YOUNG CHILDREN'S SOCIAL-CATEGORY BASED PREFERENCES AND LEARNING BIASES: AN EXAMINATION OF METHODOLOGICAL EFFECTS

By

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INTRODUCTION

Humans are a social species. Within the first year of life, infants demonstrate remarkable abilities to recognize and evaluate individuals from different social groups. Just 48 hours after birth, an infant appraises people and discriminates between them, preferring his mother's face to that of a stranger (Pascalis, de Schonen, Morton, Deruelle, & Fabre-Grenet, 1995) and the sounds of mom's native language to those of a foreign tongue (Moon, Cooper, & Fifer, 1993). After just a few months of experience with others, infants form preferences for people based on social-group dimensions such as gender (Quinn, Yahr, Kuhn, Slater, & Pascalis, 2002), race (Kelly et al., 2005) and language (Kinzler, Dupoux, & Spelke, 2007).

At the same time that infants are forming preferences for social others, they are also developing the skill to learn from social others. Just hours after birth, infants demonstrate an amazing tendency to mimic others' behaviors (Meltzoff & Moore, 1983) — an important precursor to social learning. At a few months of age, infants recognize that people (but not objects) act intentionally to achieve goals (Woodward, 1998). Infants also use speakers' referential social cues, such as gaze direction and pointing, to learn about their world (Baldwin & Moses, 2001; Tomasello, Kruger, & Ratner, 1993). Thus, by the time children enter preschool, they have honed two main social abilities: 1) dividing their world into social groups and evaluating people based on group dimensions; and 2) learning from social others. As these social-cognitive abilities develop, it is plausible that social-group evaluations may affect social learning and vice versa.

Research indicates that social categorization and evaluation affect preschool children's behavior in various ways. For example, preschool children categorize others into social groups and use that information to form peer preferences, choosing to be friends with someone who speaks their own language (Kinzler et al., 2007), or someone who is simply wearing the same color t-shirt as they are (Patterson & Bigler, 2006). Preschool children also use social categories to guide inductive reasoning. That is, they will infer that two people who share a social group based on ethnicity will have similar *preferences* (i.e., that they like the same game), even if they do not share personality traits (Diesendruck & haLevi, 2006). Preschoolers will also use social category information to decide whether or not to share a resource such as coins (Dunham, Baron, & Carey, 2011) and to predict interactions between social group members, such as who will help or harm whom (Rhodes, 2012).

Further, past research has established that children's social learning skills develop rapidly during the preschool years. Preschoolers use social cues (verbal, gestural, eye gaze) to infer people's beliefs and knowledge states (Csibra & Gergely, 2006). While using their nascent "mind-reading" skills, children are selective about the information they accept. Rather than believing anything they are told, children use their experience with a person to determine whether he or she is a trustworthy source of relevant information (e.g., Koenig, Clement, & Harris, 2004). Thus, one body of research has focused on how social categorization affects children's reasoning about others, and another group of research has tracked the development of social learning skills in preschoolers. However, the question of how one (social categorization) might affect the other (social learning) is just beginning to be explored.

Two studies have shown that young children are more likely to learn from an in-group member (a native-language speaker) versus an out-group member (a foreign-language speaker in Buttelmann, Zmyj, Daum, and Carpenter's 2012 study, and a foreign-accented speaker in Kinzler, Corriveau, and Harris' 2011 research). Kinzler and colleagues concluded that these results reveal a general learning bias, possibly an evolutionary adaptation, to learn selectively from culturally in-group versus out-group members. They believe a speaker's accent/language is a key social dimension guiding young children's selective learning (Kinzler et al., 2011; Spelke & Kinzler, 2007).

If a strong genetic bias exists to selectively learn from native speakers, experimental results of studies examining these learning biases should be robust to changes in research methodology. However, the methods used in previous research may have affected the results that were reported. In Kinzler and colleagues' (2011) study, children were forced to choose between information offered by an in-group and an out-group member who were not present in the environment; rather, the stimuli (pictures of both individuals) were presented on video. Video stimuli were also used in Buttelmann and colleagues' research (2012).

It is possible that young children's proclivity to learn from social others, and their sophisticated ability to do so, will be apparent when out-group members are 1) the sole source of information and 2) present in the child's environment. When children actually meet an out-group member and that person's contribution is not pitted against information offered by an in-group member, I predict that children will learn from both people. Children's learning from an out-group member who offers information face-to-face, with no conflicting information offered by someone else (probably a more

ecologically valid situation than forced-choice methods using video) will cast doubt on the idea that evolution has endowed humans with a social-category based learning bias.

In the first chapter of this dissertation, an overview of the research on children's social categorization and evaluation will demonstrate that preschool children have the ability to use social categories to guide decision making (e.g., with whom to be friends) and to reason inductively about new group members.

An overview of the research on young children's selective learning follows in Chapter Two. This research will show that preschool children can use a speaker's personal characteristics (such as her previous accuracy) to determine whether or not she would be a trustworthy source of information. However, this chapter will also highlight that preschoolers demonstrate this selective learning in research studies when they are systematically comparing two sources of information at the same time. When a single person is intentionally communicating information, young preschoolers typically learn from her, even if she is shown to be an unreliable source.

Next, an overview of research in the third chapter will demonstrate that young children's learning from people on video often is less efficient than their learning from people in their environment. Additionally, this chapter will address the possibility that "live" experience with an out-group member may affect children's preferences for her.

Finally, in the fourth chapter of the introduction, I will review the few studies that have directly examined young children's use of social category information to guide learning, and demonstrate how my study systematically compares methodological factors including: 1) whether children are forced to choose between two speakers or see one speaker at a time and 2) whether speakers are present in the room or on video. These

comparisons will allow me to further examine whether preschool children consider a speaker's social-category information when deciding whether or not to learn the information she presents.

CHAPTER I

SOCIAL CATEGORIZATION AND EVALUATION

> Appreciating that the social world consists of groups of individuals who (supposedly) share some natural affinity and basic similarity is in fact a capacity that all humans with intact nervous systems possess, and a proclivity of all known human cultures. (LeVine & Campbell, 1972 as cited in Hirschfeld, 1988, p. 611)

Hirschfeld references the work of LeVine (an anthropologist) and Campbell (a psychologist) to demonstrate an implicit assumption shared by both disciplines: Humans readily classify their social world into groups. Social groups are formed both on biologically-based dimensions (e.g., kin) and on socially-constructed ones (e.g., political parties, sororities). Researchers within psychology and anthropology continue to argue about details such as why certain social dimensions are more readily used for social categorization than others. Yet, it is generally accepted that all typical humans, including children, engage in some type of social categorization, which affects their behavior.

One way in which preschool children use social categories is to make predictions about a new person based on his/her category membership. If children know that boys like trains and girls like dolls, they will conclude that a new girl (whom they have never met) will like a doll. Children's inductive reasoning is a key feature of what is called *psychological essentialism* (Gelman, Coley, & Gottfried, 1994; Medin & Ortony, 1989). According to essentialist thinking, some categories have a "true nature that one cannot observe directly but that gives an object its identity, and is responsible for other similarities that category members share" (Gelman, 2004, p. 404). Researchers have found that young children "essentialize" aspects of other individuals such as their race,

language and gender (Hirschfeld, 1996; Hirschfeld & Gelman, 1997; Taylor, 1996). Studies in this area often focused on whether children consider certain social categories innate and fixed over time (e.g., an infant girl will grow up to be a girl even if she is raised on an island by all men). Yet, one study demonstrated that young children used social-category information (ethnicity), rather than personality traits, to inductively reason about new people (Diesendruck & haLevi, 2006). The researchers used a common paradigm in which children were shown drawings of two characters (e.g., two boys) side by side, and told about a *social-category* trait, a *personality* trait, and a novel preference of each; for instance, one boy was Arabic (social category trait) and quiet (personality trait) and liked to play a novel game called zaber; the other was Jewish (social category) and active (personality) and liked to play a novel game called zigo. Next, the researcher introduced a third character who shared a social category with the first boy (e.g., was Arabic) and personality trait with the second (e.g., was active). The researchers asked children to predict the third character's preference by choosing the preference of the category-match character or the personality-match character. Five-year-olds made predictions about novel group members' preferences based on social-category (i.e., predicting that the third boy would want to play zaber because he was Arabic), whereas adults were more likely to use personality traits (i.e., predicting that the third boy would want to play zigo because he was active). This study does not make any claims about whether children must consider a social category "innate and fixed" in order to guide inductive reasoning, however it does demonstrate one functional way that young children use social-category information: To make predictions about new people's

preferences. Thus, it is plausible that children might use social-group membership to make predictions about someone's trustworthiness in providing information.

However, when young children have to decide whether or not to learn *from* someone they are not just reasoning about a third party; they are now directly involved in the situation and their reliance on social categorization therefore may differ. For example, if a young Arabic child were introduced to two characters (an Arabic boy who wanted to teach him to play a new game called zigo, and a Jewish boy who offered different information about how to play the same game), would that child still rely on social-category membership to make a decision about his own learning? Further, would his use of social-category membership differ if he was offered information by *only* the Jewish child (whose information therefore did not conflict with anyone else's)? Very little research thus far has investigated whether children may use social-category membership when making decision about their own learning.

