seems possible that bilingual children and adults should also be sensitive to variations in linguistic contexts that may affect how pragmatic principles are applied. For example, bilingual speakers may be able to apply the conversational norms that are compatible with the language spoken by their current conversation partner. Furthermore, bilingual speakers may also be able to judge others' use of language appropriate norms.

For a bilingual person to become fluent in two languages that differ in their application

of conversational norms, two sets of rules may need to be learned. There is evidence that some

conversational norms vary across languages. For example, languages differ with regard to the

use of indirect requests. An indirect request is one that is made when asking for something that

may trouble a person (e.g., borrowing someone's car). One may ask directly (e.g., "Can I borrow

your car?") or indirectly allude to it (e.g., "I don't have a car to get to work tomorrow. I wonder

what I'll do."). The situations that require indirect requests vary across languages (Brown, &

Levinson, 1987; Economidou-Kogetsidis, 2010). For example, familiarity influences the

directness of requests differently in the United States and Mexico (Brown, & Levinson, 1987).

Furthermore, some languages (e.g., Greek) allow for greater use of direct request than others

(e.g., English) in the same situations (Economidou-Kogetsidis, 2010).

The use of honorifics varies both across languages and across cultures. In English the

pronoun *you* can be used to address someone in any situation. Other European languages (e.g.,

German and Spanish) have two forms of the pronoun that are used to denote status when

addressing others (Laurido, 2011). Japanese has a great variety of honorifics that apply to

different relationships (Tokunaga, 1992). A bilingual person who speaks languages that vary in

their use of honorifics may face challenges when determining how to apply them when

addressing others. The use of honorifics also varies across dialects of the same language. Some

Spanish speaking groups (e.g., Colombians) use the formal pronoun *usted* when addressing

most conversation partners, including spouses. Others (e.g., Cubans) mostly use the informal *tu*

with different conversation partners (Laurido, 2011). An inability to use honorifics appropriately

may convey rudeness if one uses the informal form of address when convention requires that

the formal be used. On the other hand, one may convey submissiveness when doing the opposite.

Despite their sensitivity to conversational norms at an early age (Siegal, Iozzi, Surian, 2009), bilingual children and adults may have some difficulty understanding pragmatic rules that differ between their languages. One reason for this may be that bilingual speakers will have less exposure to instances in which different norms are used. For instance, a child who speaks English at home and Japanese at school will have less experience with each individual language than a monolingual English speaker who speaks English at school and at home. The lower exposure to each language could result in children not observing enough situations in which a norm is applied in one language. For example, a bilingual child may not have many opportunities to observe how her teacher is typically addressed in each of the child's languages. If a certain level of experience with conversational norms is needed before they are learned, then pragmatic development may be affected when someone is bilingual. This is true for some other aspects of linguistic development in bilingual children. In vocabulary acquisition, bilingual children tend to lag behind their monolingual peers in each of their languages even though their combined vocabulary may be equal to that of monolinguals (e.g., Gathercole, & Thomas, 2009; Lindsey, Manis, & Bailey, 2003; Rosenblum, & Pinker, 1983).

Another possibility is that exposure to two languages highlights differences in conversational norms and makes the rules more salient. If this is the case, then bilingual children and adults may learn to apply context appropriate norms earlier than their monolingual counterparts. Whether there is a lag or an advantage in the acquisition of context variable conversational norms in bilingual children has yet to be tested.

Some conversational norms are shared between languages. For example, Siegal, Iozzi & Surian (2009) found that monolingual and bilingual preschool speakers of Italian and Slovenian are sensitive to the Gricean maxims of quality (be truthful), quantity (say as much but not more than needed) and relation (be relevant). However, there is some evidence suggesting that adherence to the Gricean maxim of manner (be brief) varies across languages. When compared to English speaking mothers, Japanese mothers elicit more brief responses from their toddlers (Minami, & McCabe, 1995). This indicates that these language groups may have different expectations about the manner in which speakers should interact in conversation.

There have not been many explicit tests of differences in use of pragmatic principles across English and Romance language like Spanish and Italian. However, research on differences in writing across English and Romance languages is suggestive of a difference in the application of the maxim of manner. In particular, texts written in Romance languages reflect a tendency to create elaborate sentences by including additional information. English texts are generally written in a more direct fashion so that only ideas that are necessary to the writer's intended point are included (Kaplan, 1966). In a study comparing the writing style of speakers of Mexican Spanish and American English, Montaño-Harmon (1991) found that essays written by ninth grade Spanish speakers contained more unrelated information than essays written by English speakers in the same grade. This additional information was added in a conscious manner, as students often stated explicitly that they had diverged from the topic. This research suggests that Spanish speakers may differ from English speakers in their form of expression with regard to Grice's maxim of manner. Despite evidence that the maxim of manner is judged

differently in some languages, the consequences of these differences in bilingual speakers have not been directly investigated.

In chapter three, I describe a study investigating how children and adults evaluate pragmatic competence in different conversational contexts. In the first two experiments, I tested how English-Spanish bilingual children and adults apply pragmatic norms that differ in the two languages, and their understanding of how norms are applied across different contexts within one language (English). To compare how pragmatic competence is evaluated in the two languages, in a third experiment I tested how monolingual speakers use different utterance features to determine which speakers are adhering to the maxim of manner in each language.

CHAPTER II

EXPEDIENCY IN ACTION AS EVIDENCE OF RELIABILITY

Children can make inferences about what others know in a variety of situations. They

prefer to learn new labels from speakers who correctly label common objects (Koenig, et al.,

2004; Koenig & Harris, 2005; Pasquini, et al., 2007), who answer questions successfully by

providing truthful and relevant answers (Vazquez, et al., 2012), and who correctly describe

objects by demonstrating nonobvious properties (Sobel, & Corriveau, 2010). Preschoolers are

also more likely to learn about novel games from individuals who know common object names

and are successful at using common objects (Rakoczy, et al., 2009). Taken together, these

studies show that preschoolers prefer to learn about conventions (labels and games) from

individuals with a history of successfully completing linguistic goals alone or a combination of

linguistic and action goals. The following experiments asked whether children are also more

likely to trust information provided by one of two actors who differ only in terms of the

expediency with which they completed a goal.

Previous research has clarified that around their fourth birthday, children become

better able to use a person's prior behavior to evaluate new information the person provides

(e.g., Pasquini, et. al., 2007; Racokzy, et. al., 2009; Sobel, & Corriveau, 2010). This study

investigated an additional way in which 4-year-old children may infer what others know by

considering whether they previously performed actions in an expedient or inexpedient manner.

Preschoolers were first familiarized with actors who differed in the path taken to complete

actions. Then the actors provided conflicting information about tool use and object labels.

Participants were asked to determine which of the two actors was providing accurate

information in each case. One prediction was that four-year-olds would prefer to learn about

tool use from someone with a history of using expedient goal directed actions (e.g. using most

direct path toward a goal). Additionally, if children generalize expertise across domains, they

may also prefer to learn new labels from the actor with a history of being expedient. If children

are conservative in their generalizations about expertise, then they may not be more likely to

trust the labels provided by the expedient actor.

However, it is possible that children learn about tools and labels differently. For

example, children may rely on others' testimony alone to learn labels but may rely on a

combination of testimony and object features to learn how to use novel tools. When children

use evidence from different sources to learn new information the relative salience of the two

sources may influence what children ultimately learn. In the present study, children had to

decide which of two novel tools was appropriate for completing a task (e.g., scratching your

back). To solve this problem, children were offered information about which tool was

appropriate by an expedient and an inexpedient actress who each endorsed a different tool. If

this is the only evidence that children use to select the appropriate tool, they should endorse

the expedient actress' tool. However, children's own assessment of the features of the tools

features may have led them to use their own knowledge about tools to select the object that

was most compatible with the task. To test how the relative salience of these two pieces of

evidence (information source vs. object features and task compatibility) affects how children

learn about tools, I conducted two variations of the same procedure.

In Experiment 1a participants were asked to select the appropriate novel tools for tasks (e.g., digging holes) that are completed with familiar tools (e.g., a shovel). If children use object features to determine whether a tool fulfills the needs of the task, they might not endorse the tool chosen by the reliable speaker because they have some previous knowledge about what tool is appropriate to use. On the other hand, if children use testimony from trustworthy speakers to determine how something is used, they should select the object endorsed by the reliable speaker. In Experiment 1b participants were asked to select the appropriate novel tool for a task (e.g., closing boxes) that does not have a familiar tool associated with it. If children still use object features to determine whether a tool fulfills the needs of the task even when they cannot compare the objects with known tools, then they should not prefer tools endorsed by the reliable speaker. On the other hand, if children do not have knowledge of which tool is commonly used for a task, they should on testimony to select the object endorsed by the reliable speaker.

<div align="center">Experiment 1a</div>

<div align="center">*Method*</div>

Participants

Ten 4-year-olds (M = 4;6, range: 4;3 – 5;2, 4 male) were recruited from daycare centers close to Vanderbilt University. Parents received a consent form and a letter inviting them to participate through their child's homeroom teacher. Children participated individually in a small room at the childcare centers.

Materials

Six video clips of two actresses separately placing two balls in a basket were recorded.

Each clip lasted about 1 minute. In the videos the actresses wore different colored t-shirts (i.e.,

black and white) to help participants distinguish between them. Each actress appeared in three

video clips. In one, the *goal demonstration video*, a bench obstructed the path to the basket. To

place the balls in the basket, the actress grabbed one ball at a time and walked around the

bench in a curved path to drop it in the basket. In the other two videos, the bench was removed

so that a straight path to the basket was available. In the *expedient means video*, the actress

selected a ball and took a straight path toward the basket. In the *inexpedient means video*, she

selected a ball and took a curved path to the basket. This was the same path she took during

the goal demonstration video with the bench present (Figure 1).

Goal Demonstration Videos

Expedient Means Video   **Inexpedient Means Video**

Figure 1. Screen shots from the *goal demonstration* videos (top), and an *expedient means* and

inexpedient means videos (bottom).

Two television sets were placed on a table in front of two chairs. Each of the televisions displayed a picture of one of the two actresses. Since children would be watching the videos of each actress on one of the TVs, this picture was present to help them track where they had seen each actress' clips.

Six novel objects that children do not have labels for were used during label endorse trials (Figure 2). A second set of six novel tools that children had never seen before were used during tool endorse trials (Figure 3). The objects were purchased at hardware and crafts stores, built in the lab or created by breaking apart larger objects until something that was unrecognizable and unnamable remained.

Figure 2. Novel object pairs used in label endorse trials in Experiment 1a.
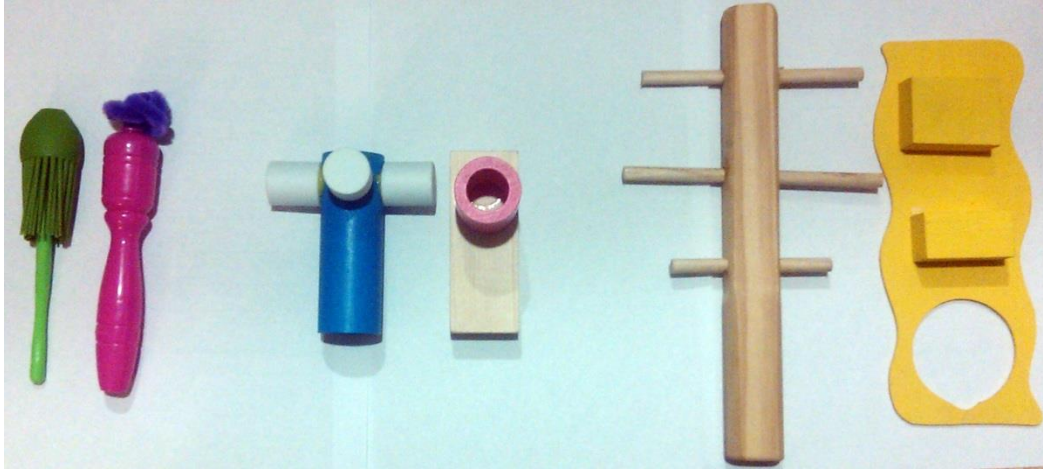
Figure 3. Novel tool pairs used the tool endorse trials in Experiment 1a.

Procedure

The procedure consisted of two phases. During the *familiarization phase* participants

saw videos of two actresses who differed in the expediency with which they approached a goal.

During this phase, participants were asked to predict and assess the actresses' actions. This was

followed by a *test phase* consisting of four blocks of trials (tool endorse, label endorse, neutral

preferences and prosocial attribution) and a memory check question (to confirm that children

remembered who was more expedient at the end of the procedure).

Familiarization phase

During the familiarization phase, participants viewed four videos: the *goal*

demonstration videos of both actresses followed by the *expedient means video* of one actress

and the *inexpedient means video* of the other actress. The order in which the last two videos

were shown and which video was played for each actress was counterbalanced across

participants. The experimenter introduced the videos by saying, "Today we are going to watch

some of my friends on TV. One is wearing a black shirt and one is wearing a white shirt. Who

has a black shirt? Can you point to her? Who has the white shirt? Can you point to her?" The experimenter then described the actresses' goal and played the goal demonstration video for one of the actresses ("My friends had to put some balls in a basket. Let's watch the girl with the black shirt first."). She then played the video of the other actress, using the same description.

The goal demonstration videos were viewed first. They introduced the two actresses and established that their goal was to place the two balls in the basket. After viewing the demonstration videos for both actresses, children saw the expedient means video for one actress and the inexpedient means video for the other actress. For the first video, the experimenter said, "Let's watch the girl with the white shirt again!" She paused the video as it appeared on screen and before the actress began to move so that a still frame of the new setup (no bench) was visible. The experimenter then asked the *path prediction question*: "Look, someone took the bench away. Will she go straight or will she go around like she did before?" This question allowed us to assess whether children understood that the more expedient path was now different. That is, would children notice that the actress could now reach the basket using a straight path? The order in which the choices were mentioned was counterbalanced across participants. The experimenter then allowed the video to play through the end and asked the *path assessment question*: "Did she go to the basket the right way?" The same procedure, including the path prediction and path assessment questions, was followed for the video of the other actress. After viewing the expedient and inexpedient action videos children responded to the *path comparison question:* "Who was better at going to the basket?"

Test phase

The familiarization phase was followed by four test blocks: tool endorse, label endorse, neutral preference and prosocial attribution. The *tool endorse trials* tested whom children trusted to provide information about novel tool use. During *label endorse trials*, participants were asked to decide which actress was providing accurate information about the referent of a novel label. The order in which the label and tool endorse blocks were presented was counterbalanced across participants. The tool and label trial blocks were followed by a block of *neutral preference questions*, to rule out the possibility that children were biased toward one actress, and a final test block of *prosocial attribution questions.* This last block explored the possibility that children trusted the information provided by one actress because they attributed a helpful disposition to her, not because they considered her more knowledgeable. Finally, children were asked to compare the paths taken by the actresses for a second time in the *memory check question*.