In another area of social-categorization research, psychologists have focused on how children's social-category evaluations result in in-group preferences (and possibly prejudiced behaviors). Typically, researchers present children with photographs or videos of unknown children who differ along a dimension of interest (e.g., race, gender, language). Children's preferences for individuals from one group versus another are then assessed. In experimental studies, 3-to-5-year old majority race (white) children preferred to play with children of their own race (Kircher & Firby, 1971) and 4-to-10-year-olds preferred same-gender children (Martin, 1989). Five-year-old monolingual French and English children preferred to be friends with native speakers (Kinzler et al., 2007), a preference that extended to native-accented speakers (Kinzler, Shutts, DeJesus,

& Spelke, 2009). Two-and-a-half-year-olds (presumably too young to reason in the abstract about friendship choices) preferred to exchange toys with native-language speakers who appeared on video (i.e., toys came out of tubes attached to the television — Kinzler, Dupoux, & Spelke, 2012).

The social evaluation research therefore suggests that children "like" people who are similar to them. And yet, people differ on a variety of dimensions. Do children consider some social dimensions more important than others? Indeed, researchers have found that children prioritize certain social category dimensions when making friendship choices. For example, 5-year-olds consistently prioritized gender and age over race, choosing to play with objects or activities endorsed by *own-gender/other-race* children and *own age/other race* children over those endorsed by children of their own race who were a different age or gender (Shutts, Banaji, & Spelke, 2010). When accent was pitted against race, 5-year-olds reliably preferred *own-accent/other-race* speakers over *foreign-accent/own-race* speakers (Kinzler et al., 2009). These studies demonstrate that children reliably use social-category dimensions, and systematically prioritize certain dimensions (e.g., gender and accent over race) to form preferences for in-group members.

Besides social categories such as gender or accent, however, a large body of research has demonstrated that completely arbitrary social categories can also affect children's group-based preferences. Distinctions as minimal as having different group shirt colors (Patterson & Bigler, 2006), whether one group is shown to be "lucky" (Olson, Banaji, Dweck, & Spelke, 2006), or simply being randomly assigned to groups with no other distinctions (Dunham et al., 2011; Tajfel 1970), can affect young children's evaluation of group members. In these studies, researchers have measured children's

preferences (who do they "like" better), resource allocation (who do they share with), and reasoning about novel group members. For example, in one study in which groups were randomly assigned, 5-year-olds preferred to share coins with in-group members versus out-group members (Dunham et al., 2011). In another study, 3-to-5-year-olds were randomly assigned to a "blue" or "red" team in their classroom, and children demonstrated in-group preferences in their ratings of how much they would like to play with peers from their class, as well as unknown group members dressed in red or blue shirts (Patterson & Bigler, 2006).

The fact that minimal-group distinctions can easily lead to preferences for an "in-group" suggests that what may appear as "natural" category biases emerging from evolutionary adaptations could result instead from a more general categorization bias. Bigler and Liben (2007) support this conclusion:

> Given the vast diversity of potentially important categories and the complexity of the cues that mark such categories, we reject the idea that evolution "hard-wired" specific dimensions as salient bases for classification. We instead suggest that evolution led to a flexible cognitive system that motivates and equips children to infer — from environmental data — which bases of classification are important within a given context. (p. 163)

Thus, children may have a general categorization bias, through which specific categories may be prioritized depending on the situation, rather than an evolutionary adaptation that biases them to rely on *specific* social categories to guide reasoning.

Kinzler, Shutts, and Correll (2010) acknowledge that humans are flexible in terms of prioritizing even arbitrary social categories depending on the context (e.g., "If living in Boston, being a Red Sox fan may be a notable social category", p. 582). They note, however, that numerous social psychological studies have shown gender, age, and race to be particularly robust in guiding children and adults' social reasoning. The authors take a

different stance than Bigler and Liben (2007) by suggesting evolution may have endowed humans to prioritize certain "deeply rooted" social dimensions when reasoning about social groups (p. 583).

Kinzler et al. (2010) argue that language and accent should also be considered one of the major dimensions guiding social-category reasoning. This claim is based on their previous research demonstrating infants' and children's preferences for native-language and native-accent speakers over foreign speakers (Kinzler et al., 2007, 2009). The authors note that, "infants and young children may be predisposed to grant particular attention to the language with which others speak in guiding their social interactions" (Kinzler et al., 2010 p. 585), because "social preferences and reasoning based on accent may have origins in cognitive evolution" (Kinzler et al., 2011, p. 110). Kinzler and colleagues are not the first to suggest humans' reasoning about social groups has roots in evolution (Geary & Bjorklund, 2000; Gil-White, 2001; Hirschfeld, 2001; Tooby & Cosmides 1992) although suggesting a particular predisposition to focus on language and accent makes their claim one of the more specific. Debate continues as to whether children reason about social groups from a *general* cognitive mechanism adapted through evolution or one *specific* to certain social dimensions (see also, Sperber & Hirschfeld, 2004). Further research on the situational specifics in which young children rely on certain social categories such as language to guide social interactions will help to determine the plausibility of evolutionary claims. It is important to note that Kinzler and colleagues (2011) do not suggest evolution has bestowed children with a hard-wired rule to *only* learn from linguistic in-group members across any situation; rather, they suggest this may be children's default mechanism — that children will do so unless there is clear

environmental input to do otherwise (e.g., if a foreign-speaker is shown to be an expert in a particular domain or if a child is in a novel foreign environment – p. 110).

One way to investigate how strictly children rely on certain "high-priority" social categories to guide social interaction is to examine situations in which children do not rely on a social category to guide reasoning. Flexibility in children's use of social categories would weaken the argument that evolution has endowed children with a mechanism that automatically guides their decision-making. Social learning scenarios offer insight into whether children call a speaker's social-category to mind when deciding whether to accept information she provides. For instance, Kinzler and colleagues (2007; 2011) argue that children will use language to guide reasoning about who is a trustworthy source of information.

Spelke and Kinzler (2007) theorize that humans have innate "core knowledge" systems for representing objects, actions, number, space and *social partners*. They suggest that core representations of number guide young children in learning how to count (e.g., Wynn, 1990, as cited in Spelke & Kinzler, 2007) and that a core representation of social partners may similarly guide cultural learning (defined following Tomasello, 1999) as, "acquisition of skills and behaviors that sustain life within a particular human group" (Spelke & Kinzler, 2007, p. 92). A core system to guide learning *about* people (e.g., inductive reasoning from one group member's behavior to another's) might be plausible. However, Tomasello focused on human cultural learning *from* other people, compared to the non-social learning of non-human species, not on specific ethnic or regional cultures within humanity. It has only been in the last few years that his research group has focused on the personal or social characteristics of

particular human teachers, such as their social-category membership (e.g., Buttelmann et al., 2012; Over & Carpenter, 2012; Schmidt, Rakoczy, & Tomasello, 2012).

To date, it is an open question whether young children's social cognitive skills to learn efficiently from the people around them apply only to cultural in-group members. Throughout history, young children have typically had primary contact with, members of their own cultural group. It is possible that children may not learn from an out-group member (based on an "important" social category) in their environment. Or it may be that if children are directly exposed to an out-group member, social learning from the person will proceed as usual. That is, when presented with an out-group member face-to-face, social learning skills may overcome any hesitation a young child might feel about learning from someone they have categorized as "not the same as me".

CHAPTER II

SOCIAL LEARNING

> The capacity to learn by observation enables people to acquire large, integrated patterns of behavior without having to form them gradually by tedious trial and error.

Here, Bandura (1977, p. 12) points out one benefit of social learning compared to direct exploration: not having to learn everything in the "school of hard knocks". Obviously, adults and children learn by directly interacting with the environment as well as by taking advantage of the knowledge of others. During development, much of children's learning takes place through social interactions in a particular *social-cultural* environment (Vygotsky, 1978). Young children typically spend most of their time being supervised by and exposed to social others who frequently provide information in the form of speech and observable behavior. Due to the sheer volume of input, it is likely that children use some sort of judgment or bias to guide learning. But: How do they determine when and from whom to learn? Researchers have suggested a "pedagogical" theory of social learning in which "teachers" provide *ostensive cues* such as eye contact, pointing, and infant-directed speech to signal that they are sharing information relevant to the recipient (Csibra & Gergely, 2006, p. 250). Tomasello acknowledged the importance of social "cues" and additionally argued that social learning relies on children's ability to *understand another person's intentions* (Tomasello, 1999). This skill to discern others' intentions and learn from them is fundamental to human social cognition and may be so ingrained in typically-developing preschoolers that it will supersede any hesitation children might have about taking information from a social out-group member.