Tool endorse trials. In three trials, participants were asked to decide who is likely to know which of two novel tools is required for a specific task. To begin the tool endorse trials the experimenter said, "My friends were here yesterday and I asked them about the tools in this box. I asked them to show me how to use them. I don't know how to use them so you are going to have to help me figure out how they are used." A pair of novel tools was presented in each trial. During a trial, the experimenter placed one object from a pair in front if a TV displaying the picture of one of the actresses while saying, "The girl with the black shirt said you use this to scratch your back." Then, while placing the other object from the pair in front of the TV displaying a picture of the other actress said, "The girl with the white shirt said you use this to

scratch your back." The experimenter then turned to the child and said, "They aren't both used

to scratch your back! Only one is used to scratch your back. Which one do you use to scratch

your back?" Children made a selection by grasping or pointing to one of the objects. A different

pair of objects was used for each tool endorse trial, and each tool pair was associated with the

same action (i.e., scratching your back, digging holes, pushing books) for all children. The order

in which the pairs appeared was roughly counterbalanced across participants, as there were 10

participants and three presentation orders.

Label endorse trials. Label endorse trials were analogous to the tool endorse trials.

However, participants were asked to decide who is likely to know the referent of a novel label.

The label endorse block began with the experimenter saying, "I asked my friends about the toys

in this box. I asked to tell me the names of the toys. I don't know what they're called. You are

going to have to help me figure out what they are called." For each trial, one pair of objects and

its associated label was used. The experimenter placed the first object in front of the television

displaying a picture of one actress and said, "The girl with the white shirt said this is a dake."

She then placed the other object in front of the other television, while saying "The girl with the

black shirt said this is a dake." After this, she turned to the child and said, "They can't both be

dakes! Only one is a dake. Which one is the dake?" She then waited for children to answer the

question by grasping or pointing to one of the two objects. The three pairs of objects were each

associated with one label (i.e., teg, glap or trome). As in the tool endorse trials, the three preset

orders were roughly counterbalanced across participants.

Neutral preference questions. Presented after the tool and label endorse trials, three

questions were included to rule out the possibility that children were biased to select one

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actress over the other irrespective of the question being asked. In these trials, the experimenter told children that "my friends like different things. You are going to help me figure out what they like. Okay?" She then asked three questions in one of three roughly counterbalanced preset orders. For one question, the experimenter asked, "Only one of my friends likes the color gray. Who likes the color gray?" The other two questions asked children to determine who likes to read books about plant and who likes to take pictures of things. Children's responses to these questions should be independent of which actress was expedient in her actions. To respond to the questions children referred to the actress by shirt color (black or white) or pointed to her picture displayed on one of the two televisions.

Prosocial attribution questions. To test whether children attributed generally helpful disposition to the expedient actress, a set of questions about prosocial behaviors was included. This question block assessed whether children would select the expedient actress because she was considered to be more helpful rather than more knowledgeable. Prosocial attribution questions were asked right after the *neutral preference questions* in one of three preset orders. In one trial, children were told, "One of my friends says please and thank you when she asks for something. Who says please and thank you?" In the other two trials children determined who helps her mom clean the house and who shares her candy with her little brother/sister. Children's responses were determined by which television they pointed to or which shirt color they mentioned.

The preset orders used in each individual block during the test phase were unrelated to the question order in the other blocks. For instance, one child might respond to label and tool endorse questions in matched order ABC, whereas a different child would see order ABC for

label trials but not for tool trials. All children responded to all test questions. If a child failed to give a response initially, the experimenter reminded him that she didn't know the answers to the questions and that the child could help her figure out the answer. She then restated the information she had given the child previously (e.g., "I know that the girl with the black shirt said this is a dake and the girl with the white shirt said this is a dake. Which one is the dake?").

Memory check question. To test whether children were able to track which actress was expedient in her actions throughout the experiment, they were asked, "Remember when we saw the videos? Who was better at putting the balls in the basket?" All children provided the same answer as in the familiarization phase, indicating that they were able to remember who they judged to be more expedient at the start of the study.

Coding

During the familiarization phase, participants were asked 5 questions. The *path prediction question* was asked for each actress and was coded as correct (1) if the child predicted she would take the straight path and incorrect (0) if the child predicted that she would go around in a curved path. The answers, one for each actress, were summed so each participant's path prediction score ranged from 0 – 2. The *path assessment question* was scored in the same manner, but the correct responses were that the expedient actress went the right way and the inexpedient actress did not go the right way. The *path comparison question* asked participants to decide who was better at going to the basket. Participant answers were coded as 1 if the expedient actress was chosen and 0 if the inexpedient actress was chosen. A *familiarization score* ranging from 0-5 for children's responses to questions in the

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familiarization phase was calculated by summing the path prediction, assessment and comparison scores.

The test phase consisted of four blocks of three trials each. Responses to each question in the tool endorse, label endorse, neutral preference and prosocial attribution trials were coded as 1 if the child selected the expedient actress and as 0 if the inexpedient actress was chosen. All children responded to all questions and scores for each block were summed separately. Therefore, the total score for each individual block ranged from 0 (if the inexpedient actress was chosen in all three trials) to 3 (if the expedient actress was chosen in all trials). Responses to the memory check question were coded in the same way as the path comparison question: the child's selection of the expedient or inexpedient actress was recorded.

Results and discussion

The current experiment tested preschoolers' ability to differentiate between actors using only information about expediency in action. I investigated whether children would be more likely to trust information about tool use and labels from people with a history of behaving expediently. One prediction was that children would identify the expedient path to the goal and would be able to use this information to make explicit judgments about observed actions. These results are discussed first. A second prediction concerned children's endorsement of information provided by the actresses. These results are discussed second. I predicted that children would be more likely to trust information about tool use (another type of action) and labels (another convention) provided by the expedient actress.

Familiarization score: Path prediction, assessment and comparison questions

To test children's understanding of the two actresses' actions in the observed videos we calculated a *familiarization score* for each participant. This score summed children's responses to the path prediction, path assessment and path comparison questions. The mean familiarization score for participants was different from a chance value of 2.5 (M=3.2, SD=.92, one-sample t(9)=2.41, p<.05), indicating that they understood how the actresses were supposed to reach their goal and how they differed in reaching the goal. To evaluate children's responses to the different question types asked during the familiarization phase, p*ath prediction* and *path assessment* scores were tested against a chance value of 1. Children were reliably able to predict that the agent would take a straight path once the bench was removed (M=1.50, SD=.53, one-sample t(9)=3.00, p<.05) but did not reliably judge that the expedient actress took the right path and the other actress did not (M=1.20, SD=.42, t(9)=1.50, p=.17). A closer look at children's responses to the two path prediction questions (Table 1) revealed that they provided a correct response to the question for the first actress (9 out of 10, p<.05, binomial test, one-tailed) but not the second actress (6 out of 10, p=.38). For the path assessment questions, children did not respond correctly when assessing the path taken by the first (5 out of 10, p=.38, binomial test, one-tailed) or the second (7 out of 10, p=.17, binomial test, one-tailed) actress, irrespective of whether she was expedient or not. Finally, children's responses to the path comparison question ("Who was better at getting to the basket?") did not differ from chance, as only 4 out of 10 (p=.38, binomial test, one-tailed) children stated that the expedient actress was better at getting to the basket.

Actress	Path Prediction		Path Assessment	
introduced	*Correct*	*Incorrect*	*Correct*	*Incorrect*
First	9*	1	5	5
Second	6	4	7	3

*p<.05

Table 1. Responses to individual questions during the familiarization phase of Experiment 1.

Test phase: tool endorse, label endorse, neutral preference and prosocial attribution trials

In *tool endorse trials*, participants decided which of two novel tools was appropriate for a task. Whereas, in *label endorse trials*, participants selected the referent of a novel label. In both cases, participants were predicted to use information about prior expediency to decide which actress was providing accurate information. No sex differences emerged so sex was not analyzed further. A paired samples t-test comparing tool and label endorse scores did not reveal significant differences in children's tendency to select the expedient actress' tools (M=2.10, SD=.57) versus labels (M=1.40, SD.1.17), t(9)=1.77, p=.11. Preschoolers' scores in these two test blocks were compared to a chance value of 1.5. Children performed above chance in the *label endorse*, t(9)=3.34, p<.01, but not in the *tool endorse*, t(9)=.27, p=.79, block (Figure 4). This last result demonstrates that children reliably selected the expedient actresses object in the label endorse trials, but not the tool endorse trials.

The neutral preference and prosocial attribution questions were included to test for possible biases. Children's responses to the neutral preference questions should be unrelated to the actresses' prior behavior. As predicted, scores were no different from chance for the neutral preference questions (M=1.30, SD=.48) t(9)=1.31, p=.22. This result demonstrates that children were equally likely to select the expedient and inexpedient actress for the preference

questions. The prosocial attribution questions were included to investigate whether children would select the tools or labels endorsed by the expedient actress because she was considered more helpful and not more knowledgeable. The total score for the three prosocial attribution questions (M=1.10, SD=.74) was not different from chance, t(9)=1.71, p=.12. Together with the neutral preference questions these data suggest that children's preference for the referent labeled by the expedient actress was not the result of a bias to select her for all items.
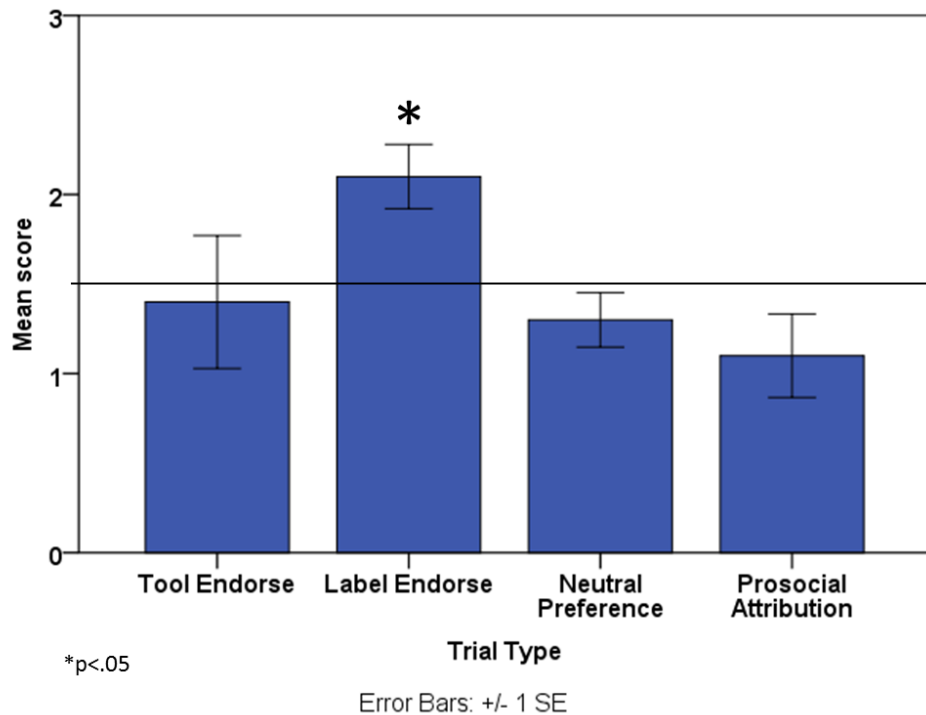

Figure 4. Mean scores for all four test trial blocks in Experiment 1a.

Since the order in which the tool and label blocks were presented was counterbalanced and each served as the first test block for half of the participants, I performed additional analyses on the mean score for the first block to determine if there were any differences by

block type. First block scores did not differ by tool or label, independent samples $t(8)=.95$, $p=.37$. First block scores differed from chance when the first block consisted of *label endorse trials* ($M=2.20$, $SD=.45$), $t(4)=3.50$, $p<.05$, but not when it consisted of *tool endorse trials* ($M=1.60$, $SD=1.34$), $t(4)=.16$, $p=.88$. This mirrors the results from the full analysis. The mean scores for the second block did not differ by tool or label block, independent samples $t(8)=1.37$, $p=.21$. Additionally, the mean score for the second block was not different from chance when the second block consisted of *tool endorse* ($M=1.20$, $SD=1.10$), $t(4)=.61$, $p=.57$, or *label endorse* ($M=2.00$, $SD=.71$) $t(4)=1.58$, $p=.19$, *trials*.

During the test phase, participants preferred to learn labels from the previously expedient actress. However, children did not show a preference for the tools endorsed by either actress. One possible explanation for this result is that children relied on their own prior knowledge of tools to select an object. To increase the likelihood that children would use evidence of prior competence to determine which actress was providing accurate tool information, children were asked to select tools for a different set of tasks in Experiment 1b. Specifically, they were asked to select the appropriate tools for tasks that are typically performed without tools (e.g., closing boxes).

Experiment 1b

Method

Participants

Ten 4-year-olds (M=4;10, range: 4;2-5;6, 8M) participated in daycare centers in the Nashville area. Children were recruited from the same daycare centers that participated in Experiment 1a. All children participated individually at their school.

Materials

The same videos and equipment from Experiment 1a were used. The novel objects for the label endorse trials were the same as in Experiment 1a. However, as we began to collect data for Experiment 1a, a bias toward one of the tools emerged. The tools from this pair were replaced with a new pair of objects of similar size (See Figure 5 for new set of novel tools).
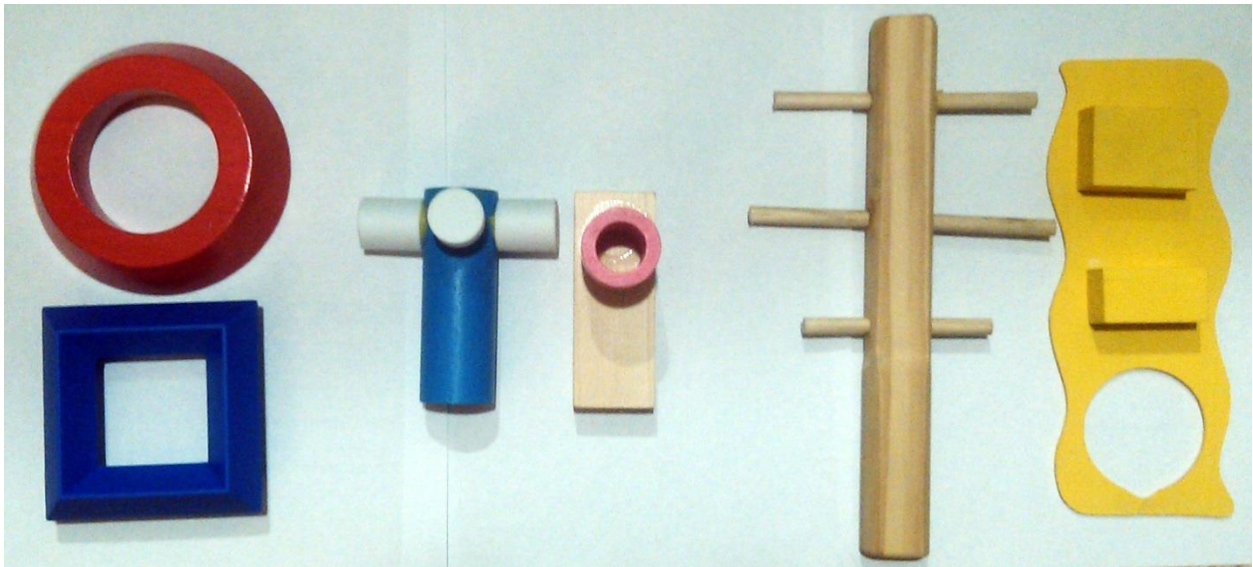
Figure 5. Novel tool pairs used in tool endorse trials in Experiment 1b.