Many researchers have experimentally demonstrated that young children rapidly and efficiently acquire knowledge based on this ability to understand another person's intentions. For example, when learning new words, toddlers are quite skilled at discerning a person's referential intentions to accurately map a new label to a novel object rather than simply relying on temporal associations between an offered label and whatever he or she happens to be observing at the time. If a toddler is looking at a toy when she hears her mother say "whisk," the child will not automatically assume that the word "whisk" is the label for the toy. Rather, she will look to her mother's face and follow the direction of her gaze to determine what Mom intended to label. Baldwin (1993) found that toddlers have a strong tendency to seek out and use a speaker's referential intentions to learn a new word; in a situation like the one with the whisk, they look to a speaker's face, follow her gaze direction, and accurately map her label onto the proper referent. Even if the whisk is in a drawer during labeling, but then her mother pulls out an unusual wire object, looks satisfied, and begins to use it, toddlers will accurately map the label "whisk" to the proper object (e.g., Akhtar & Tomasello, 1996). Toddlers are flexible in their reasoning about a person's intentions: When a particular cue (e.g., information about gaze direction) is uninformative, they adaptively use any of a variety of communicative cues (such as emotional expressions) that may be available (Tomasello & Barton, 1994; Tomasello, Strosberg, & Akhtar, 1996).

Understanding another person's intentions also supports children's learning about objects and their copying of new behaviors. For example, 14-to-18-month-olds will learn a novel action from a person who demonstrates the action intentionally (saying "There!" upon completion of the action) but not from someone who completed the action

accidentally (saying "Whoops!" — Carpenter, Akhtar, & Tomasello, 1998). Meltzoff (1995) similarly demonstrated that 18-month-olds will imitate an intended, rather than accidental action on an object. In this study, one end of a dumbbell-shaped toy could be removed. One group of toddlers saw the adult demonstrate a complete action (pulling off one side of the dumbbell) whereas another group saw the adult *attempt but fail to complete* the action (his hand repeatedly slipped off the end). Toddlers in both groups imitated the intended, *completed* action. In an important follow up, toddlers did not produce the completed action when a mechanical object rather than a human failed to complete the action (Meltzoff, 1995). This research suggests that toddlers use, not just perceptual information, but a more complex intention-based understanding of a human's actions to guide their behavior.

In fact, the copying of a person's actions following social learning is so strong that children often imitate a speaker's inefficient or unusual actions if they are intentional. That is, children "over-imitate" by faithfully copying all of a speaker's intentional actions, even if they are not necessary to achieve a goal (e.g., Lyons, Young, & Keil, 2007; Nielsen, 2006). In these studies, an actor typically demonstrates either an inefficient action (e.g., the first step of a two-step process is superfluous) or an unusual one (e.g., turning on a light with one's forehead). Children imitate the person's exact actions *based on their perception of the demonstrator's intent*. For instance, children only turned on a light with their heads after watching a person do so whose hands were free, but not when a justification for the strange action was offered (e.g., he turned on a light with his head because his hands were full — Gergely, Bekkering, & Kiraly, 2002; Meltzoff, 1988). Children's tendency to "over-imitate" has been demonstrated in

multiple age groups in many laboratories, as well as with Kalahari Bushman children in southern Africa (Nielsen & Tomaselli, 2010). This research suggests children's over-imitation might be a pervasive, robust human behavior that would not happen solely in response to the behavior of an in-group member but might transcend culture. Research also demonstrates that the tendency to over-imitate increases as children get older and that even college students exhibit this behavior (McGuigan, Makinson, & Whiten, 2011; McGuigan, Whiten, Flynn & Horner, 2007). Thus, over-imitation is not a learning "mistake" made only by young children, but rather an entrenched social-learning behavior, which even adults exhibit.

By the preschool years, children have extensive practice in using others' intentional cues to learn information about their world. However, they are not passive recipients of *any and all* intentionally presented information; rather, they are developing "epistemic vigilance" (Sperber et al., 2010). That is, preschoolers critically assess whether a communication partner is likely to provide true and useful information.

There are several traits one might consider when someone offers information: Do I know this person? Has she been accurate in the past? Is she an "expert" in a given field? Certain characteristics of a speaker, such as previous accuracy, are closely related to whether children should learn from her. However, researchers have begun to investigate whether characteristics more distal to a person's knowledge base, such as personality traits (e.g., honesty, kindness) influence children's judgment. A few groups of researchers have also begun to examine whether a person's social category (based on her spoken language) affects whether children will learn from her (e.g., Buttelmann et al., 2012; Kinzler et al., 2011). Before delving into the specifics of the social-category based

learning studies, it will be helpful to consider how methodological factors may influence the conclusions that can be drawn from research on children's selective trust in information sources.

In these studies, children typically are presented with a scenario in which a speaker is shown to be a trustworthy informant by accurately labeling familiar objects, compared to an "untrustworthy" speaker who is shown to be inaccurate (e.g., labeling a shoe, "duck"). When the two speakers subsequently present conflicting information about a novel object label, children use their knowledge of the speakers' previous accuracy to preferentially learn from the trustworthy speaker. Children's ability to critically assess a speaker's knowledge state develops during the preschool years. Three-year-olds, for example, were perfectly willing to learn from someone who had repeatedly mislabeled objects just moments before, whereas 4 and 5-year-olds preferred to learn from the trustworthy speaker (Koenig & Harris, 2005). Later studies included task modifications such as increasing the salience of the speaker's inaccuracy and providing verbal reminders of who had been accurate; in those scenarios, 3-year-olds preferred to learn from the accurate speaker (Pasquini, Corriveau, Koenig, & Harris, 2007). Three- and four-year-old children also learned novel object functions from someone who was previously accurate about typical functions for common objects (Birch, Vauthier, & Bloom, 2008). Around the same time, 4- and 5-year-olds are developing a basic understanding that different people may be experts and have knowledge in different areas; for example, a doctor will know about biological things whereas a car mechanic will know about mechanical things (Lutz & Keil, 2002). Children are also flexible at disengaging from one salient trait (a speaker's age) to focus on a trait that appears related

to expertise to guide learning. For example, preschool children preferred to learn about a new toy from a child rather than an adult (VanderBorght & Jaswal, 2009).

Children also prefer to learn from a speaker based on characteristics that are not as directly relevant to her knowledge base. For example, children preferred to learn from a familiar speaker over an unfamiliar speaker; 3-year-olds continued to do so even when the familiar speaker was shown to be inaccurate, whereas 4 and 5 year olds' moderated their trust in the familiar speaker based on her accuracy (Corriveau & Harris, 2009). Even 3-year-olds preferentially learned from a "nice" puppet (one who caressed the researcher) rather than a "mean" one (who hit the researcher — Mascaro & Sperber, 2009; see also Doebel & Koenig, 2013). By age 4, children used a speaker's truthfulness (Vazquez, DeLisle, & Saylor, 2013) or niceness/honesty (Lane, Wellman, & Gelman, 2012) to guide word learning. At least by the age of four, children appear to consider a speaker's accuracy and knowledge, as well as certain personality traits, to determine whether she is a trustworthy source of information. Thus it is plausible that children may rely on information about a speaker's social category to determine whether or not to learn from her.

It is important to note that in all of these studies, children were *forced to choose* between two speakers. This methodological choice must be considered before drawing conclusions about children's rejection of particular classes of individuals as completely untrustworthy sources of information. Children's preference to take information from speaker A over speaker B does not automatically imply that children are unwilling to take information from speaker B. Children may simply believe choosing Speaker A is the

"correct" answer in this paradigm, but would be perfectly willing to learn from Speaker B if she were the sole source of information. Recent research supports the latter conclusion.

Before the age of 5, children's default response to an informant appears to be credulity; they believe what someone tells them — even when they are explicitly informed that a speaker is untrustworthy. Several research groups have demonstrated that young children have great difficulty rejecting intentionally communicated information. For instance, after being introduced to a "helper" and a "tricker," children saw separate videos of each speaker telling a third person where to find a desired, hidden object. Importantly, children were not forced to choose between the two speakers. After each video, children could choose to accept or reject that speaker's information in searching for the object themselves. Three-year-olds searched the location they were told by both the "helper" and the "tricker"; only by age 5, did children selectively follow the advice of the "helper" and disregard the advice of the "tricker" (Vanderbilt, Liu, & Heyman, 2012). Jaswal and colleagues (2010) demonstrated that 3-year-olds' proclivity to trust what a person tells them is so strong they rarely do otherwise, even when a speaker has consistently offered inaccurate information just moments before. In this study, children were again attempting to find the location of a hidden sticker (if they found the sticker, they got to keep the sticker, but if they searched in the wrong location, the speaker got to keep it). When the speaker verbally announced the wrong location, children continued to search, trial after trial, in her designated (incorrect) location. Over half the children acted on her incorrect verbal information on all 8 trials, never once successfully finding the sticker. Having a speaker simply point (with no verbal information) to the incorrect location was similar to the offer of verbal testimony;

children were unable to disregard this familiar, intentionally-communicated information (Palmquist & Jaswal, 2012). Heyman and colleagues (2012) tested over 200 preschoolers with similar results; children had difficulty rejecting a speaker's incorrect information when it was not directly pitted against another informant's information. Overall, these results support the hypothesis that preschool children have great difficulty rejecting information that is intentionally communicated by other people. Therefore, if a social out-group member is intentionally providing information that is not directly pitted against an in-group member's information, young children's "default" to learn from a single source may override any social-category based biases.