The procedure was the same as in Experiment 1a, with one exception. During the tool endorse block, the actions paired with each novel tool pair were changed to represent actions not commonly associated with tools. The novel tool actions used in Experiment 1b were: closing boxes, moving play-doh and stacking cups.

Results and discussion

In Experiment 1b, I tested whether children would recruit evidence of the actresses' prior competence instead of information about object features to determine which tool was appropriate for each task. To this end, participants were asked to select tools for tasks that are not typically performed with tools. These results are discussed in the second section below. In the first section I evaluate children's understanding of the actresses' actions during the familiarization phase.

Familiarization score: Path prediction, assessment and comparison questions

Children's familiarization score was our measure of participants' understanding of the actions performed by the two actresses. Participants were asked to predict, assess and compare the paths taken by the actresses. As expected, this score differed from chance (M=3.6, SD=.84, t(9)=4.12, p<.05). Separate analyses by question type revealed that *path prediction score* ("Will she go straight or will she go around like she did before?") was marginally different from chance (M=1.5 out of 2, SD=.71, t(9)=2.24, p=.052) while *path assessment score* ("Did she go to the basket the right way?") did not differ from chance (M=1.20, SD=.42, t(9)=1.5, p=.17). A closer look at children's responding to the *path prediction question* for each actress (Table 2)

revealed that they provided a correct response for the first actress (9 out of 10, p<.05, binomial, one-tailed) but not the second actress (6 out of 10, p=.38). Responses to the two separate *path assessment questions*, were not different from chance (first assessment: 6 out of 10 responded correctly, p=.38; second assessment: 6 out of 10, p=.38). Unlike participants in Experiment 1a, participants in Experiment 1b provided the correct answer to the *path comparison question*, stating that the expedient actor was better at getting to the basket (9 out of 10, p<.05). This result emerged despite using the same procedure during the familiarization phase in both studies.

Actress introduced	Path Prediction		Path Assessment	
	Correct	*Incorrect*	*Correct*	*Incorrect*
First	9*	1	6	4
Second	6	4	6	4

*p<.05

Table 2. Responses to individual path prediction and assessment questions in Experiment 1b.

Test phase: tool endorse, label endorse, neutral preference and prosocial attribution trials

Children's endorsement of the information provided by the actresses was measured in two test blocks: *tool endorse* and *label endorse trials*. No sex differences emerged so sex was not analyzed further. A paired samples t-test comparing tool (M=1.70, SD=.95) and label endorse (M=2.0, SD=.67) scores revealed no significant differences, t(9)=.82, p=.43. Mean scores for the two blocks were tested against chance (=1.5). As in Experiment 1, the mean score was above chance for the label endorse block, one-sample t(9)=2.37, p<.05, but not the tool endorse block, one-sample t(9)=.67, p=.52. Participant responding was at chance in the *neutral preference* (M=1.70, SD=.48), t(9)=1.31, p=.22, and prosocial attribution (M=1.50, SD=.53),

t(9)=0, p=1, blocks (Figure 6). Together these findings suggest that children selected the

expedient actress' referents, but not her tools. This tendency was not the result of a general

bias toward the expedient actress.

*p<.05

Error Bars: +/- 1 SE
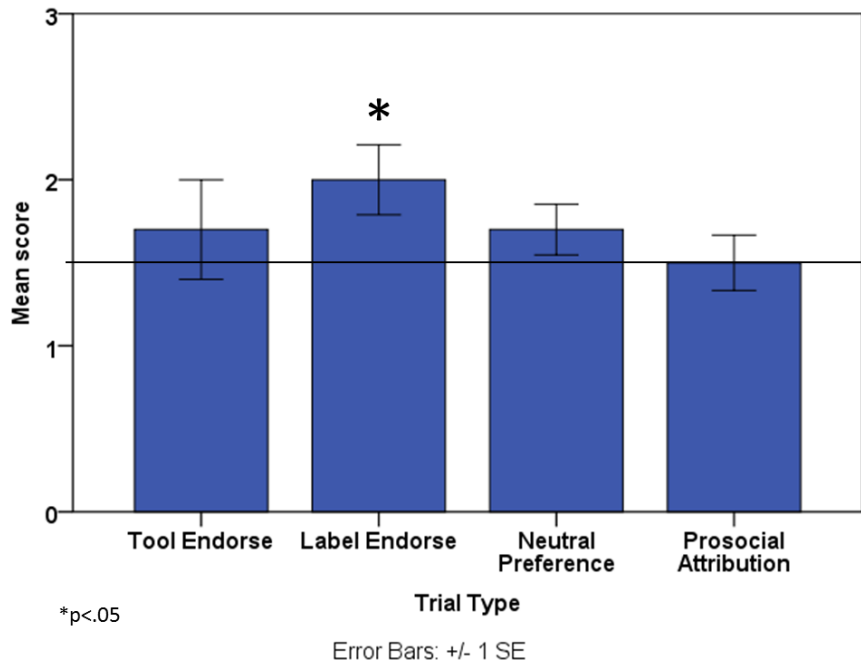
Figure 6. Mean scores for all test blocks in Experiment 1b.

To evaluate participants' performance through the experiment, we compared mean

scores for the first trial by trial type (tool vs. label). The means for tool and label score were not

different (independent samples t(10)=.54, p=.61). As in Experiment 1a, the mean score on the

first block differed from chance when it consisted of the label endorse trials (M=2.20, SD=.45,

t(5)=3.50, p<.05) but not the tool endorse trials (M=1.80, SD=.84, t(5)=.80, p=.47). In the second

test block, the two trial types were not different (independent samples t(10)=.29, p=.78). The

mean score for the second block did not differ from chance when it consisted of label trials

(M=1.67 , SD=1.21 , t(5)=.35 , p=.75) or tool trials (M=1.83 , SD=.75 , t(5)=1.08 , p=.33).

Children did not score above chance whether it was a label endorse (M=1.80, SD=.84,

t(4)=.80, p=.47) or tool endorse block (M=1.80, SD=.84, t(4)=.80, p=.47).

To increase our ability to detect trends in children's response patterns, additional

analyses were conducted by collapsing data from Experiments 1a and 1b. The two procedures

differed in the types of action that were described and one pair of novel tools was different.

Analyses on the combined data from the two Experiments were conducted after excluding the

object pair that was not used in both studies. To accomplish this, the proportion of correct

responses to tool trials was determined from the two remaining trials in each experiment.

Familiarization score: Path prediction, assessment and comparison questions

As in the individual experiments, children's familiarization score differed from chance

(M=3.27, SD=1.12) one-sample t(21)=3.24, p<.01. Separate analyses by question type revealed

that *path prediction score* was different from chance (M=1.45 out of 2, SD=.67) one-sample

t(21)=3.18, p<.01) but *path assessment score* was not (M=1.14, SD=.47), one-sample

t(21)=1.34, p=.19. Responses to the *path comparison question*, stating that the expedient actor

was better at getting to the basket, was marginally different from chance (15 out of 22, p=.07,

binomial test, one-tailed).

Test phase: tool endorse, label endorse, neutral preference and prosocial attribution trials

The label endorse score for Experiment 1a (M=2.10, SD=.57) did not differ from the label

endorse score in Experiment 1b (M=2.08, SD=.67), independent samples t(20)=.06, p=.95.

Similarly, the tool endorse score for Experiment 1a (M=1.40, SD=1.17) did not differ from the

tool score in Experiment 1b (M=1.67, SD=.89), (t(20)=.29, p=.77), indicating that children performed similarly in these test trials in both studies.

A paired samples t-test comparing tool and label endorse scores for the combined data from Experiments 1a and 1b revealed that participants were more likely to trust the expedient actress's labels (M=2.09, SD=.13) than her tools (M=.47 out of 1), SD=.39), paired-t(20)=2.35, p<.05. Mean scores for the two blocks were tested against chance. The mean label endorse score was higher than would be expected by chance, t(21)=4.54, p<.001, but the mean tool endorse score was not, t(21)=-.27, p=.79 (Figure 7). Participant responding was at chance in the *neutral preference* (M=1.55, SD=.51, t(21)=.42, p=.68) and prosocial attribution (M=1.36, SD=.66, t(21)=-.97, p=.34) blocks. These findings suggest that children selected the expedient actress' referents, but not her tools.
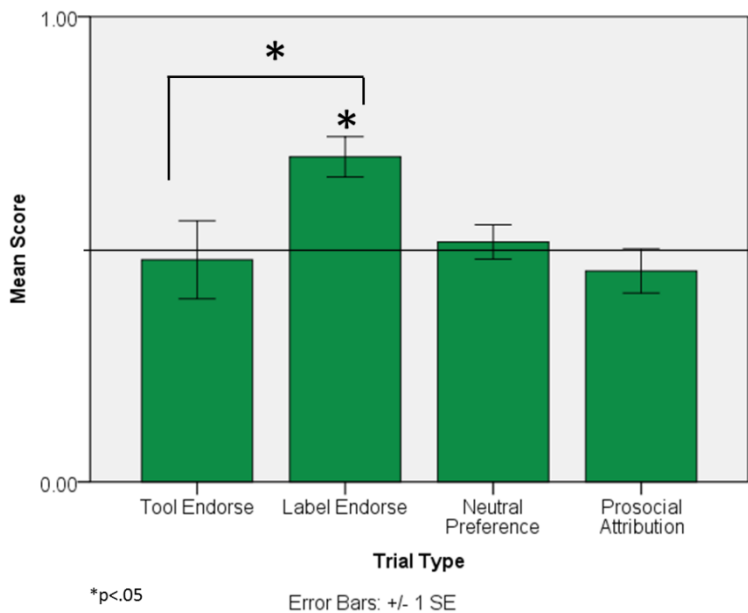
Figure 7. Proportion of answers endorsing the expedient actress in each trial type collapsed across experiments.

Chapter II Discussion

The goal of the present study was twofold. First, I investigated whether children made explicit judgments about the actions of others based solely on a person's ability to behave expediently. Importantly, children could not use information about someone's capacity to complete a goal (as both actresses did this successfully) nor were they provided with information about the person's ability to provide accurate information. A second goal was to explore the inferences that children make about people based on their prior actions. I tested this by asking children to make judgments about what each actress was likely to know in different domains: tool use and label knowledge. I explored whether children use evidence of expediency to decide who is more likely to provide accurate information about tools in different situations. To do this, I manipulated children's access to information about object features across the two experiments, asking children to select tools for tasks that have common tool associations (Experiment 1a) and tasks that are commonly performed without tools (Experiment 1b). In both studies, children preferred to learn labels from the previously expedient actress. Children's trust in the expedient actress' labels was not related to a general bias toward her. Children failed to select the tools endorsed by the expedient actress, despite their endorsement of her labels for objects.

One important finding in the present study is preschoolers' use of information about expediency in action to determine who is more likely to be accurate in language. A great amount of research has demonstrated that preschoolers use information about competence in achieving goals (e.g., Koenig, et al., 2004; Koenig & Harris, 2005; Pasquini, et al. , 2007; Rakoczy, et al., 2007; Sobel, & Corriveau, 2010) to decide who is the more accurate source of novel label

information. The present findings show that preschoolers can also evaluate the means employed to achieve a goal (even when the goal is achieved in either case) to determine if someone is a good source of linguistic information. Four-year-olds did this in the absence of any information about the agents' linguistic competence, including her ability to provide accurate labels. This finding suggests that children can generalize proficiency in one domain (action) to another (language).

Children's overall responding to questions during the familiarization phase was above chance in both studies, indicating that they had a general understanding of the actresses' goals and relative expediency. However, analyses by individual item show that children were not equally successful when responding to all of the items. For example, while children were able to identify the correct path toward the goal in both experiments (a straight line), and selected the expedient actress as better at getting to the basket (Experiment 1b), they did not explicitly state that the expedient actress was good and the inexpedient actress not very good at getting to the basket. One possibility is that the question that addressed this (the path assessment question) was difficult to interpret. Because the goal of reaching the basket was achieved in both cases, children may not have understood that the question referred to the path taken, and may have thought that it addressed the actresses' ability to complete the goal.

In the current experiments, preschoolers used evidence of efficiency in action to determine which of two actresses was likely to provide accurate label information. Yet, they did not prefer to learn about tool use from expedient actors. Crucially, the procedure used to present information about the two objects in each trial in the tool and label blocks were analogous. The information provided by each actress in both block types was presented in the

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same way: each actress endorsed a different object as the referent of a label or the tool used for a task and children then decided what information was correct by selecting an object. I predicted that children would use information about the actresses' prior behavior to solve the task in both cases, concluding that the expedient actress was more likely to provide accurate information about tools and labels. However, the different results in the two trial types suggest that children may have used different strategies to select label referents and tools.

While children must learn labels from others, their acquisition of information about tools may rely on a broader set of evidence. Children may consider whether the source of information is trustworthy but, unlike when learning words, may also rely on their own observations of tool features. This possibility is supported by research showing that children use their own judgments when determining whether a task requires a tool to be completed more efficiently. In one study, 27-month-olds used a tool to complete a task that an adult was unable to complete even though the adult did not use the tool in his attempt, demonstrating an ability to deduct information about tool use without relying on adult testimony or demonstration (Racokzy, & Tomasello, 2006). When children understand the demands of a task, they may place more weight on their own assessment the kinds of tools that are required to complete the task than on the testimony of others. Because the tools used in the present task were novel and constructed for the study, it is possible that different children were attending to different features of each tool when making their judgments. In future work it would be interesting to contrast children's object selection in a situation where testimony is provided by speakers who differ in their prior expediency and a situation in which speaker providing testimony do not differ in any relevant way.

Another aspect of the current procedure that may have decreased children's tendency to use evidence of expediency to decide who is likely to know about tools concerns the type of actions that children observed the actresses perform. During the familiarization phase the actresses differed in the paths taken to reach a goal. Yet, during the test phase, children were asked to infer what the actresses knew about tools. One possibility is that children will consider people who are expedient with tools to be trustworthy when providing information about other tools. For example, there may be a more transparent link between a person who uses a large shovel to expediently dig a hole (as opposed to someone who uses a toy shovel to inexpediently dig the same hole) and deciding whom to trust about information concerning new tools. Initially, this assessment may seem unlikely in light of the current finding that children generalize action knowledge to label knowledge. However, it is possible that children consider tools special and are less likely to generalize other knowledge to tool knowledge. This may be possible if children recognize that tools are used for many different things and knowledge of a subset of related tools (items used for gardening) may not indicate knowledge of other tools (items used to fix cars).

Some goals may be completed in a variety of ways. I introduced children to two actresses who used different paths to reach a goal. Children understood that the actress who used the most direct path was more expedient. They subsequently trusted her over the other actress when she provided information about the names of novel objects. In contrast, children did not prefer to learn about tools from either actress. One account for this difference is that children learn about labels and tools differently. Word learning may rely heavily on others, leading children to consider a speaker's prior behavior when determining whether to trust her

label information. On the other hand, learning about tools may draw on different sources of

evidence, including children's own understanding of an object's features and how the features

fulfill the requirements of a task.

CHAPTER III

ADHERENCE TO LANGUAGE APPROPRIATE CONVERSATIONAL NORMS AS EVIDENCE OF
RELIABILITY

In this study I was interested in how children and adults evaluate pragmatic competence

in different contexts. I also wanted to test whether children and adults prefer to learn about

language from people who are pragmatically competent. In the first two experiments I

investigated English-Spanish bilingual speakers' understanding of pragmatic norms that may

vary across their languages (Experiment 1) and their understanding of differences in how norms

are applied across different contexts within a language (Experiment 2). The ability to do this

requires that bilingual individuals first recognize that differences in norm use exist and later

learn how to apply them across situations. Because it may take time to recognize that

differences exist I tested whether bilingual speakers who differed in the amount of time they

have spoken a second language (second graders and adults) recognize pragmatic competence

in others. In a third experiment I explore what utterance features are used to determine

pragmatic competence. To do this, I asked monolingual speakers of English and Spanish to

evaluate adherence to conventions when speakers flouted the Gricean maxim of manner in

different ways.

Experiment 1: Pragmatic judgments by bilingual adults and children

When responding to a question a speaker can choose to be elaborate or concise. Either approach is possible in Spanish and English, yet speakers of each language may prefer different manners of response. Evidence from studies on written language suggests that Spanish speakers include more tangential material than English speakers when discussing the same topics (Kaplan, 1966; Montaño-Harmon, 1991). For example, when describing a recent shopping experience, an English speaker may describe the shirt she bought. A Spanish speaker, may include a tangential story about running into an old friend before describing the shirt she bought. It is not clear whether bilingual speakers recognize this difference and apply norms appropriately in spoken language.

The current study explored whether bilingual English and Spanish speakers recognize that there are different expectations about elaboration in the two languages. I investigated this in two age groups (2nd graders and adults) to test developmental changes in the ability to recognize differences in pragmatic norms across the two languages. I was also interested in exploring whether the two age groups differed in their ability to use evidence of pragmatic competence to determine what others know. Previous research has clarified that monolingual English speaking 5-year-olds possess an understanding of expectations about elaboration in speech (Wagner, Greene-Havas, & Gillespie, 2010). Children who are exposed to a second language at a later age may require some additional time to recognize conversational norms but the amount of time that is needed has not been clarified. The group of sequential bilingual children in the present study was not formally exposed to their second language until preschool

or kindergarten. Therefore, I included an older age group (adults) who were also sequential learners but had more experience with their second language.

The main goal of this experiment was to explore whether bilingual speakers of English and Spanish are aware of differences in conversational norms in their languages. Previous findings on bilingual English/Spanish speakers' writing styles in the two languages suggest that the amount of elaboration expected in Spanish is greater than in English (Kaplan, 1966, Montaño-Harmon, 2010). Therefore, the first prediction was that participants who observed the Spanish language conversations would judge the elaborate speaker as better at answering questions, and participants who observed the English language conversation would prefer the concise speaker's responses. A second goal was to assess the inferences that participants make about speakers after observing their behavior in conversation. Object labels are transparently tied to a particular language. Therefore, participants were predicted to trust the label-object pairs endorsed by the speaker who followed the brevity conventions of the language in which the labels were offered. Specifically, participants tested in Spanish would prefer the Spanish language labels offered by the elaborate speaker, while participants tested in English would demonstrate a preference for the concise speaker. To test whether participants would generalize knowledge to other nonlinguistic domains, the generalization question asked participants to decide who is likely to know how to use a novel tool. If participants expect that knowledge of linguistic norms is an indicator of general knowledge, then they should prefer to learn about tools from the person who followed the language appropriate conversational norms.

Method

Participants

Two groups of bilingual speakers of Spanish and English participated: 32 adults (Mean age = 27, range: 18-68, 16 female) and 28 second graders (M=8;1, range: 7;5-8;7, 11 female). Participants were tested separately in one of the two languages. Half of the participants in each age group were tested in English (adults: M=24, range: 18-32, 6 female; 2nd graders: M=8;1, range: 7;7-8;6, 6 female) and half in Spanish (adults: M=29, range: 20-68, 10 female; 2nd graders: M=8;1, range: 7;5-8;7, 5 female).

Adults were recruited and tested online using Amazon.com's Mechanical Turk service. This online tool connects participants with survey authors, who pay a set amount for the estimated time spent responding to a survey. Participants in the present study received $2 for their participation, which generally lasted 10 minutes. The survey was made available only to participants in the United States.

Children were recruited from English immersion schools in the San Juan, Puerto Rico area. Consent forms prepared by the researchers were distributed to parents by the school and children whose parents consented participated individually in their school. Parental reports used to assess children's linguistic background showed that they spoke an average of two languages (M=2.04, range: 2 – 3, SD=.19). They began learning their second language informally at home around age 2 (M=2;2, range: 0 – 5, SD=1.56) and formally at school around a year and a half later (M=3;10, range: 2 – 6, SD=.85). Spanish was the first language for 26 of the 28 children, while English was the first language for the other two children. Upon completion of the study adults were asked to provide information about their linguistic background. Their

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responses revealed that they spoke two languages on average (M=2.28, range: 2 – 5, SD=.68).

To be considered eligible for the study English and Spanish had to be the first two languages

acquired (in any order). The age of second language acquisition was more variable than that of

children (at home: M=10;4, range: 0 – 30, SD=7.00; in school: M=10;8, range: 4 – 27, SD=5.28).

Materials

For child participants, storybooks depicting simple conversations between children were

created using PowerPoint (see Figure 8 for story slides). The same books were prepared in

Spanish and English (see Figure 9 for Spanish language scripts). Adult participants saw the same

stories in a video presentation. The video consisted of a slideshow of the pages from the

storybook which children read. In the stories, a boy interacts with two girls separately. The girls

have different colored t-shirts and respond to the boy's questions differently. One provides

concise responses to his questions and the other provides elaborate responses.
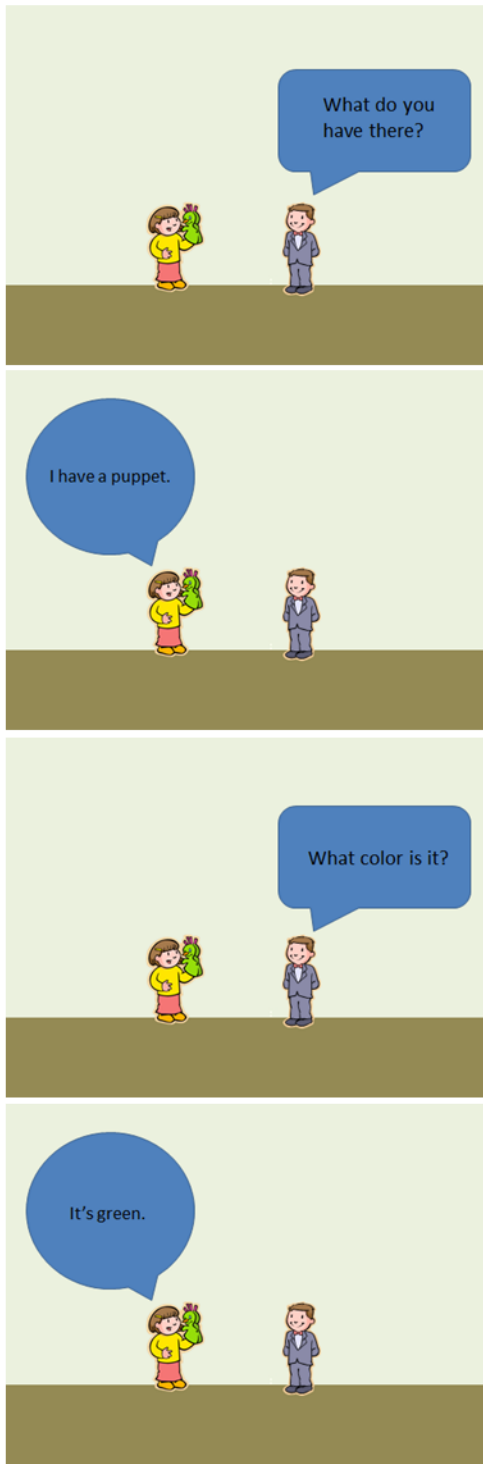
Figure 8. English language story used in Experiment 1.

Characters:

Concise speaker

Boy: ¿Qué tienes ahí?

Lisa: Tengo un títere.

Boy: ¿De qué color es?

Lisa: Es verde.

Elaborate speaker

Boy: ¿Qué tienes ahí?

Sara: Es un juguete. Tengo un yoyo. Es divertido jugar con él.

Boy: ¿De qué color es?

Sara: Conozco los colores. Es azul. Es el color del cielo.

Figure 9. Spanish language scripts used in Experiment 1.

Additional materials included pictures of two novel objects (a novel toy and a novel tool; Figure 10) and six pictures of each character labeling a different novel object (Figure 11). The labels tolly(English)/toli(Spanish), dackan/dacan and goona/guna were used consistently with the same objects. Since there were three labels and six objects, the objects were divided into three pairs. Each pair was used in one labeling trial. In each trial the same label was used by the two characters to refer to a different object from the pair. The objects pictured were bought at hardware and crafts stores or created by breaking apart larger objects until something that is unrecognizable and unnamable remained.
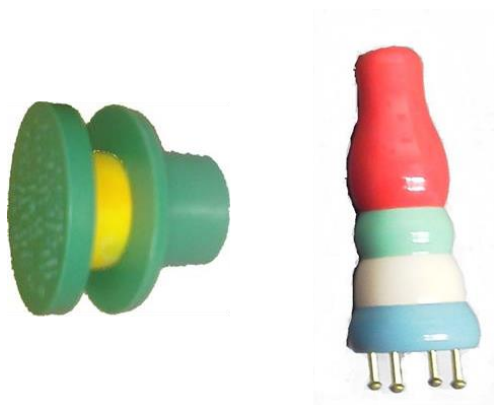
Figure 10. Novel toy and tool used in Experiment 1.
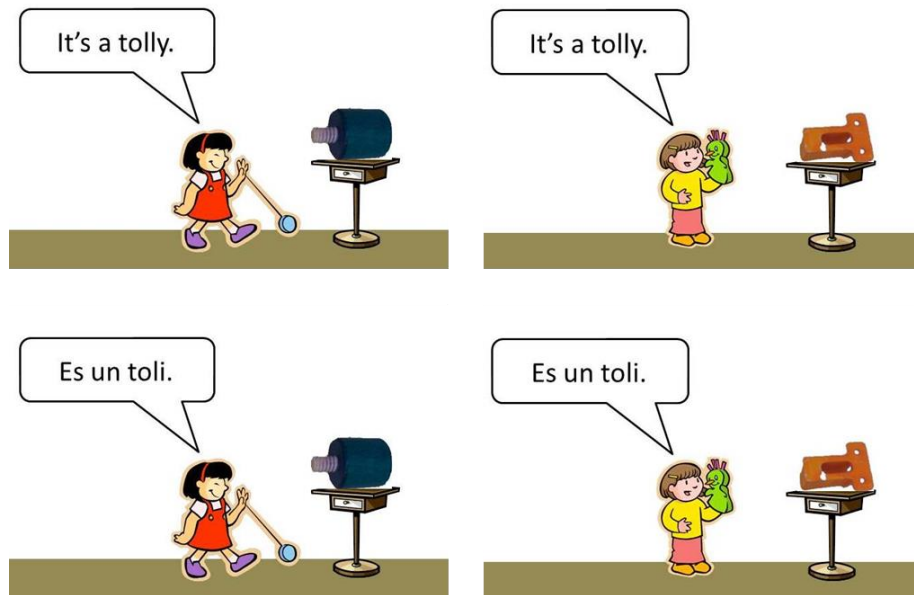
Figure 11. Example of the slides in which the characters labeled novel objects.

Procedure

The online procedure for adults mimicked the in-person procedure followed with children. Therefore, the procedure with children will be described first, followed by a description of the modification employed for the adult participants. The first part of the study consisted of a *familiarization phase* during which the two female characters were introduced. This was followed by a *test phase* during which children responded to questions which assessed their inferences about the two girls.

Familiarization phase

To begin the study, the experimenter sat next to the child and introduced the storybook by saying, "Today we are going to read a story about two girls. One is wearing a yellow shirt and

one is wearing a blue shirt. Let's read the story." The experimenter then read the first part of

the story depicting the conversation between the boy and one of the two girls. After reading

this part of the story she asked, "Was she good at answering questions or was she not very

good at answering questions?" The experimenter then read the second part of the storybook

depicting the other girl's conversation and afterwards asked, "Was she good at answering

questions or not very good at answering questions?" After reading about both characters, the

experimenter asked, "Who was better at answering questions?" These three speaker

assessment questions measured which response type participants considered appropriate.

Test phase

Following the familiarization phase, participants were asked a series of questions to

further test their assumptions about the two girls. In particular, I asked whether participants

considered the girls knowledgeable about labels and tools. This was tested with three types of

questions. The questions, which are described in detail below, were asked in a preset order:

label request, *labeler preference*, *generalization of expertise.* In addition to this, participants

understanding of the procedure was explored with three final questions: *neutral preference*,

memory check and *explicit evaluation*.

Label request. While the experimenter showed participants a picture of a novel toy, she

asked, "If you found this thing, who would you ask to tell you what it's called, Lisa or Sara?"

Labeler preference trials. In three labeling trials, participants were asked to decide who

knew the name of a novel object. In each trial, participants saw cartoons of each character

labeling a novel object. The same label was used by the characters to refer to two different

novel objects. The experimenter then pointed to the cartoons saying, "the girl with the blue

shirt said this is a tolly and the girl with the yellow shirt said this is a tolly. They can't both be

tollies. Only one is a tolly. Which one is the tolly?" The same label was associated with each

novel object pair (Figure 12). The pairs were presented in one of three preset orders, which

were roughly counterbalanced across participants.

English labels	object	pairs	Spanish labels
Tolly			Toli
Dackan			Dacan
Goona			Guna

Figure 12. Novel object pairs used in Experiment 1.

Generalization of expertise question. This question asked participants to decide whom

they would trust to provide accurate non-linguistic information. Participants were shown a

picture of a novel tool while being asked, "If you found this tool, who would you ask to tell you

how to use it, Sara or Lisa?"

Neutral preference question. A speaker preference question was included to rule out the

possibility that participants would select one of the actresses repeatedly in response to all the

questions. This was important to ensure that children were basing their responses on the

questions and not a bias toward one character. Children were told, "One of these girls likes

strawberries. Who likes strawberries?" The answer to this question should not be based on

which character was more competent. If there is no bias, participants should respond at chance.

Memory check. The memory check question was included to test children's ability to keep track of which character they thought was better at responding to questions. Participants were asked. "When we read about Lisa and Sara, who was better at answering questions?"

Adult participants

The procedure for adult participants consisted of an online version of the in-person procedure conducted with children. As such, the cartoon sequence as well as the order in which questions were asked was the same. However, adults watched the cartoons as a slideshow on YouTube.com. After viewing the video, each participant responded to questions in survey format on the Mechanical Turk website. They saw the same novel objects and responded to the same questions as children.

To gain a better understanding of participants' linguistic experience, a Language and Social Background Questionnaire (See Appendix) was included at the end of the study for adult participants to complete. Parents of second graders received a version of the questionnaire assessing their child's language background in the packet containing the consent forms. This questionnaire helped to assess participants' everyday language use and experience. Data from these questionnaires were reported in the participants section above.