Another factor to consider is whether children recognize the differing importance of social group in deciding whether particular information is relevant to them. Do children recognize that some types of information (e.g., an object label) are specific to certain social groups, whereas other information (e.g., an object function) may or may not be specific to certain groups and some information (e.g., fire is hot) is objectively true and not group-specific at all? Do children expect all intentionally- communicated information to be relevant to them, regardless of who offers the information? In this regard, researchers have begun to examine children's developing understanding of "conventional knowledge." Basing their definitions on the work of Lewis (1969), Diesendruck and Markson (2011, p. 189) describe conventional knowledge as socially-communicated information that is arbitrary, "community-bound (as opposed to idiosyncratic or universal)….and prescriptively powerful…(as opposed to completely flexible)." Language is a clear example of conventional knowledge. There is nothing inherent in the word "dog" that links it to its four-legged referent — this set of sounds is

merely the agreed upon or "conventional" label for English speakers (e.g., see Clark, 2007). Language offers a clear example that conventionality exists *within a particular social group* — while "dog" is conventional for English speakers, the label, "perro" is conventional for Spanish speakers. Kalish and Sabbagh (2007) suggest several additional domains in which information may be conventional, such as object function and categorization, social interaction expectations, and rules of a game. Children may assume when they see a novel behavior that this is how "those in the know" (i.e., older people) do it. For example, when children see someone intentionally use a two-step process to open a box (even if they can see that one step is causally unnecessary), they may repeat it because they believe the process is "the proper way" to open the box, rather than an idiosyncratic behavior particular to the demonstrator.

Diesendruck and Markson (2011) note that children have a "liberal" assumption of conventionality, particularly for information that is presented intentionally and consistently within and across individuals (see also Wohlgelernter, Diesendruck, & Markson, 2010). However, during the preschool years, children do develop some flexibility in reasoning about the shared nature of different types of information — that is, they understand that while common noun labels are likely to be shared (e.g., "dog"), *proper* noun labels (e.g., a dog named "Rover") are not (Diesendruck, 2005). Similarly, preschoolers do not expect people to share knowledge of arbitrary facts about an object (e.g., "my uncle gave this to me" — Diesendruck & Markson, 2001). Thus preschool children are able to distinguish between information that is likely to be shared by others and idiosyncratic information. In the domain of object function, preschoolers show similar flexibility. Children expect typical object *functions* to be shared by others in their

community (Casler & Kelemen, 2005), however by age 5 they realize that although there may be one conventional use, objects can be used in multiple, novel ways (Birch et al., 2008; Defeyter, Hearing, & German 2009). Thus, it is plausible that preschoolers may be able to distinguish between information that is likely to be shared among social groups, and information that may be culturally bound to certain groups.

Whether or not information is likely to be conventional could certainly play a role in how and when children use a speaker's social-category membership to guide learning. Accordingly, researchers have begun to question who children consider to be trustworthy sources of *conventional* information. Kalish and Sabbagh (2007) note, "It remains an open question how children identify the best informants about conventional knowledge" (p. 7). Diesendruck and Markson (2011) also theorize about cues children may use to determine whether someone will be a good source of conventional knowledge and suggest the possibility that "the development of social categories aid children in recognizing relevant purveyors of conventional knowledge" (p. 193). They go on to note that, "an early differentiation between in- and out-groups may be functionally adaptive not only for the sake of identifying potential foes but also for recognizing potential 'teachers'" (Diesendruck & Markson, 2011, p. 193). Therefore it is possible that children may use social-category information to guide learning of conventional information. However, the question remains: Do preschool children have the capability to distinguish between information that is clearly conventional (a new word) and information that may or may not be conventional (a novel use of an object)? Further, can they use a speaker's social-category information to appropriately guide learning?

In summary, preschool children tend to learn from people when they are the sole source of information. Children also appear to have a default assumption that information (when intentionally-presented) is conventional. In the current research, I examine how young children react when faced with a speaker from a social out-group who is intentionally offering information that may or may not be conventional (e.g., object function). Will children use social category membership to decide whether to trust an out-group speaker's information (as some researchers have claimed) or will a social learning "default" lead children to learn from her despite her out-group status, especially if her information does not conflict with an in-group member's information?

CHAPTER III

DIRECT EXPERIENCE AND VIDEO

There is one final factor to consider in an examination of whether young children rely on social-category membership to guide learning: whether children are offered information by an out-group member that is present in the room or one who is on a video. Many studies investigating both social evaluation and children's trust in information sources have used drawings, photos or videos to present social stimuli. Researchers, if they acknowledge this decision at all, typically mention that using symbolic media allows for greater control of extraneous variables than using "live" stimuli (which is certainly true). In using symbolic media to represent social partners, however, researchers are assuming that children will reason in the same way they would after seeing a real person in their environment. This may not be the case for very young children.

Researchers studying young children's social categorization have often used symbolic media to assess children's subsequent evaluations and in-group preferences. Using photographs or videos of social group members is a valid method that allows researchers to answer questions about how children assess a *group* by combining responses to multiple individuals over a short period of time, which would be difficult to achieve with real people present in the lab. When considering a social dimension, however, it should be acknowledged that children's experience with a person who is in the room might affect their in-group preferences. It is possible that positive experience with an out-group member could lead to increased preference for that person and perhaps

extend to other members of her social group, thus ameliorating in-group preferences. On the other hand, direct experience with an out-group member may be disconcerting to young children who have had no prior experience with this sort of person. In this case, video may provide "psychological distance" (DeLoache, 2000) from the person, rendering the experience a safe one. If "live" experience happens to be aversive to young children, we might expect them to show an in-group preference after real, direct experience with an out-group member.

The mere presence of foreign speakers in one's environment does not appear to eliminate preferences; 5- to 11-year-olds who grew up in South Africa surrounded by many different languages still preferred their own language (Kinzler, Shutts, & Spelke, 2012). However, native Xhosa-speaking children who attended an English-speaking school preferred English speakers to Xhosa speakers (Kinzler et al., 2012). Thus own-language preferences may be overcome through close contact with a foreign-language speaker (e.g., a teacher or caregiver). The same appeared to be the case for race-based preferences. Three-month-old African infants raised in a Caucasian environment preferred to look at Caucasian faces (i.e., the race with which they had the most experience) over African faces (Bar-Haim, Ziv, Lamy, & Hodes, 2006). Both of these studies with children and infants demonstrate amelioration of social preferences based on *extensive*, (presumably positive) experiences with classmates, teachers and parents.

It is an open question what quantity and quality of social experience is necessary to reduce young children's own-group biases, though this is an area social psychologists continue to investigate (e.g., see Crisp & Turner, 2009 for an argument for "imagined contact" and Cameron, Rutland, Brown, & Douch, 2006 for a study of vicarious

experiences). For example, would simply seeing an out-group member face-to-face in a brief, positive demonstration be enough to get rid of in-group preferences? Or would young children be surprised and put off by the novel situation of interacting with an out-group member?

One recent study supports the idea that live experience (without familiarity) can affect preferences: after watching/listening to two people who were present, 19-month-old children demonstrated no preference for a native-language speaker over a foreign-language speaker (that is, they chose equally between objects belonging to the two speakers — Howard, Henderson, Miller, & Woodward, 2011). Simply knowing that a foreign speaker is a real person capable of interaction, whose presence is accepted by the experimenters and parents, may signal to young children that the foreign-speaker is equally worthy of acceptance as the own-language speaker.

In addition to preferences, children's learning may also be affected by the presence of a speaker. Research indicates that infants' and toddlers' social learning (including imitation and word learning) typically is better when they interact with a person in their environment rather than merely watching them on video (e.g., Anderson & Pempek, 2005; Barr & Hayne, 1999; Roseberry, Hirsh-Pasek, Parish-Morris, Golinkoff, 2009; Troseth, Saylor & Archer, 2006; see Barr, 2010, and Troseth, 2010 for extensive reviews of the literature). Although by the age of three, children are more successful at learning from a person on video, they may still learn better from someone in their environment. For example, 3-year-olds imitated the exact actions of someone present in their environment but not someone on television (McGuigan et al., 2007). In other studies, older preschoolers had difficulty using information from video in various ways

(e.g., recognizing themselves on a delayed video — Povinelli, Landau, & Perilloux, 1996 — and finding objects hidden in an adjoining room — Zelazo, Sommerville, & Nichols, 1999). Children of this age needed parental support to learn words and story content effectively from video (Strouse, O'Doherty, & Troseth, in press).

One reason children may learn better directly from people than from video presentations is that a person on TV typically does not actually interact with the viewer. Thus, children may not consider someone on video to be a social partner and they may not assume that watching a video is a "pedagogical situation" in which a person may share relevant information (Csibra & Gergely, 2006). In studies in which a person on video actually interacted with viewers (via closed-circuit television), 2-year-old children learned: They imitated exactly what the person on TV did and followed her directions (Nielsen, Simcock & Jenkins, 2008; Troseth et al., 2006). McGuigan et al., (2007) attributed the failure of 3-year-olds to imitate a demonstration on video to the fact that their "socially degraded" video presentation showed only the demonstrator's hands (p. 362). Three-year-olds who saw the same behaviors demonstrated "live" had no problem learning them. These results suggest that even 3-year-olds may still rely on the presence of a real person offering typical social cues of intentionality (such as those carried by the eyes and facial expression) and reciprocal interaction in order to realize that the person is offering relevant information that they could learn.

In previous chapters, I examined how young children might use a speaker's social-category information to determine if she is a trustworthy source. I argued that young children's entrenched social learning skills might overcome hesitation about learning from an out-group member when she is the sole source of information. But the

use of video brings an added dimension. The research on young children's difficulty learning from video suggests that seeing an out-group member in one's own environment, versus on video, would increase the likelihood that children would learn from her. An out-group member's appearance on video (where she might not be viewed as a viable social partner) might add a "second strike" against the possibility that young children would learn from her. In fact, one study has shown that infants who repeatedly meet a foreign speaker do learn language information from her, whereas infants who only see the foreign speaker repeatedly on video do not (Kuhl, Tsao, & Liu, 2007).

It is an open question how 3- and 5-year-old preschoolers' social learning would be affected by an out-group speaker's presence "in person" versus on video. In the following chapter, I will describe several studies on social learning from an out-group speaker that used either "live" or pictorial (video or photographs) stimuli. No studies have directly compared the two. By systematically comparing preschool children's learning from an out-group speaker who is present in the room versus one on video, we can answer questions about the presence and strength of children's learning biases. Many of the studies purporting to show learning biases have used pictorial stimuli and have pitted an in-group member against an out-group member. If children learn from an out-group member who is present (but not on video), it would suggest that a person's presence might play a more significant role in children's learning than her out-group status.

CHAPTER IV

LANGUAGE-BASED LEARNING BIASES AND THE PRESENT STUDY

Researchers have begun to investigate whether young children selectively learn from cultural in-group members. In these studies, a speaker's foreign language or accent serve as the social trait of interest; one shown to be salient to young children in the formation of in-group preferences, and one which may be a valid cue for determining cultural in-group versus out-group members. Kinzler and colleagues (2011) first investigated whether social preferences for native- accented speakers might also guide selective learning. In this study, speakers demonstrated their native or foreign accent by reading briefly from a Curious George storybook. Next, the speakers *silently* demonstrated two different functions for a novel object and participants had to choose which function to endorse. Five-year-olds selectively endorsed novel object functions demonstrated by a native-accented speaker versus a foreign-accented speaker. The authors suggested that "children demonstrate selective trust in information provided by members of their own native cultural group over nonmembers, *even when information does not rely on linguistic communication*" (italics added, p. 110).

There are several important aspects of this study. First, children demonstrated own-language learning biases for ambiguously conventional information (object function). Additionally, children showed a native-speaker bias even when the authors controlled for speaker comprehensibility by having both speakers read nonsense words from the Lewis Carroll story, *Jabberwocky* (each in her own accent). Thus, the results of

this study suggest that children use information about a speaker's linguistic social category (not simply comprehensibility) to determine if she is a trustworthy source of (even non-linguistic) information. However, in this study both speakers were on video and young children were forced to choose between them. Would children similarly dismiss information from a foreign speaker if that information did not conflict with what a native speaker said? And what if the foreign speaker were present in the room? Would children readily dismiss a foreign speaker's information if she sat across from them and presented it?

In a between-subject design, in which children were not forced to choose between two speakers, 14-month old infants demonstrated a similar learning bias for native speakers (Buttelmann et al., 2012). In this study, one group of infants saw a native speaker demonstrate unusual actions, and another group of infants saw a foreign speaker do the same. Fourteen-month-olds were more likely to imitate unusual actions of an own-language speaker than unusual actions of a foreign speaker, a result lending support to Kinzler's theory that young children use a speaker's language to guide learning, even of non-linguistic information. Both authors conclude that children are "cultural" learners who preferentially take information from cultural in-group members. Yet Buttelmann et al.'s speakers were on video, and learning rates overall were low (46% of infants endorsed the novel action of the in-group speaker, 21% endorsed the action of the out-group speaker). Although children attended equally to the in-group and out-group presentations, it is possible that part of their difficulty in imitating the foreign speaker's action was because he was on video. Would the infants have imitated the foreign speaker if he were present in the environment?

A similar study with 19-month-olds, offers conflicting results. When own and other-language speakers (both present in the room with the child) demonstrated two different unusual actions on the same object, participants imitated both speakers equally (Howard et al., 2011). Howard and colleagues (in prep) also found that 18-month-olds imitated own- and other-language speakers equally often when each participant only saw one speaker in a between-subjects design (as cited in Howard et al., 2011). Thus, when speakers were live in the room, children learned from both in-group and out-group members.

The Present Study

The research reported here examined how a particular social-category dimension — foreign language — would affect preschool children's behavior on three outcomes: a) learning the function of an object (less-conventional information); b) learning an object label (highly-conventional information); and c) exhibiting a preference for one of the speakers. The present research involved two factors that previously had not been directly considered in the same study: whether children rely on the social dimension of language and accent to form in-group preferences and learning biases when the speaker is the *sole source of information* (versus when forced to choose), and when the speaker is *present in the room* (versus on video). In some tasks, participants were forced to choose between two information sources, whereas on other tasks, they were free to accept or reject an individual speaker's information. I varied between subjects whether speakers were present in the room or appeared on video, which allowed me to determine whether a speaker's physical presence affected preferences and learning. Finally, I counterbalanced

whether children were asked a set of preference questions first, or after a set of learning questions, to determine if the length of exposure to a foreign speaker (including playing with the same toys as she did) would affect preferences and learning.

There were several possible outcomes of the learning tasks. If children's "default" response is to learn from a person (regardless of social-category) who is not contradicted by another individual, they should learn equally well from a native and from a foreign speaker on both the object function and object label task. If children rely on the social dimension of foreign-vs-native language to guide learning of highly-conventional information *only*, they should learn an object *label* from a native (but not a foreign) speaker, whereas they should learn an object *function* from both speakers equally. Finally, if children rely on a speaker's language to guide learning of *any* potentially-conventional information, children should learn both object label and object function from a native (but not foreign) speaker.

In regard to the effect of medium (live or video), it is possible that seeing a foreign speaker on video adds a complicating layer to young children's recognition that this person is a viable social partner from whom to learn. If this is the case, children who saw a foreign speaker on video should not learn as well (either object function or object label information) as children who saw a foreign speaker live. It was also possible, that only young preschoolers would exhibit this residual "video deficit".

If children rely on a speaker's language to form in-group preferences (especially if this is a species-wide tendency wrought by evolution), they should prefer the native speaker to the foreign speaker regardless of medium or task order. However, it was possible that medium would affect preferences. On the one hand, seeing a foreign

speaker live in the environment may make children more comfortable with her; they may feel more engaged with her than if she appeared on a video. If so; children who see the speakers live should show less of an in-group preference than children who see the speakers on video. On the other hand, seeing a foreign speaker in person may make her out-group trait more salient. Her difference from other people the child meets in daily life may appear more pronounced, compared to seeing a foreign speaker on video; if so, children who see the speakers live may show a stronger in-group preference than those who see the speakers on video.

Task order could also affect learning and preferences. Children who demonstrate in-group favoritism when asked preference questions first might have been "primed" to focus on language differences and used that to guide from whom they would learn. In contrast, children who spend time with a foreign speaker during learning tasks, watching her play with toys that the children then get to share, could feel more connected to the foreign speaker, like her more, and show less systematic in-group preferences than children who were asked the preference questions at the start.

The present study includes both 3-year-olds and 5-year-olds for several reasons. First, previous social learning studies demonstrate that children's ability to discern the trustworthiness of a speaker increases over this age range (e.g., Koenig & Harris, 2005). Second, previous research suggests 3-year-olds may learn better from someone in their environment than on video, thus I wanted to see if a video "deficit" might contribute to children's difficulty learning from foreign speakers. Finally, including both ages allowed me to see if my results would replicate previous research in which preferences for native

speakers were found for similar age groups (2.5 year olds in Kinzler, Dupoux, & Spelke 2012; 5-year-olds in Kinzler et al., 2007).

CHAPTER V

METHOD

Participants

A total of 64 three- and five-year old monolingual English-speaking children participated: 32 three-year-olds (*M* = 37.0 months, *SD* = 4.39; 16 girls) and 32 five-year-olds (*M* = 60.1 months, *SD* = 3.33; 17 girls). Participants were recruited via telephone from state birth records. To ensure a monolingual sample with little to no exposure to foreign languages, parents were asked if their child had any significant exposure to languages besides English. Children were excluded from participating if they were exposed to a language besides English for more than 5% of time in a given week or if their foreign-language exposure came from a close family member (e.g., a grandparent living in another country). Additional children were tested but excluded from the final analysis for parental interference (n = 2), and suspected developmental delay (n = 1).

Study Design

Participants were randomly assigned to one of four between-subject conditions to examine whether or not spending time with the foreign speaker and playing with the same toys (either seeing the real person or watching a video of her) before completing the preference tasks affected children's preferences and learning. In the *Live/Learning first* condition, an English speaker and Russian speaker were present in the room and participants completed a set of learning tasks prior to a set of preference tasks. The

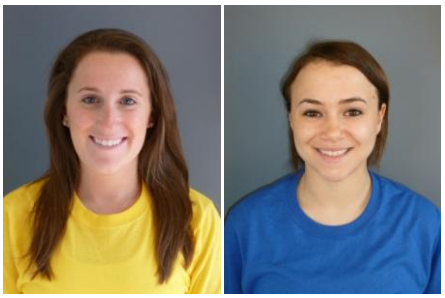
Video/Learning first condition was the same but the speakers were on pre-recorded video. In the *Live/Preference first* and *Video/Preference first* conditions, the speakers were, respectively in the room or on video, and preference tasks were completed first. To examine the effect of question type on children's preferences for and learning from native versus foreign speakers, all participants were given both forced-choice measures in which they chose between the English and Russian speaker ("Forced-Choice" tasks) and measures in which they saw one speaker at a time and could accept or reject her information ("One-Speaker" tasks).