Coding

Familiarization phase. During this initial phase, participants' judgments about the two characters' speech was explicitly measured. Participants received a score of 1 or 0 for each of the speaker assessment questions. To receive a score of 1 for each of the individual assessment

questions, participants had to say that the elaborate character was "good at answering questions" and the concise speaker was "not very good at answering questions." To receive a score of 1 for the speaker comparison question, participants had to declare that the elaborate speaker was better at answering questions. All participants responded to all the questions, therefore a score of 0 was assigned to the alternative answers to the questions above. A familiarization score was then calculated by summing the answers to the questions above. The possible total score for a given participant ranged from 0, if a preference for concise responses was displayed, to 3 if elaborate responses were preferred.

Label request. The first question presented during the test phase asked participants to choose which character they would ask for the name of a novel toy. Participants received a score of 1 if the elaborate character was selected and 0 if the concise character was selected. This score was consistent with scoring during the familiarization phase, where higher scores suggest a preference for the elaborate speaker.

Labeler preference. During each of the three labeling trials, participants received a score of 0 when selecting the concise speaker's label referent and 1 if the elaborate speaker's referent was selected. The range of scores possible for a single participant was 0-3.

Generalization of expertise, neutral preference, and memory check questions. For each of these questions, a score of 0 (for the concise speaker) or 1 (for the elaborate speaker) was assigned to participants depending on which speaker they endorsed in their answers.

Results and Discussion

In this experiment I tested whether bilingual speakers of English and Spanish are aware of differences in conversational norms in their languages. Bilingual speakers were sensitive to

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the language context of the conversations they observed. They rated elaborate responses more favorably in Spanish than in English. I also tested whether children and adults prefer to learn about language from speakers who demonstrate pragmatic competence in the same language. Adults preferred to learn Spanish language labels that were provided by the elaborate speaker, suggesting that bilingual adults use evidence of linguistic competence in one language to determine if someone is knowledgeable about other aspects of the language.

Familiarization phase: elaborate speaker assessment, concise speaker assessment and speaker comparison questions

Participants' responses to the three questions asked during the familiarization phase were summed to calculate the familiarization score. A two way ANOVA (age group X condition) for the familiarization score revealed a main effect of condition (English vs. Spanish; $F(1,56)=7.49$, $p<.01$) but no significant main effect of age group ($F(1,56)=2.11$, $p=.15$) or interaction between age and condition ($F(1,56)=.01$, $p=.93$). This difference across language conditions demonstrates that bilingual speakers of both age groups prefer elaborate responses when observing Spanish language conversations. Since we had predictions about performance varying across languages, direct comparisons were performed for each age group. As predicted, the familiarization score was higher in the Spanish than the English language condition for both age groups. This difference was significant for adult participants (Spanish: M=1.81, SD=.83; English: M=1.13, SD=1.02), $t(30)=2.81$, $p<.05$. There was a marginally significant trend for second graders (Spanish: M=2.14, SD=.86; English: M=1.5, SD=1.02) $t(26)=1.8$, $p=.08$.
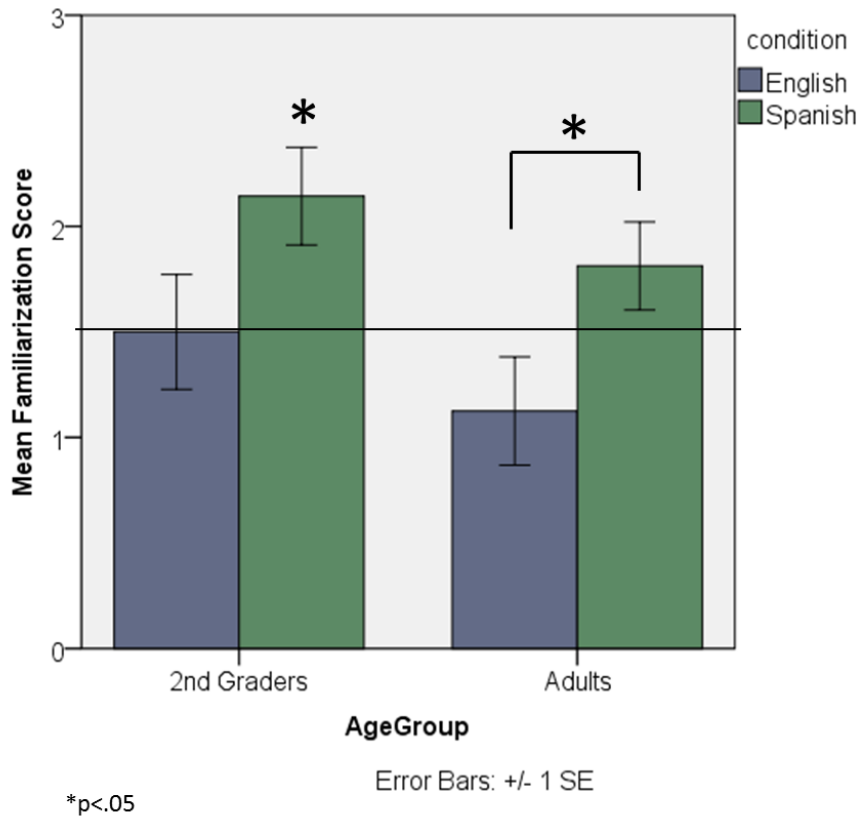
Figure 13. Mean familiarization score by age group and condition.

Single sample t-tests were conducted to compare the performance of each group against chance (Figure 13). A score higher than the chance value (1.5) would indicate a preference for elaborate responses, whereas a score below the chance value suggested a preference for concise responses. Adults' familiarization score did not differ from chance in either language condition (English: $t(15)=1.46$, $p=.16$; Spanish: $t(15)=1.50$, $p=.16$). For second graders, the familiarization score was higher than would be predicted by chance in the Spanish ($t(13)=2.78$, $p<.05$) but not in the English condition ($t(13)=0$).

An analysis of responding by individual questions suggests that participants from both age groups preferred more elaborate responses in Spanish language conversations. They did not seem to favor either manner of conversation in English (Table 3). Second graders in the

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English condition reliably stated that the concise speaker was good at answering questions (11 of 14 children, p <.05, one-tailed binomial test). They also showed non-significant trend to describe the elaborate speaker as good at answering questions (10 of 14 children, p = .09) and the elaborate speaker as better at answering questions (10 of 14 children, p = .09). Children in the Spanish condition showed a preference for an elaborate manner in conversation, describing the elaborate character as good at answering questions (13 of 14, p<.001) and as better than the concise speaker at answering questions (12 of 14, p<.01). About half of the children in the Spanish condition considered the concise speaker as good at responding to questions (9 of 14, p=.21). There was no difference in who second graders described as better at answering questions across conditions ($X^2(1)=.85$, p=.36).

Like second graders, adults in the English language condition judged the concise speaker as good at answering questions (15 of 16, p<.001). They also did not declare that the elaborate speaker was good at answering questions (10 of 16, p=.23), nor did they describe the elaborate speaker as better at answering questions (7 of 16, p=.40). Adults were marginally more likely to describe the elaborate speaker as better at answering questions in the Spanish condition than the English condition ($X^2(1)=3.24$, p=.07).

Age group	condition	Elaborate assessment		Concise assessment		Who was better?	
		good	Not very good	good	Not very good	elaborate	concise
2nd graders	English (n=14)	10	4	11*	3	10	4
	Spanish (n=14	13**	1	9	5	12*	2
Adults	English (n=16)	10	6	15**	1	7	9
	Spanish (n=16	15**	1	13*	3	12*	4

*p<.05
**p<.01
Binomial tests, one-tailed

Table 3. Responses to individual familiarization phase questions.

Test phase: tool endorse, label endorse, neutral preference and prosocial attribution trials

Following the familiarization phase, participants were asked to decide which speaker was likely to provide accurate information about different things. The first two question types discussed below assess inferences about the speakers' label knowledge. The first asked participants to select which character they would ask for the label of a novel object, while the second measure consisted of a participant's score for the labeling trials. The final question asked during the test phase assessed participants' willingness to attribute knowledge about nonlinguistic information to one of the characters in the storybooks. The results of the three parts of the test phase are discussed below.

Label request. When asked to select which speaker they would ask for the label of a novel toy, participants did not demonstrate a preference for either speaker in any of the age groups or conditions (Table 4). They were equally likely to ask the elaborate or the concise speaker to tell them the name for a novel object.

| Age group | condition | Label request | |
		elaborate	concise
2nd graders	English (n=14)	9	5
	Spanish (n=14)	7	7
Adults	English (n=16)	7	9
	Spanish (n=16)	9	7

Table 4. Number of participants who would request label information from each character.

Labeler preference. Participants' relative trust of the referents of novel labels provided by the speakers was assessed in three labeling trials. Our measure of their preferred labeler was their selection of her referents as the target of each label presented during three test trials. Responses to each of the three trials were summed to get a label score ranging from 0 - 3. A two way ANOVA (age group X condition) for the label score revealed a main effect of condition

(English vs. Spanish; F(1,56)=7.49, p<.05) and an age group by condition interaction (F(1,56)=4.71, p<.05). A main effect for age group approached significance (F(1,56)=2.91, p=.09). Direct comparisons for each age group revealed no difference in children's label score across conditions (t(26)=0) and a significant effect of condition for adults (t(30)=2.66, p=.013).

The mean score for each group was tested against a chance value of 1.5 (Figure 14). Second graders' label score was not different from chance in either condition (English: M=1.36, t(13)=-1.08, p.36; Spanish: M=1.36, t(13)=-.72, p=.49). For adults the label score differed from chance in the Spanish (M=2.25, t(15)=2.82, p<.01) but not the English condition (M=1.25, t(15)=-.94, p=.36).
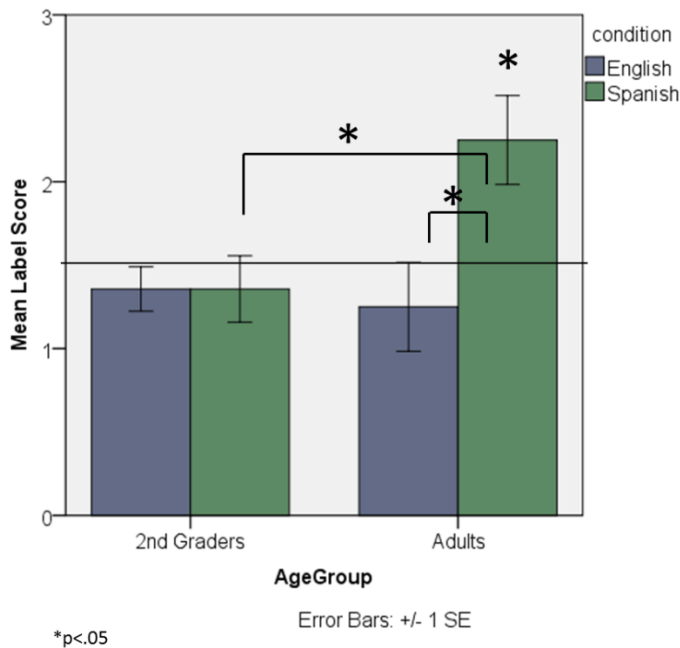

Figure 14. Mean label score by age group and condition.

Generalization of expertise. When selecting which speaker would provide accurate information about the appropriate use of a novel tool, only adults in the Spanish condition demonstrated a preference for the speaker who was considered better at answering question.

In particular, 13 of 16 (p<.05, binomial one-tailed) adults in the Spanish condition preferred to request information about how to use a novel tool from the elaborate speaker (Table 5).

Age group	condition	Generalization (tool)	
		elaborate	concise
2nd graders	English (n=14)	8	6
	Spanish (n=14)	9	5
Adults	English (n=16)	9	7
	Spanish (n=16)	13*	3

*p<.05

Table 5. Number of participants who would request tool information from each character.

Consistent with the results of the familiarization phase, adult bilingual speakers endorsed the referents labeled by the speaker who was deemed more competent at answering questions (In this case, only the concise character in the Spanish condition). Furthermore, they also trusted nonlinguistic information provided by the same speakers. Adults in the English condition did not show a preference for the labels or tool information provided by either character, mirroring their equal preference for both response types during the familiarization phase. Although second graders had a preference for the elaborate speaker in the Spanish condition, they did not endorse her labels.

Experiment 2: Bilingual speakers' sensitivity situational differences in norm use

The previous experiment shows that bilingual speakers apply different conversational norms in different language contexts. In the previous experiment, English-Spanish bilingual

speakers preferred elaborate speech in Spanish but not in English. However, some questions

remain about bilingual speakers' understanding of how pragmatic norms are applied in

different contexts within one language. Different conversation partners may require different

amounts of elaboration. For example, monolingual English speaking children also recognize that

speech directed to children is different from speech directed to adults (Grieser & Kuhl, 1988;

Masataka, 1992; Masur, 1978; Shatz, & Gelman, 1973; Wagner, Greene-Havas, & Gillespie,

2010). In one study, 5-year-olds were asked to evaluate a person's speech to predict who they

were talking to. They saw a puppet in conversation with an out of view person. In one

condition, the speech used by the puppet was simple and brief. In another condition, the

puppet used more elaborate language. After seeing the puppet speak, they were shown

pictures of different people and were asked to identify who the puppet had been talking to.

Children assumed that simple speech was directed at a child and elaborate speech was directed

at an adult (Wagner, et al., 2010). It is unclear whether bilingual children understand how

speech is modulated across situations in English.

To test whether bilingual children and adults have an understanding of the constraints

placed by context on conversational norms in English, I compared their judgments of speakers

engaged in conversation with different interlocutors. I predicted that participants from both

age groups would show no preference for speaker type when observing the conversations

between children (a replication of the English language condition in Experiment 1). However,

previous research has demonstrated that monolingual English speaking children expect that

utterances directed at adults (i.e., teachers) during conversation be longer and more elaborate.

Therefore, I predicted that bilingual speakers from both age groups would consider the

elaborate speaker as better than the concise speaker at answering questions when observing the child-adult conversation. Their endorsement of the labels provided by the two speakers should reflect this pattern, with participants in the teacher condition selecting the object-label pairings that were provided by the speaker who gave elaborate responses to questions.

Method

Participants

Twenty-four adults (Mean age = 30, range: 18-49, 12 female) and 25 second grade (M=8;0, range: 7;5-8;9, 9 female) bilingual speakers of Spanish and English participated. Thirteen of the participants in each age group were assigned to the child condition (adults: M=30, range: 19-49, 8 female; 2nd graders: M=8;0, range: 7;6-8;7, 4 female). Eleven adults and twelve 2nd graders were assigned to the teacher condition (adults: M=30, range: 18-45, 4 female; 2nd graders: M=8;2, range: 7;5-8;9, 7 female). Adults were recruited and tested online using Amazon.com's Mechanical Turk service, receiving $2 for their participation which lasted about 10 minutes. Children were recruited from the same English immersion schools as in Experiment 1 and each child participated individually in a quiet room in their school.