There were eight 3-year-olds and eight 5-year-olds in each condition. Analyses indicated no significant differences in participants' ages per condition, $F(3,60) = .028$, $p = .994$.

Personnel

Native and Foreign-Language Speakers. Three English-speaking and two Russian-speaking research assistants acted as the native and the foreign-language speaker throughout the course of the study. The two Russian speakers were bilingual (with English) from birth. Through pilot tests using photos, I ensured that preschoolers had no a priori preferences for any of the speakers based on appearance alone. Each participant saw one English and one Russian speaker; which pair the participant saw was dependent upon scheduling (see Figure 1 for speaker pairings). Analyses confirmed that there were no differences in children's behavior between speaker pairs.[1]

[1] Speaker pair 1 was used for 20.3% of participants; pair 2 for 31.2% and pair 3 for 48.4%. I combined results for Speaker pairs 1 and 2 (foreign-speaker Jaquelene) to compare to pair 3 (foreign-speaker Eliz), and chi-square analyses indicated no differences between speakers on children's learning or preference tasks.



Pair 1: English Speaker Lauren & Russian Speaker Jaquelene

Pair 2: English Speaker Libby and Russian Speaker Jaquelene

Pair 3: English Speaker Zoë and Russian Speaker Eliz

Figure 1. Speaker pairs used during the study.

To help participants differentiate between the English and Russian speakers, each wore a different brightly colored shirt (blue or yellow) with shirt color counterbalanced. To match the *Live* and *Video* conditions, participants viewed the same pair of speakers for a given counterbalanced order. For example, if a participant in the *Live/Preference*

First/Order 3 saw Speaker Pair 1, a participant in the *Video*/*Preference First*/Order 3 saw a pre-recorded video of Speaker Pair 1.

Researcher. An English-speaking researcher interacted with the child during warm up (e.g., played puzzles) and administered all tasks to the child.

Materials

Videos, Speaker photos, and Language-demonstration toys. A total of 24 videos were created, 8 videos per speaker pair, which matched the 8 *Live* condition counterbalancing orders (e.g., which person spoke first, what shirt color she wore, etc.). Videos were displayed on a 32" (81cm) television set, and were paused (on a blank screen) when it was the child's turn to complete a task. Additionally, 4x6 photos of each speaker were used as prompts in several of the tasks. A set of three plastic animals (horse, turtle, and sheep) and a plastic bucket were used during the speakers' language demonstration.

Learning Tasks.

"One-Speaker" Imitation. Materials for the imitation task were based on those from McGuigan et al., 2007. I used two dual-compartment boxes (see Figure 2), with one compartment of each baited with a sticker. Each box also had two entry points (corresponding to the two compartments) with two distinct closure systems: the blue box had a yellow bolt to push out and a purple screen to push aside; the purple box had a red-and-white door to open and a brown leather flap to lift. Opening one of the two closures was irrelevant to retrieving the sticker. Thus, when the researcher opened both closures

before retrieving the sticker, she produced an irrelevant action that allowed us to measure "over-imitation" by the participant. The box that each speaker used was counterbalanced across participants, but the location of the sticker in the box remained the same (the stickers were placed behind the purple screen and the leather flap).

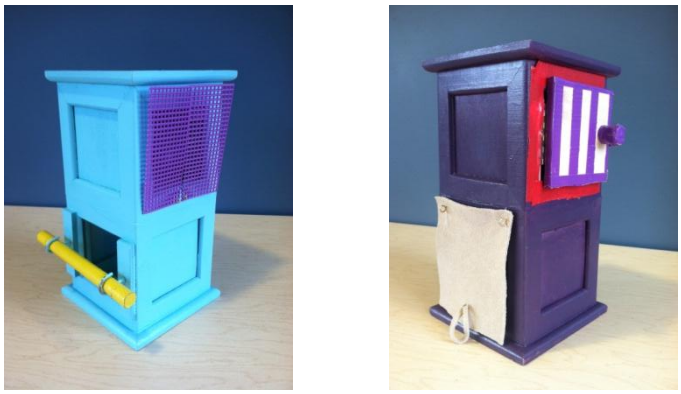
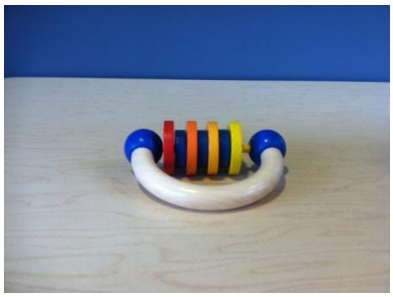


Figure 2. Dual-compartment boxes used in the "One-Speaker" Imitation tasks.

Forced-Choice Imitation. I used two novel objects, a hose connector and a wooden rolling toy, each of which could be acted upon in two ways by the two speakers (Figure 3). Order of object presentation, as well as the speakers' actions on the object, were counterbalanced across participants.

Hose Action A: holding up to one's mouth like a horn

Hose Action B: holding up to one's eye like a telescope

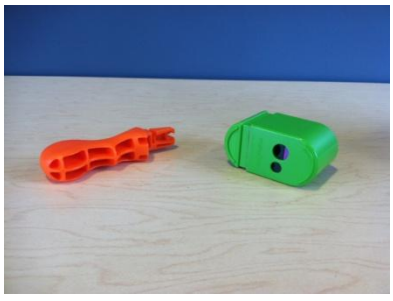


Toy Action A: rolling the toy on the table

Toy Action B: picking the toy up and spinning the wheels with one's hand

Figure 3. Novel objects and actions used in the Forced-Choice Imitation task.

"One-Speaker" Word Learning. Three familiar items used for training included a rubber duck, a green toy car, and a small plastic spoon. Novel items were unfamiliar plastic objects that the child could not spontaneously name: a green pencil sharpener paired with an orange hook, and a green circular object paired with a red rubber object (Figure 4). The pair used by each speaker, as well as which object was the target within each pair, was counterbalanced across participants.



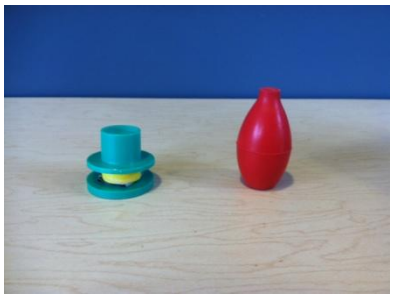


Figure 4. Novel object pairs used in the "One-Speaker" Word Learning task.

Forced-Choice Word Learning. A single novel black wooden object (Figure 5) was given a different novel label by each of the speakers, which label each speaker used was counterbalanced across participants.

Figure 5. Novel object used in the Forced-Choice Word Learning task.

Preference Tasks.

Forced-Choice Toy Giving. A yellow and a blue plastic bucket (corresponding to speakers' shirt colors) as well as two multi-colored plastic balls were used for the toy-giving task (Figure 6).

Figure 6. Items and photographs used in the Forced-Choice Toy Giving task.

"One-Speaker" Toy Endorsement. Four colorful, multi-part wooden toys were used for the toy endorsement task. I paired two toys that had similar twisting actions: a

wooden block with holes and plastic screws, and a set of wooden nuts and bolts of different colors and sizes. The second pair of toys required similar stacking actions: a set of colorful pegs with corresponding stackable rings and a colorful wooden building set. All toys were stored in clear plastic containers with a photo of the assembled toy on the top. Matched toys (Figures 7 and 8) offered similar action affordances to avoid preferences for toy type (i.e., some children may simply prefer stacking toys to twisting toys). The pair of toys each speaker used and which toy was the target were counterbalanced across participants.

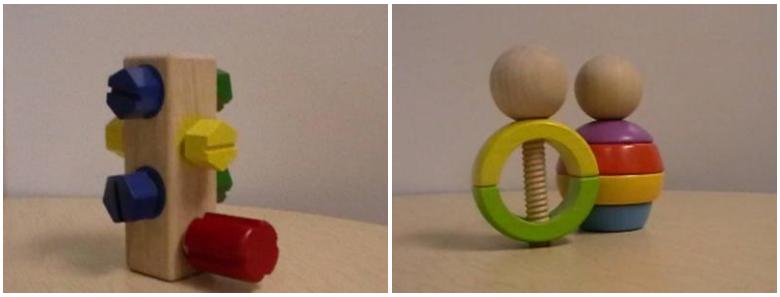


Figure 7. Twisting toys used in the "One-Speaker" Toy Endorsement task.

Figure 8. Stacking toys used in the "One-Speaker" Toy Endorsement task.

Forced-Choice Tool Choice. A yellow wooden box with a silver "fish" handle (see Figure 9) could be opened using one of two novel tools created out of foam board

and duct tape. One was orange with red stripes and a black handle; the other was red with white dots and a black handle. I counterbalanced the tool that each speaker used.

Figure 9. Tools and yellow box used in the Forced-Choice Tool Choice task.

Forced-Choice Extra Viewing. Photos of the speakers were used for children to choose whom to bring back for another demonstration. The chosen speaker brought in a novel "toy": a red box with an affixed doorbell that children could ring.

"One- Speaker" Extension Task. Children were shown a PowerPoint presentation in which each slide contained one photo of a preschool-aged boy or girl (see Figure 10) accompanied by an audio clip of a child speaking either English or Russian. Each audio clip consisted of a female or male English-speaking or Russian-speaking child reading portions of unfamiliar children's poems.

Figure 10. Photos of "unknown" children used in the "One-speaker" Extension task.

Forced-Choice Extension Task. Three additional PowerPoint slides contained pairs of speakers matched on gender and age. Audio clips of Russian- and English-speaking children were the same as in the "One Speaker" Extension task; audio clips of adults were recordings of English- and Russian-speaking research assistants making a neutral statement ("There are four seasons. Winter, spring, summer, fall"). The adult audio clips were never of the same speaker who appeared in the actual experiment (e.g., if Speaker Pair 1 were in the experiment, the audio clips of speaker pair 3 were used in the Extension task). Factors counterbalanced across children included: the photo paired with the English speaking audio clip, which side of the screen the "English speaker" was on, and order of speaker-pair presentation. See Figures 11, 12 and 13 for speaker pairings.

Figure 11. Speaker pair 1 in the Forced-Choice Extension task.

Figure 12. Speaker pair 2 in the Forced-Choice Extension task.

Figure 13. Speaker pair 3 in the Forced-Choice Extension task.

Procedure

Participants colored with crayons or played with puzzles while their parents completed the consent forms. Participants then were seated at a small table across from the speakers' chairs (in *Live* conditions) or a video monitor (in *Video* conditions). Holding up a photo of each speaker in turn, the researcher said the speaker's name and the language she spoke (e.g., "This is Eliz. She speaks Russian"). Next, the researcher told participants that each speaker would show them some things and then they would get a turn to play. The researcher obtained the participant's assent and then said, "Let's meet the girls." The speakers entered the room or the video was turned on.

Language Introduction. All participants first saw the English and Russian speaker playing with and labeling familiar toys in order to establish the language she spoke. The speakers entered the room (live or on video) sat down next to each other facing the participant, and introduced themselves, saying, "Hi, my name is _____" (the Russian speaker said the equivalent in Russian.) The first speaker then played with three familiar toys and made comments about her actions with the toys ("Look, a horse! The horse gallops across the table!" "Look, a turtle! The turtle is hopping up my arm!" "Look, a sheep! The sheep jumps into the bucket!"). While the first speaker played with

the toys, the other speaker neutrally watched the toys, not making eye contact with the child or the first speaker. The second speaker then played with the same toys in the same way, making the equivalent statements in her language. The speaker on the child's left always spoke first; this was counterbalanced to ensure that half the participants heard the English speaker talk first and half heard the Russian speaker talk first.

Participants in the *Learning First* conditions next moved on to the learning tasks followed by the preference tasks; participants in the *Preference First* conditions completed the task sets in the opposite order.

Learning Tasks.

The learning tasks consisted of forced-choice and one-speaker imitation and word-learning tasks. I thought of imitation of an action on an object as less conventional than the meaning of a word, and the question was whether children would be more willing to imitate a foreign speaker than to learn a word from her.

"One-Speaker" Imitation. One speaker remained seated at the table with one of the dual-compartment boxes in front of her (in person or on the video). The other speaker left the room. The researcher said, "Watch closely and then you will have a turn". The speaker said "[hello]" (in her own language to remind the child of the language she spoke) and then silently demonstrated a two-step process (with the first-step being irrelevant) to retrieve a sticker. She repeated the demonstration and then said "[goodbye]" and left the room. The researcher then handed the box to the child and said, "There is one sticker in this box and it is your turn to get the sticker." Participants were given 30 seconds to retrieve it. If they did not succeed, the researcher said, "We will get

it later" and waited until after the second box demonstration to give the child the stickers. The other speaker then entered the room and the same procedure was repeated with the other box. Order of speakers and which box (blue or purple) each speaker used was counterbalanced across participants.

Forced-Choice Imitation. Both speakers then returned to the room. One of the two novel objects (hose connector or wooden rolling toy) was placed in the center of the table. Each speaker demonstrated a different way to use the object. The first speaker said "[I do this]" and demonstrated her action, set the toy down, picked it back up and repeated her statement and action; the second speaker said the equivalent in her language before demonstrating her action, also repeating the process twice. For the hose connector, one speaker would blow into it like a horn whereas the other would look into it like a telescope. For the wooden toy, one speaker would roll it along the table whereas the other would pick it up and move the wheels with the palm of her hand. After the speakers departed, the researcher handed the object to the participant and said, "Show me what you do with this." The participant was given 30 seconds to play with the object. Next the speakers came back into the room and the same procedure was repeated with the other novel object. Again the speakers departed and the child had 30 seconds to play with the object. Order of object presentation and which action each speaker demonstrated were counterbalanced across participants.

"One-Speaker" Word Learning. Next, the Russian or English speaker entered the room, said "[hello]" and sat down. She first labeled two familiar items to demonstrate the object labeling procedure and to remind children of the language she spoke. She pointed at a rubber duck, labeled it, "Ooo [duck]!" (in her own language),

picked it up, labeled it again, "[duck]!" and then placed it in a small bucket. The speaker then removed the toy from the bucket and passed the toy and bucket to the participant. The researcher said, "Now it is your turn to put it in the bucket." The process was repeated with another familiar object (a toy car). Next, a set of two novel objects were placed on the table. The speaker pointed and looked at the target and labeled it, using one of two novel labels: dax or fep. So for example she said, "Ooo dax!" picked it up and repeated the novel label "dax!" She then pointed and looked at the distracter object and labeled it, "Ooo [this one]" (in her own language), picked it up and repeated "[this one]!", placed the two objects in the bucket, and then removed them and gave them to the child to put into the bucket. To provide a slight delay before the test trial, she labeled one more familiar item (a spoon). Participants were first asked about a pair of the familiar items to acclimate them to the testing process. The speaker held out two of the familiar items and then said the name of a desired object twice in a questioning voice (e.g., "[spoon]?" "[spoon]?") If children did not choose an object, the researcher said in English "Can you pick the [spoon] and put it in the bucket?" Next, the speaker held out the two novel items (presented on the opposite side than it was during labeling) and the speaker said, for instance, "dax?" dax?" If the child did not choose, the researcher said, "Can you pick the dax and put it in the bucket?" Next, the first speaker departed and the second speaker entered the room and repeated the same process. The familiar objects were the same. For the set of novel objects, she labeled the target using the novel word that the first speaker did not use (e.g., "fep"). She labeled the distracter "[this one]". The set of novel objects each speaker used, which object within the set was the target,

whether she labeled the target first or second, and speaker order (English or Russian first) was counterbalanced.

Forced-Choice Word learning. Both speakers then entered the room and sat down. There was one novel object (the black wooden toy) on the table. The first speaker pointed to it and labeled it with one of two novel labels: "verma" or "jukta" (Russian words that could be said with a Russian or English accent). For example she said, "verma!" and then picked it up and said "verma!" and put it back in the center of the table. The second speaker then pointed to the same object and said, "jukta!", picked it up and said "jukta!" and then put it back in the center of the table. Both speakers then left the room. The researcher pointed to the object and asked, "What is this called?" If children did not respond, the researcher repeated the labels using the speaker photos as prompts ("She said 'verma'….she said 'jukta'….what do you think this is called, 'verma' or 'jukta'?") Speaker order and which label each speaker used were counterbalanced across participants.

Preference Tasks.

Most of the previous research on social category biases has used forced-choice preference tasks. I examined whether children would endorse the foreign speaker more if this choice was not pitted against endorsing the native speaker. I also included preference tasks to see if children's preference choices might be linked to selective learning biases.

Forced-Choice Toy Giving. While both speakers were out of the room, two buckets were placed on the table (corresponding to each speaker's shirt color and side of

the table) with the speakers' photos each in front of the color-corresponding bucket. The researcher gave the participant two balls, one of which they could keep and one to give away. Once the participant chose which ball to give away, the researcher asked, "Who do you want to give the ball to? You can put it in her bucket and we will give it to her later." After the participant dropped the ball in (or pointed to) a bucket, the researcher said, "Thanks, we will give it to her later" and put all the materials away.

"One-Speaker" Toy Endorsement. Next, one speaker entered the room and said "[hello]". She brought either the "Twisting" pair of toys or the "Stacking" pair of toys. The researcher said, "Watch closely and then you will have a turn to choose." The speaker then opened one box, played with the toy for 20 seconds, and then opened the other box and played with the toy for an equal amount of time. Next, she looked back and forth between the toys, said "[hmmm – I want this one]" and pointed to and then played with her chosen toy for approximately 60 seconds. She then put both toys back into their boxes and left the room. The researcher showed participants the pair of toys and asked them which one they wanted to play with (participants could only choose one). Participants were allowed to play with the toy for approximately 3-4 minutes. The process was then repeated with the second speaker, who played with (and chose one from) the other pair of toys. Speaker order, the toy set each speaker used, and the chosen toy within each set were counterbalanced across participants.