Children spoke an average of two languages (M=2.04, range: 2 − 3, SD=.20). They began learning their second language informally at home (M=2;5, range: 0 − 5, SD=1.80) before being exposed to it at school (M=3;11, range: 1 − 7, SD=1.21). Spanish was the first language spoken by 23 of the 25 children and English was the first language spoken by two of the children. Adults also spoke an average of two languages (M=2.21, range: 2 − 3, SD=.42). The age of second

language acquisition was later than that of children (at home: M=6;8, range: 0 – 16, SD=4.29; in school: M=9;2, range: 3 – 16, SD=4.56).

Materials

The English language storybooks and videos from Experiment 1 were used in a child condition. An additional set of storybooks and videos was created for a teacher condition. In the teacher condition, the two female characters responded to questions from a teacher. The conversation with the teacher consisted of same scripts as the English language conversation between children (Figure 15). The toys from Experiment 1, were also used in Experiment 2.
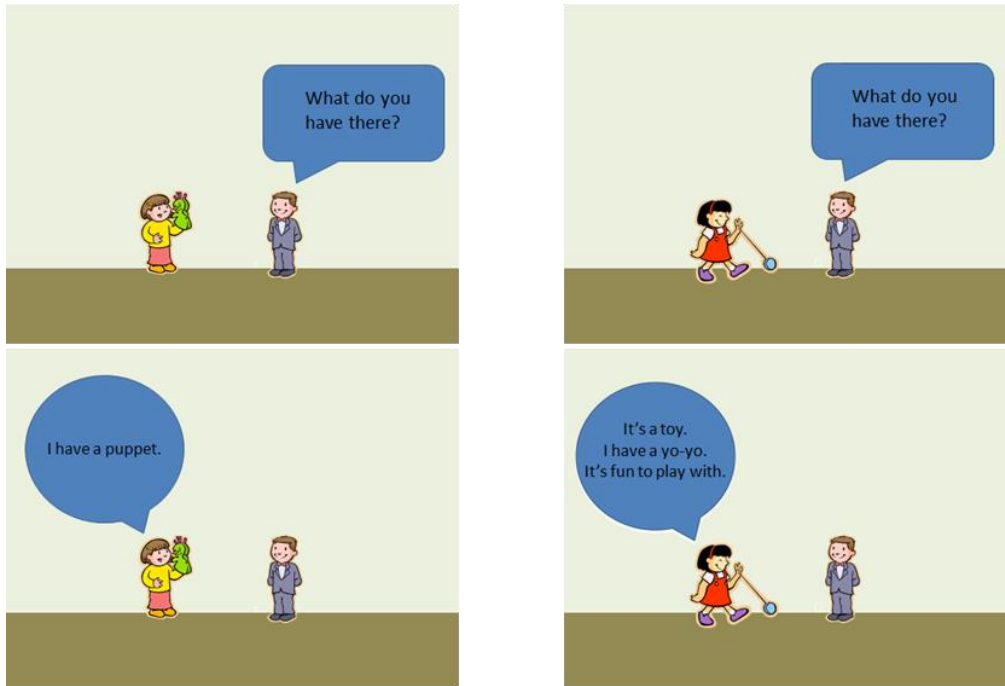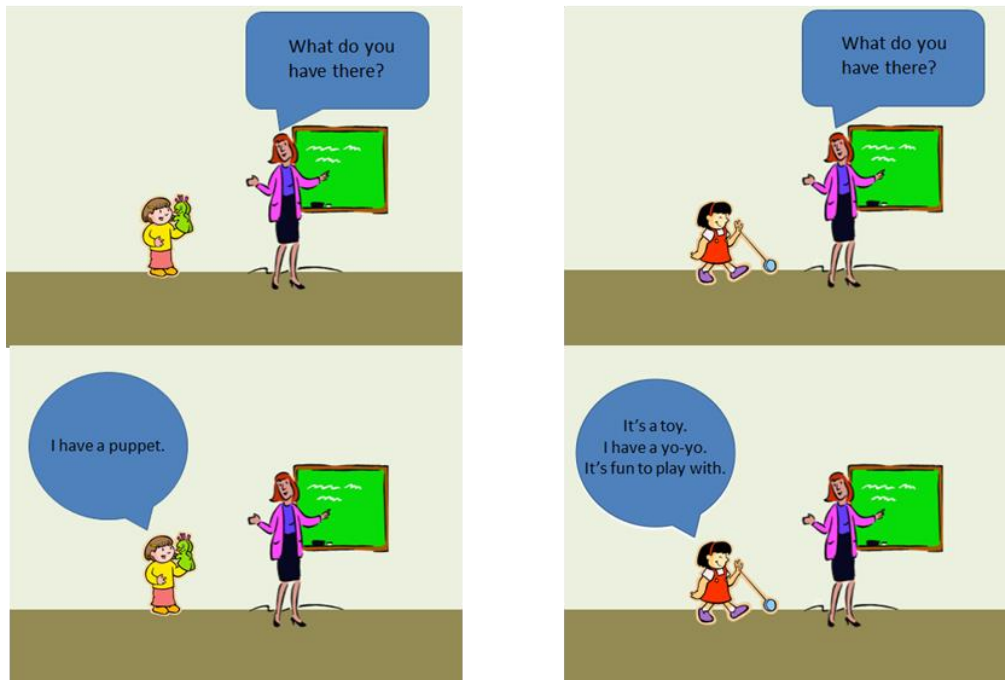
Figure 15. Sample storybook pages for the child and the teacher conditions. In each condition participants saw a concise and an elaborate speaker.

Participants from each age group were assigned to one of two conditions: child or teacher. Each participant saw two girls interact with a same age character (child condition) or an adult (teacher condition). One character provided elaborate responses to questions and the other provided concise responses. Aside from this difference, the procedure was the same as in Experiment 1.

Coding

Since the same questions as in Experiment 1 were asked, coding was done in the same manner.

Results and discussion

Familiarization phase: elaborate speaker assessment, concise speaker assessment and speaker comparison questions

A familiarization score consisting of the sum of all three speaker assessment questions was calculated. A two way ANOVA (age group X condition) for the familiarization score revealed no significant main effects of age group: $F(1,45)=.38, p=.57$ or condition: $F(1,45)=.50, p=.51$), and no significant age group X condition interaction ($F(1,45)=.03, p=.86$).
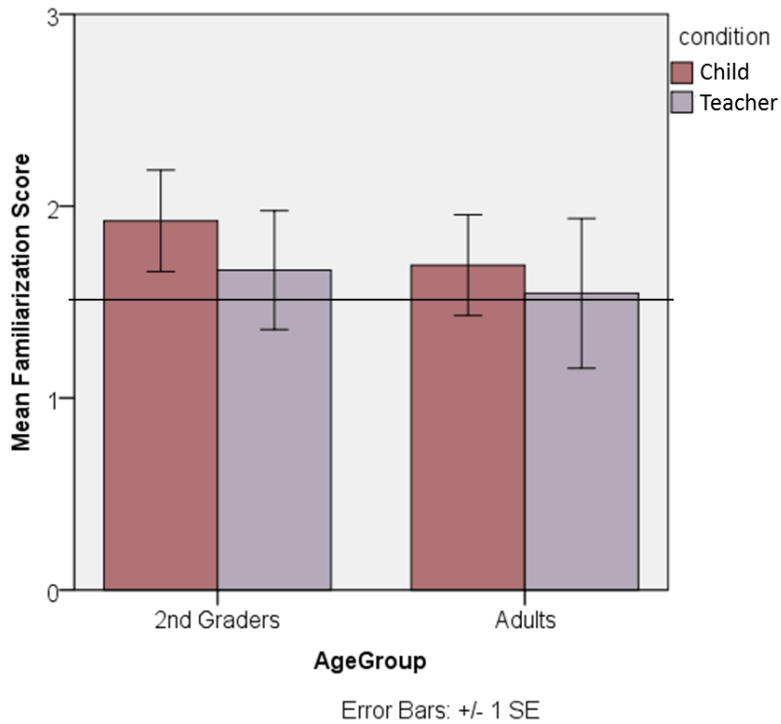
Figure 16. Mean familiarization score by age group and condition in Experiment 2.

Single sample t-tests were conducted to assess the performance of each group (Figure 16). Responding did not differ from chance for second graders' (child: M=1.67, t(12)=.54, p=.60; teacher: M=1.92, t(11)=1.60, p=.14) or adults (child: M=1.69, t(12)=.73, p=.48; teacher: M=1.55, t(10)=.12, p=.91).

Responses to separate questions presented during the familiarization phase were also evaluated (Table 6). Second graders in the child condition considered the elaborate speaker to be good at answering questions (12 of 13, p<.001, binomial one-tailed). They did not consider the concise speaker as good at answering questions (9 of 13, p=.13) nor did they find the elaborate speaker to be better at answering questions (9 of 13, p=.13). Children in the teacher condition also found the elaborate speaker to be good at answering questions (10 of 12, p<.05)

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and not the concise speaker (9 of 12, p=.07). As in the child condition, second graders did not

consider the elaborate speaker to be better at answering questions (7 of 12, p=.39).

Adults in the child condition described the elaborate speaker (11 of 13, p<.05) and the

concise speaker (12 of 13, p<.01) as good at answering questions. However, they did not prefer

the elaborate speaker (9of 13, p=.13). In the teacher condition, adults did not consider the

elaborate speaker (7 of 11, p=.27) or the concise speaker (8 of 11, p=.11) as good at answering

questions. When comparing the speakers, they did not prefer the elaborate character (7 of 11,

p=.27).

Age group	condition	Elaborate assessment		Concise assessment		Who was better?	
		good	Not very good	good	Not very good	elaborate	concise
2nd graders	Child (n=13)	12**	1	9	4	9	4
	Teacher (n=12)	10*	2	9	3	7	5
Adults	Child (n=13)	11*	2	12**	1	9	4
	Teacher (n=11)	7	4	8	3	7	4

*p<.05
**p<.01
Binomial tests, one-tailed

Table 6. Responses to individual familiarization phase questions in Experiment 2.

Test phase: tool endorse, label endorse, neutral preference and prosocial attribution trials

Label endorsement. Participants were first asked to select which speaker they would ask

for the label of a novel toy. There was no preference for the concise or elaborate character in

either condition or age group (Table 7). This result is not surprising, as participants' responses

during the familiarization phase did not indicate a preference for either character.

Age group	condition	Label request	
		elaborate	concise
2nd graders	Child (n=13)	9	4
	Teacher (n=12)	7	5
Adults	Child (n=13)	7	6
	Teacher (n=11)	7	4

Table 7. Number of participants who would request a label from each speaker in Experiment 2.

Labeler preference. Participants' scores in the label trials were analyzed in a two way ANOVA (age group X condition). Label scores did not reveal significant main effect of age group ($F_{(1,45)}=1.40$, $p=.24$) or condition ($F_{(1,45)}=.27$, $p=.61$). There was no significant age group X condition interaction ($F_{(1,45)}=.46$, $p=.50$).

Tests comparing the mean score for each group with chance were not significant for children (child: M=1.25, t(12)=-1.39, p=.19; teacher: M=1.62, t(11)=.54, p=.60) nor adults (child: M=1.77, t(12)=.71, p=.49; teacher: M=1.82, t(10)=.80, p=.44) in either condition (Figure 17).
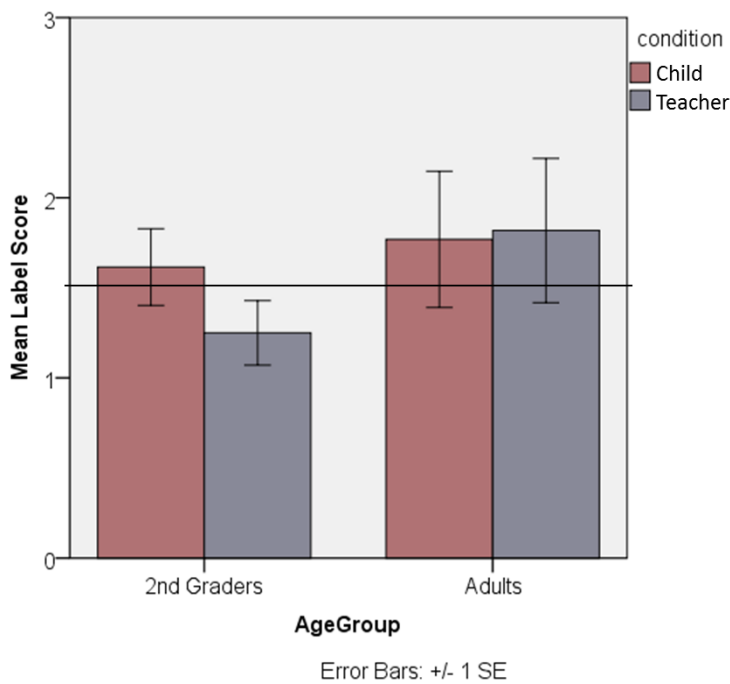

Figure 17. Mean label score by language and condition in Experiment 2.

Generalization of expertise. No group of participants displayed a preference to learn about tool use from one character (Table 8).

Age group	condition	Generalization (tool)	
		elaborate	concise
2nd graders	Child (n=13)	5	8
	Teacher (n=12)	6	6
Adults	Child (n=13)	9	4
	Teacher (n=11)	6	5

Table 8. Number of participants who would ask each participant about a novel tool.

In the current experiment, participants from both age groups did not demonstrate a preference for elaborate or concise speech in any condition. This result contradicted a prediction that, like monolingual children, bilingual children and adults would understand that speech should be modified according to the age of the conversation partner in English language conversations (Wagner, et al., 2010). Participants did not prefer to learn new information from elaborate or concise speakers. The tendency to learn equally well from both characters is consistent with the preferences displayed during the familiarization phase. No character was considered more competent in their use of language in either condition. Therefore, participants could not rely on evidence from their prior behavior to judge the quality of their information.

Experiment 3: Monolingual adults' expectations of brevity in conversation

In Experiment 1, bilingual children and adults considered the language of a conversation to determine what pragmatic norms were appropriate. When a conversation was in Spanish, adults and children had a greater expectation for elaborate speech than when the conversation

took place in English. The ability to apply different rules to conversations in different languages suggests that bilingual children and adults do not mix the pragmatic norms of the languages they speak and they apply norms regarding brevity in conversation appropriately. Specifically, they understand that there is an expectation of elaborate speech in Spanish, but not in English. However, it is not clear whether the positive evaluations of elaborate Spanish speakers reflect a preference for more words regardless of content, or if they prefer more words as long as they are meaningful.

To explore the nature of Spanish speakers' preference for elaborate utterances, I asked monolingual Spanish speakers to evaluate conversational competence in two conditions. In one condition they observed a *concise speaker* and an *informative speaker* who was elaborate by responding to questions with more information than was requested (e.g., *boy*: "What do you have there?" *girl*: "It's a toy. I have a puppet. It's fun to play with."). In another condition, participants observed a *concise speaker* and an *uninformative speaker* who was elaborate by adding filler words to her responses (e.g., *boy*: "What do you have there?" *girl*: I'll tell you what it is. I have a puppet. That's what I have."). If Spanish speakers prefer elaborate responses regardless of content, they should show a preference for the informative and uninformative speaker over the concise speaker in each condition. If Spanish speakers prefer elaborate responses when they are meaningful, they should prefer the informative speaker over the concise speaker but not the uninformative speaker over the concise speaker.

In Experiments 1 and 2, bilingual English-Spanish speakers did not show a preference for elaborate or concise speech when observing conversations between children. In Experiment 2, bilingual second graders and adults did not have different expectations about the amount of

elaboration that is expected when utterances are directed at a child or an adult. However, previous research has clarified that monolingual English speaking children expect elaborate speech in some contexts (e.g., when addressing an adult) and concise speech in other contexts (e.g., when addressing a child; Wagner, et al., 2010). In the present study, I tested whether monolingual English speaking adults, might be able to evaluate whether someone is being overly elaborate or concise to determine if they are better at adhering to conversational norms in some situation.

After making judgments about whether the two characters adhered to conversational norms, both English and Spanish speakers were asked to decide whom they would trust to provide information about language and tools. I predicted that participants would trust language information provided by a speaker they considered competent in conversation. However, participants who did not consider one speaker to be more competent, should not trust language information provided by either speaker.

Method

Participants

Thirty-two monolingual English speaking adults (Mean age = 32, range: 18-61, 12 female) and 32 monolingual Spanish speakers (M=29, range: 18-45, 12 female) participated online through Mechanical Turk. Half of the participants in each language group were tested in an informative speaker condition (English: M=35, range: 18-61, 6 female; Spanish: M=31, range: 18-45, 6 female) and half in an uninformative speaker condition (English: M=30, range: 18-50, 6 female; Spanish: M=27, range: 18-40, 6 female). Participants received $2 for their participation, which lasted about 10 minutes. English speakers were recruited through the Mechanical Turk

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website by making the study open to people in the United States only. To recruit Spanish

speakers, the study was made available to residents of Latin American countries as well as

Puerto Rico and Spain. All participants described themselves as speaking just one language.

Most had attained a college degree or higher at the time of the study (English: 17 out of 32,

Spanish 18 out of 32) and a small proportion had no college experience (English: 6, Spanish: 5).

Materials

The object pictures from Experiments 1 and 2 were used (see Figures X, Y). All the videos

from Experiment one, which depicted English and Spanish language conversations between

children, were used. In each of these videos, a concise and an informative character spoke

separately to another child. Another set of videos depicting different conversations between

children was created. In the new videos, a concise and an uninformative character spoke with

separately with the same child (Figure 18). These were created in English and Spanish.
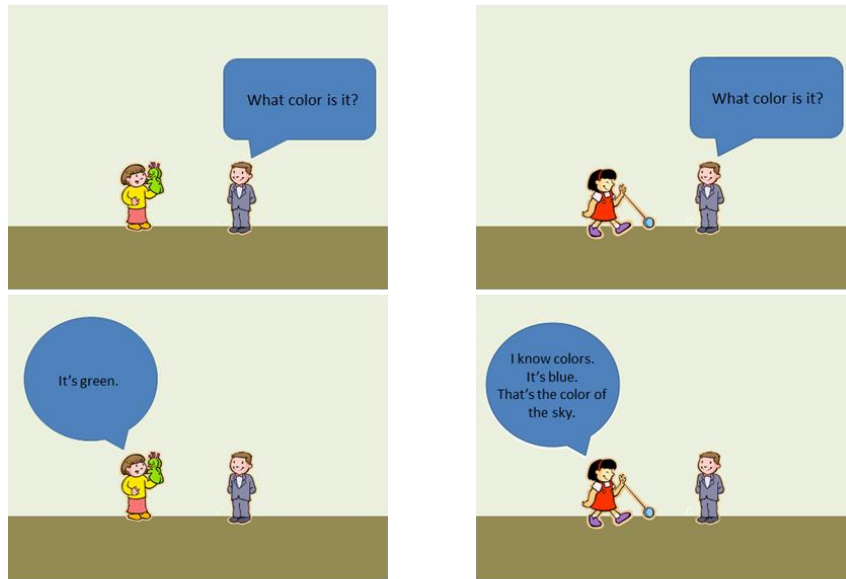
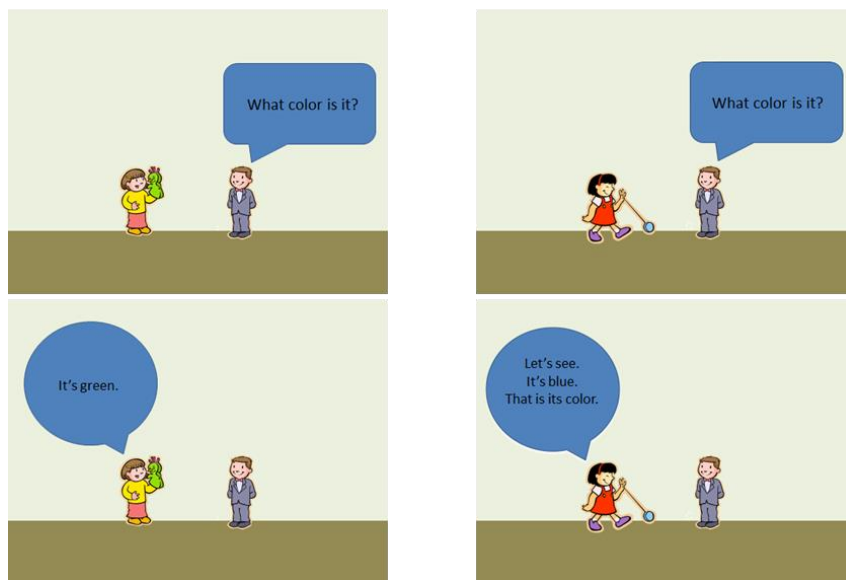Figure 18. Sample storybook slides for the informative and uninformative speaker conditions. In each condition, participants saw a concise and an elaborate character (informative or uninformative) interact with the same boy.

Procedure

Monolingual English and Spanish speakers were assigned to either an informative or an uninformative speaker condition. In all conditions, participants saw a video demonstrating a

boy's conversations with a concise and an elaborate speaker. However, the elaborate speakers'

responses provided additional information in the informative speaker condition and included

filler words without additional information in the uninformative condition. As in Experiment 1,

participants were asked to view the video and to judge the speakers' responses during a

familiarization phase. This was followed by a test phase during which participants made

additional judgments about what the speakers were likely to know. The same questions as in

Experiment 1 were used.

Coding

The same coding methods as in Experiments 1 and 2 were used.

Results and discussion

Monolingual English and Spanish speakers in the present experiment preferred concise

responses to questions over elaborate responses that were not more meaningful. This suggests

that, speakers of English and Spanish consider the content of the message when deciding

whether an utterance is overly elaborate. Participants in the present study also showed a

preference to learn about language from speakers who adhered to conversational norms.

Familiarization phase: elaborate speaker assessment, concise speaker assessment and speaker

comparison questions

A familiarization score was calculated by summing the scores for all three speaker

assessment questions. A two way ANOVA (language X condition) for the familiarization score

revealed a main effect of condition (informative vs. uninformative; $F(1,60)=5.08$, $p<.05$) but no

main effect of language ($F(1,60)=2.73$, $p=.10$) or interaction between X and Y ($F(1,60)=1.11$,

$p=.30$). The main effect of condition was the result of higher scores on the familiarization

measure in the informative condition (M = 1.38, SD = .94) than the uninformative condition (M = .91, SD =.73). Higher scores in the familiarization measure indicate a preference for elaborate responses. Therefore, participants were less likely to favor elaborate responses when the elaborate speaker was uninformative.

To test our predictions about preferences in each language, direct comparisons of the two conditions were performed separately in English and Spanish using the familiarization score. English speakers did not show a greater preference for the elaborate speaker in either condition (t(30)=.90, p=.37), while Spanish speakers were less likely to show a preference for the elaborate speaker in the uninformative condition than the informative condition (t(30)=2.21, p<.05).
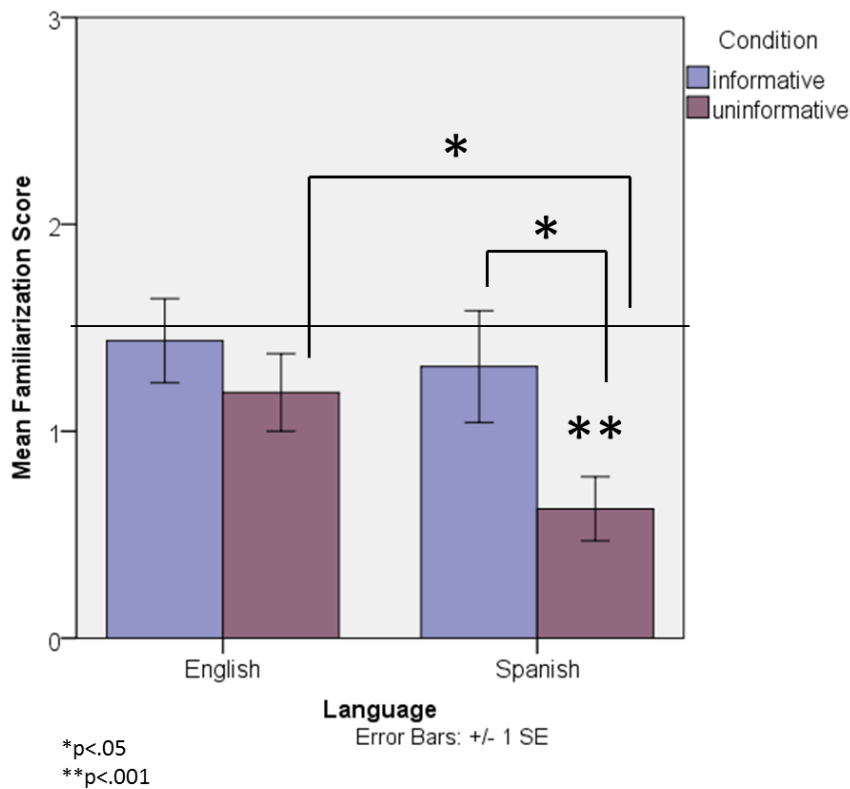

*p<.05
**p<.001

Figure 19. Mean familiarization score by speaker language and condition.

Single sample t-tests were conducted to assess the performance of each group (Figure 19). English speakers' familiarization score did not differ from chance in either condition (informative: M=1.44, SD=.81, t(15)=.31, p=.76; uninformative: M=1.19, SD=.75, t(15)=1.67, p=.12). Spanish speakers' familiarization score was at chance in the informative condition (M=1.31, SD=1.08, t(15)=.70, p=.50) but lower than would be predicted by chance in the uninformative condition (M=.67, SD=.62, t(15)= 5.65, p<.001), indicating a preference for the concise speaker in this last group.

Analyses of responses to individual questions were also conducted (Table 9). English speaking participants in the informative condition said that the elaborate (13 of 16, p<.05, binomial one-tailed) and the concise (16 of 16) speakers were good at answering questions. However, they did not say that the elaborate speaker was better at answering questions (10 of 16, p=.23). English speakers in the uninformative condition also found the elaborate (14 of 16, p<.01) and concise (15 of 16, p<.01) speakers to be good at answering questions and they found the concise speaker to be better at answering questions (12 of 16, p<.05). English speakers were more likely to prefer concise responses in the uninformative than the informative condition ($X^2(1)$=4.57, p<.05). Spanish speakers in the informative condition declared that the concise speaker was good at answering questions (14 of 16, p<.01) but they did not find the elaborate speaker to be good at answering questions (11 of 16, p=.10) and they did not consider the concise speaker to be better at answering questions (9 of 16, p=.40). For the informative speaker condition, Spanish speakers did not describe the elaborate speaker as good at answering questions (9 of 16, p=.40). They said the concise speaker was good at answering questions (16 of 16)and was better than the elaborate speaker at answering questions (15 of 16

p<.01) Like English speakers, Spanish speakers prefer concise responses when a speaker is being

uninformative than when they are being informative ($X^2(1)=6.00$, p<.05).

Language	condition	Elaborate assessment		Concise assessment		Who was better?	
		good	Not very good	good	Not very good	elaborate	concise
English	Informative (n=16)	13*	3	16***	0	10	6
	Uninformative (n=16)	14**	2	15**	1	4*	12
Spanish	Informative (n=16)	11	5	14**	2	7	9
	Uninformative (n=16)	9	7	16***	0	1**	15

*p<.05
**p<.01
***p<.001
Binomial tests, one-tailed

Table 9. Responses to individual familiarization phase questions in Experiment 3.

The preference for concise responses in the two uninformative conditions described

above demonstrate that there are different expectations about elaborate speech depending on

whether an elaborate speaker is being meaningful or just lengthening their utterances with

fillers. Importantly, this preference is true for speakers of English and Spanish.

Test phase: tool endorse, label endorse, neutral preference and prosocial attribution trials

During the test phase, participants were asked to make decisions about which speaker

was likely to provide accurate information about labels and nonlinguistic information.

Label request. The first question of the test phase asked participants to select which

speaker they would ask for the label of a novel toy (Table 10). English speakers did not prefer a

particular character for this task, not choosing to learn about labels from the concise speaker in

the informative (7 of 16, p=.40) or uninformative (11 of 16, p=.10) conditions. Spanish speakers

in the informative condition did not show a preference either (8 of 16, p=.5). Only Spanish

speakers in the uninformative condition displayed a preference to learn labels from the concise

speaker (14 out of 16, p<.01, binomial, one-tailed), indicating that Spanish speakers prefer to

request labels from speakers who adhere to conversational conventions regarding the maxim of manner.

| Language | condition | Label request | |
		elaborate	concise
English	Informative (n=16)	9	7
	Uninformative (n=16)	5	11
Spanish	Informative (n=16)	8	8
	Uninformative (n=16)	2*	14

*p<.05
Binomial, one-tailed
Table 10. Number of participants who would request information about the label of a novel object from each speaker.

Labeler preference. In three labeling trials participants' inferences about the linguistic knowledge of each character was further assessed. Participants' label score reflected the number of trials in which they selected the elaborate character's referent, so that each trial in which they selected her referent added 1 to their total score, while selecting the concise speaker's referent added a 0.

A two way ANOVA (language X condition) for the label score revealed a main effect of language ($F(1,60)=9.92$, $p<.01$), indicating that Spanish speakers were more likely to select the concise speaker than the elaborate speaker regardless of condition. There was also a main effect of condition ($F(1,60)=4.01$, $p<.05$), as both English and Spanish speakers were more likely to select the referents labeled by the concise speaker in the uninformative condition. There was no interaction between language and condition ($F(1,60)=0$). Direct comparisons by condition in each language group revealed a greater preference for the concise speaker in the uninformative than the informative condition (English: $t(30)=2.11$, $p<.05$; Spanish: $t(30)=2.37$, $p<.05$).

The mean label score for each group was tested against a chance value of 1.5 (Figure 20). Responding for Spanish speaking participants in the uninformative condition was below chance (M=.38,, SD=.72) t(15)=6.26, p<.001), indicating a preference for the labels provided by the concise speaker. English speakers' responding in the uninformative condition was also trending to be below chance (M=.94, SD=1.24, t(15)=1.82, p=.09). Label scores did not differ from chance in either of the informative conditions (English: M=1.81, SD=1.11, t(15)=1.13, p-.28; Spanish: M=1.25, SD=1.30, t(15)=.78, p=.45).
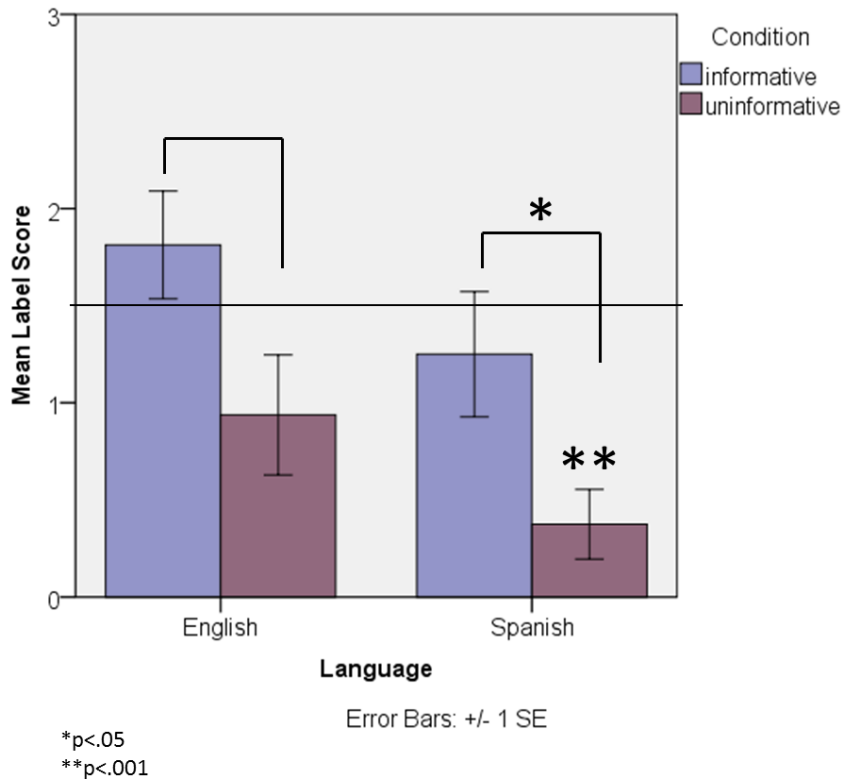

Figure 20. Mean label score by language and condition in Experiment 3.

Generalization of expertise. To test the extent to which participants would trust the information provided by the different characters, we asked them to select which of the two

characters they would ask about information on how to use a novel tool. No group of

participants displayed a preference for either character (Table X).

Language	condition	Generalization (tool)	
		elaborate	concise
English	Informative (n=16)	10	6
	Uninformative (n=16)	9	7
Spanish	Informative (n=16)	8	8
	Uninformative (n=16)	5	11

Table 11. Number of participants who would request information about a novel tool from each

character.

Chapter III Discussion

The present studies investigated the use of conversational norms in monolingual and

bilingual speakers of English and Spanish. In Experiment 1, bilingual speakers of the two

languages preferred elaborate speech when observing conversations in Spanish but not in

English and adults used information about pragmatic competence to decide who would be a

trustworthy source of other linguistic information. Children also preferred elaborate speech in

Spanish but did not use evidence of pragmatic competence to determine if someone was

providing accurate linguistic information. This result demonstrates that bilingual speakers are

aware that the maxim of manner is applied differently across their languages, but that the

application of this understanding to other domains of language may take some time to emerge.

In Experiment 2, bilingual speakers of English and Spanish did not expect elaborate

responses to questions when addressing an adult versus a child. This stands in contrast to

research in which five-year-old monolingual English speakers expect that speech directed at

children be much less elaborate than speech directed at adults (Wagner, et al., 2010) and may suggest that some bilingual speakers may not demonstrate native-like fluency in all aspects of language. In Experiment 3, monolingual adult speakers of English and Spanish favored concise speech when an elaborate response did not add meaning to an utterance. Monolingual speakers also endorsed linguistic information provided by a speaker who was considered to be more pragmatically competent. The findings from Experiment 3 suggest that English and Spanish speakers consider the message conveyed by an utterance when deciding if an elaborate approach is appropriate.

What have we learned about bilingual speakers' understanding of efficiency in conversation?

To be fully bilingual, one needs to understand that different forms of expression may be appropriate in each language. The present findings suggest that bilingual adults and children are aware that some conversational norms apply to speech in only one of their two languages. This was demonstrated by participants' tendency to consider the amount of elaboration in an utterance when evaluating conversations in Spanish but not in English. However, unlike adult bilingual speakers, bilingual children did not use evidence of appropriate norm use to decide which speaker would provide accurate linguistic information. One explanation for this difference is that young bilingual children may not yet recognize that knowledge of one aspect of a language implies knowledge of other aspects. One reason may be that they have had relatively less experience with their second language. Both children and adults in the present study were sequential bilinguals – as they acquired their second language sometime after their first. As a result, children in the study had relatively less exposure to English as their second

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langauge (6 years) than the adults (14 years on average). The role of differences in years of language exposure should be investigated in future studies.

A second characteristic that may distinguish fluent bilingual speakers is an understanding that others may vary in their fluency in one language and that not everyone is also bilingual. This knowledge allows bilingual speakers to communicate efficiently with monolingual speakers of each language. For example, a bilingual English-Spanish speaker will convey fluency in English to a monolingual English speaker if she avoids using Spanish vocabulary. Speakers who do not demonstrate this ability may be viewed as less fluent which may affect how their expertise is evaluated. Less fluent speakers may not be viewed as trustworthy sources of language information.

One factor that may influence when children recognize that there are different levels of fluency is how much exposure they have had to monolingual speakers. For example, bilingual children growing up in bilingual communities may assume that everyone has a working knowledge of both languages, as they only interact with other bilingual speakers. Children in the present experiment were from this type of environment. Bilingual children who are raised in mostly monolingual communities may not have the same expectations. They may understand that different people can provide information about one language but not the other. Therefore, they may be more likely to evaluate label information that others provide. The question of how exposure to speakers from different linguistic backgrounds influences bilingual language acquisition should be addressed in future studies.

Fluent bilingualism also requires knowledge of pragmatic norms, including those that vary within a language. For example, to be considered as fully fluent in English, an English-

Spanish bilingual needs to learn how conversational norms apply to different contexts within a language. One unexpected finding in the present study was that bilingual speakers did not recognize that the amount of speech used should vary in different conversational contexts in English. One possibility is that children and adults in the present study have relatively less experience using English. Studies comparing bilingual children's vocabulary to that of same age monolingual peers, have found a similar lag in bilingual children's vocabulary knowledge (e.g., Lindsey, Manis, & Bailey, 2003; Rosenblum, & Pinker, 1983). It is possible that they may use each language in different contexts and that Spanish may be used more frequently (as their first language, it may be the language that is used more frequently at home).

Unlike the sequential bilinguals who participated in this research, simultaneous bilingual speakers may be less likely to show a deficit in understanding pragmatic norms that differ across their languages. Simultaneous bilingualism may result more often in families from mixed linguistic backgrounds, exposing children to two languages from birth and likely resulting in exposure to a broader range of conversational contexts for each language. Comparisons of pragmatic competence in simultaneous and sequential bilingual speakers may help to clarify this possibility.

The end point of balanced bilingualism is an attainment of native-like fluency in both languages. A high level of fluency in all aspects of a language, allows a bilingual speaker to understand the pragmatic rules of a language. This ability facilitates the acquisition of additional information about a language by providing a means to evaluate it. However, an understanding of the relationship between pragmatic competence and word knowledge is less clear for bilingual children than adults, suggesting that it may improve with age.

What have we learned about monolingual speakers' understanding of efficiency in conversation?

Monolingual speakers have to learn the conversational norms that are appropriate to their language. In the present study, monolingual English and Spanish speakers preferred concise speech unless a speaker used more words to convey additional information. This was demonstrated by monolingual English and Spanish speaking adults who favored concise responses to questions when an elaborate response did not convey additional information. This difference was consistent across the two languages and may reveal a tendency to judge speakers, not on utterance length, but on the message being conveyed.

These findings also stand in contrast with some explanations about the universality of pragmatic norms. Some Gricean maxims (Grice 1957, 1975): quality (be truthful) and relation (be relevant) may describe universal preferences (e.g., Siegal, Iozzi, Surian, 2009). On the other hand, the maxim of manner which includes the expectation that speakers be brief may be more variable across languages. The present study considered preferences guiding elaboration in speech in English and Spanish, yet it would be interesting to explore if these preferences apply to other Germanic and Romance languages. It would also be important to test whether these preferences are driven by language or culture. For instance, differences might emerge in speakers of the same language from different countries (e.g., English speakers in the US and in Britain).

A final worthwhile finding from the current study concerns adult monolingual speakers' preference for linguistic information provided by previously competent individuals. A similar

series of findings from previous research demonstrates that monolingual children prefer to learn labels from speakers who respond to questions accurately by providing correct and relevant information (e.g., Koenig, et al., 2004; Koenig & Harris, 2005; Pasquini, et al., 2007; Rakoczy, et al., 2009; Vazquez, et al., 2012). The current findings clarify that adults can evaluate pragmatic competence to determine who is a better source of language information by considering whether the message was appropriate rather than accurate. That is, every speaker in the current study provided accurate answers to questions, but some used the appropriate manner of speech for the situation. Monolingual speakers evaluated the meaning conveyed in each message to evaluate appropriateness and then preferred to learn about language from the more competent speaker.

CHAPTER IV

CONCLUSIONS

The goal of the research described in this dissertation was to investigate what observers infer about people based on their ability to use expedient means to complete goals. These inferences were tested in two domains: actions and language. For actions, expediency using the most direct approach to a goal, while in language it is applying the appropriate pragmatic norms. An initial question concerned how different behaviors would be evaluated by observers. To answer this first question, children and adults were asked to evaluate how different actors completed action or linguistic goals. The second question explored the inferences that observers make about what expedient and inexpedient people might know in different areas. I predicted that individuals who engaged in expedient behavior would be considered more competent in domains close to their demonstrated area of expertise. For example, someone who uses language appropriately should be trusted to provide accurate language information, but perhaps not information about how to use tools.

Several findings from this research suggest that children and adults consider the context in which an actor is performing a task to evaluate expediency and determine the actor's level of competence in different domains. When making judgments about the paths taken to complete action goals, children determined which path was most direct and accessible. When evaluating how someone completed language goals, children and adults expected that the speaker would use the most pragmatically appropriate speech depending on the language of the conversation

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and the intended message. Evaluations of expediency were used to determine whether actors knew about other things. When someone was expedient in the means they employed to achieve a goal they were also considered to be accurate sources of label information. This was true whether prior competence was displayed in the same language as the label being offered or in actions unrelated to language.

One finding that appears in all but one experiment (Chapter III, Experiment 1) is that children and adults prefer to learn about labels but not tools from expedient actors. This tendency is also present when the actor providing information about tool use has demonstrated to be competent in actions, an area of expertise closely related to tool use. One explanation for this apparent unwillingness to learn about tools from previously competent individuals is that when people initially learn to use a new tool they may rely on their own assessment of tool properties and how they fulfill the demands of a task (Racokzy, & Tomasello, 2006). Children and adults may only rely more heavily on trustworthy sources of information to learn the use of a novel tool in the absence information about object features or the demands of a task. If people learn about labels and tools differently, the current procedure (which gives participants visual access to tool features) may be better suited for testing how source trustworthiness influences word learning. One intriguing question for future research is whether differences in the relative salience of sources of information about tool uses (trustworthiness of testimony versus how object features match the demands of a task) will influence what children and adults learn. For example, tool information provided by someone who is expedient in tool related tasks may be given more weight than assessments of object

features. This may be more evident when selecting a tool for a novel task for which the demands are not known.

One important distinction between this and previous research on word learning (Koenig, et al., 2004; Koenig & Harris, 2005; Pasquini, et al., 2007; Rakoczy, et al., 2009; Vazquez, et al., 2012) is that both sources of label information were successful at achieving their intended goals. The expedient and inexpedient actors both completed the task of delivering two balls to a basket across the room, and the concise and elaborate speakers both responded completely and accurately to the questions asked. The only way to differentiate between them was to consider the means they employed to achieve their goals. This distinction is important because it reflects the types of encounters that children and adults are likely to have when observing others. While they may occasionally encounter individuals who fail to achieve goals altogether it is more likely that one will observe differences in the ability to complete goals efficiently. This variability in means to goal attainment may reflect differences in expertise. It would be important for future research to clarify the nature of a preference to learn from expedient individuals, as this may be the result of expediency indicating greater expertise in a domain or inexpediency being seen as an indicator of lack of knowledge. In the first case, inexpedient actors may still be trusted to provide information when no other source is available. In the second case, information provided by an inexpedient actor should not be trusted under any circumstances.

Trust in sources who demonstrate competence in one domain is sensible when one is acquiring large amounts of novel information, as is the case when learning words as a child or as a second language learner later in life. Instead of having to confirm the accuracy of every

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piece of information that is available one may simply decide to trust information provided by known experts. The ability to rely on experts to provide accurate information in specific domains is present from childhood (Aguiar, Stoess, & Taylor, 2012; Koenig, & Jaswall, 2011; Lutz, & Keil 2002) and may save a great deal of cognitive effort. The current results suggest that expertise in action and conversational norms may indicate expertise in other aspects of language. Children and adults recruited evidence of expertise to determine the accuracy of conflicting label information. One interesting route for future study would be to explore what other areas of expertise indicates knowledge of language. For example, it might be sound to assume that someone who is fluent in US history is also fluent in English and should be able to provide accurate label information. However, someone who is fluent in Chinese history may or may not be a good source of linguistic information in English (Koenig, & Jaswall, 2011).

The ability to consider an information source's prior behavior facilitates children and adults' ability to make quick and accurate evaluations of new information. It would seem inefficient and perhaps impossible to verify the meaning of every new word that one hears in a dictionary. A more effective way to acquire new information would be to rely on trustworthy sources. However, this requires that one evaluate the level of expertise that a source is likely to possess. Prior research has demonstrated that the ability to complete a goal in action or language is viewed as an indication that one should be trusted to provide additional information. The present study describes two different indicators of trustworthiness when information about the ability to complete goals is not available. That is, when two actors complete an action or a linguistic goal, the one who did so most efficiently is not just viewed more favorably, but is also trusted to provide additional information. Consistently throughout

these studies, individuals who are deemed efficient are trusted to provide linguistic but not tool information, suggesting that learning in some domains may rely more heavily on testimony, while observations may be more important in others.

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APPENDIX

Language and social background questionnaire

1.   Sex:

2.   Date of birth:

3.   Level of education:

4.   What languages do you speak?

5.   Do you speak English every day?   If not, how often?

6.   Do you speak Spanish every day?   If not, how often?

7.   Do you read in English every day?   If not, how often?

8.   Do you read in Spanish every day?   If not, how often?

9.   Do you write in English every day?   If not, how often?

10.   Do you write in Spanish every day?   If not, how often?

11.   Have you lived in a place where English is the dominant language?   How long?

12.   Have you lived in a place where Spanish is the dominant language?   How long?

13.   Where were you born?

14.   Where do you live?   How long have you lived there?

15.   What is your first language?

16.   What is your second language?

17.   Where did you learn your second language? home/school/community

18.   At what age did you start learning your second language informally at home?

19.   At what age did you start learning your second language formally at school?

20.   At what age did you start using your second language actively?

21.   Did you attend a school that used your second language as the medium of instruction?