Forced-Choice Tool Endorsement. Both speakers then entered the room and sat down. A yellow wooden box and two novel tools (red and orange) were placed on the table. The first speaker said "[I use this one]", picked up a tool and opened the box with it, repeating the process twice. Next, the second speaker did the same with the other tool.

Both speakers left the room. The researcher put each speaker's photo next to the tool she used and then asked the participant, "which tool do you want to use to open the box?" (participants could only choose one). The participant was then given 30 seconds to play with the tool and box. Speaker order and which tool each speaker used were counterbalanced across participants.

Forced-Choice Extra Viewing. Next, while both speakers were out of the room, the researcher held up their photos and said to the child, "One of the girls can show you one more toy. Who do you want to come back in [whose video do you want to watch] to show you another toy?" Once the child chose a speaker, that speaker returned to the room (or her pre-recorded video clip was shown) and demonstrated how to use a new toy (a doorbell attached to a box). After she left the room, the child was given a turn to play with the toy.

"One-speaker" Extension. The participant was then shown a set of photos of children who spoke either English or Russian and asked to rate how much he or she would like to play with that child. To do so, the participant pointed to a cardboard "ratings scale" on which three schematic faces were drawn: one smiling (which the researcher verbally labeled "a lot"); one neutral (labeled "a little"); and one frowning (labeled "not at all"). The researcher then showed each photo one at a time saying, "he/she speaks English/Russian, listen" and played the corresponding audio clip. After each audio clip the researcher asked, "How much would you like to play with him/her?" and waited for the participant to point at one of the faces on the chart (smiling, neutral or frowning) before moving on to the next photo. Photo order, and whether each photo was linked to an English or Russian audio clip was counterbalanced across participants.

***Forced-Choice Extension*.** The researcher then showed the participant three sets of side-by-side photos: one pair of preschool-age girls, one pair of preschool-age boys, and one pair of adult females. The researcher showed each pair one at a time and pointed to one photo in the pair and said "this girl/boy/teacher speaks English – listen", played a corresponding audio clip and then pointed to the other photo and said "and this girl/boy/teacher speaks Russian – listen". The researcher asked the participant, "If you could only pick one of these girls/boys/teachers to play with, who would you choose?" After the participant chose one of the photos, the researcher repeated the process with the next pair. Which speaker within the pair spoke English, and on which side of the screen he or she appeared was counterbalanced. Also, whether children first completed the *"One Speaker" Extension* task or the *"Two Speakers" Extension* task was counterbalanced.

CHAPTER VI

RESULTS AND DISCUSSION

The primary questions were whether children would learn from a Russian speaker when she was in the room versus on video, as well as whether children's learning across two domains (object function and word learning) differed if the Russian speaker presented her information independently or if her information conflicted with that presented by the English speaker.

A secondary question was whether a speaker's presence in the room versus on video would affect how much children "liked" her, which was assessed using a series of preference tasks: one in which children could endorse or reject a single speaker's preferred toy, as well as three tasks in which children had to choose between the two speakers. Two additional independent factors were considered: task order (whether participants were given the learning tasks or the preference tasks first) and participant age (split into 3-year-olds and 5-year-olds). Preliminary analyses were conducted to see if these factors had any effects on each dependent measure. If so, separate results are presented.

Attention

As a measure of attentiveness, I assessed the proportion of time children spent looking at the English and the Russian speakers' demonstrations during "One-Speaker" tasks and at both speakers during "Forced-Choice" tasks. An additional coder recorded

children's attentiveness for 20% of the videotaped sessions. Inter-rater reliability was high (ρ_I = .96, p < .001). Two participants were excluded from attention analyses because of technical problems with their videotapes.

I conducted Kruskal-Wallis[2] tests to examine differences in attentiveness by condition (split by age group) on three dependent variables: a) proportion of time spent looking at English speaker demonstrations b) proportion of time spent looking at Russian speaker demonstrations and c) proportion of time spent looking at demonstrations with both speakers present (see Table 1 for means). Results of the Kruskal-Wallis indicated a significant difference between conditions in attentiveness to the English speaker demonstrations (χ^2(3, N = 62) = 13.359, p <.005) and to the Russian speaker demonstrations (χ^2(3, N = 62) = 15.775, p <.005). Follow-up Mann-Whitney U tests[3], indicated 3-year-olds in the *Video* condition were less attentive to the Russian speaker than *3-year-olds/Live* (U = 44.5, z = -3.196, p < .005, r = -0.4), *5-year-olds/Live* (U = 35.5, z = -3.240, p < .005, r = -.41) or *5-year-olds/Video* (U = 57.5, z = -2.672, p = .007, r =-.34). Additionally 3-year-olds in the *Video* condition were less attentive to the English speaker than *3-year-olds/Live* (U = 49.0, z = -3.14, p < .005, r =-.4) or *5-year-olds/Live* (U = 52.0, z = -2.602, p = .012, r = -.33).

[2] The non-parametric Kruskal-Wallis and Mann-Whitney U tests were used because the attentiveness data violated the assumption of normality of data, which is necessary for ANOVA.
[3] I used a Bonferonni adjusted alpha of .017 (.05/3 tests) as my criteria for determining significance in the Mann-Whitney U tests.

Table 1

Mean proportion of time spent watching the demonstration by condition and age group

Age Group	*Condition*	English	Russian	Both
3-year-olds	*Live*	.987 (.036)	.980 (.044)	.961 (.070)
	Video	.944 (.065)	.897 (.110)	.976 (.051)
5 year olds	*Live*	.985 (.031)	.989 (.019)	.997 (.008)
	Video	.977 (.050)	.982 (.020)	.989 (.013)

Overall attention was very high and no participants were dropped for lack of attentiveness to the demonstrations. Additionally, logistic regressions indicated that differences in attentiveness were not related to learning. Attentiveness to the Russian speaker demonstrations did not predict over-imitation, using either coding criterion (b = 1.66, z = 1.602, p =.102; b = .25, z = .265, p = .791) nor word learning (b = 0.41, z = .442, p = .659). Similarly attentiveness to the English speaker did not predict either set of over-imitation scores (b = .45, z = .334. p = .738; b = .49, z = .362, p = .717) nor word learning (b = -1.33625, z = -.865, p = .387).

Learning Tasks

"One-Speaker" Imitation. In this task, the speaker used 3 steps to retrieve a sticker: (1) an irrelevant step (e.g., removing the yellow dowel); (2) a necessary step (e.g., opening the purple doors); and (3) the final step of retrieving the sticker. I coded over-imitation in two ways. Based on a liberal coding criterion, children were credited with over-imitating if they completed steps 1 and 2 (regardless of order) prior to step 3. I

reasoned that if children first completed step 2 but remembered to go back and complete step 1 before retrieving the sticker, they were still reproducing the irrelevant action prior to achieving their goal. However, I also wanted to examine how many children reproduced the speaker's *exact* behavioral sequence using the strict coding criterion of completing all of the speaker's steps in the demonstrated order. A second coder assessed 50% of the videotapes for reliability, which was very good for over-imitation of both the Russian speaker and the English speaker (both κs = .93, *ps* < .001).

First I present the results using the liberal coding criterion. Preliminary analyses revealed no significant differences in over-imitation by age group or task order.

In binomial tests, the numbers of children who over-imitated the Russian speaker (45 of 64) and the English speaker (44 of 64) were both significantly above chance (*ps* < .005). Chi-square tests of independence indicated that the number of children who over-imitated the Russian speaker was the same whether she was present (22 of 32) or on video (23 of 32), χ^2 (1, N = 64) = 0.075, p = .784. The same was true for the English speaker (*Live* (22 of 32); *Video* (22 of 32), χ^2 (1, N = 64) = 0.00, p = 1.0). Therefore, when an "in-group" speaker *or an "out-group" speaker* was the sole source of information, children learned a new behavior from her and imitated it exactly, and they were equally likely to do so whether she was actually present or on video.

Using the stricter coding criterion (all steps in order as demonstrated) revealed a difference in the younger children's over-imitation. A chi-square test of independence indicated a significant difference in children's exact over-imitation of the Russian speaker by condition (split by age group): χ^2 (3, N = 64) = 9.069, p = .028, Cramer's V = .376. Three-year-olds in the *Video* condition were the least likely to exactly over-imitate

(5 of 16) compared to 3-year-olds in the *Live* condition (11 of 16), 5-year-olds in the *Video* condition (13 of 16) and 5-year-olds in the *Live* condition (9 of 16). There was no difference between conditions (split by age group) on exact over-imitation of the English speaker χ^2 (3, N = 64) = 1.914, p = .591; *3-year-olds/Video*: 9 of 16, *3-year-olds/Live*: 10 of 16, *5-year-olds/Video:*12 of 16, *5-year-olds/Live:* 12 of 16. There also were no effects of task order (whether participants were given learning or preference tasks first) on exact over-imitation of the Russian speaker (χ^2 (1, N = 64) = 0.00, p = 1.0) or English speaker (χ^2(1, N = 64) = 1.772, p = .183) Overall, the stricter analysis indicates that younger children were more likely to reproduce the Russian speaker's exact behavioral sequence when she was in the room than when she was on video.

"Forced-Choice" Imitation. In these tasks, children needed to choose whether to copy the behavior of the English speaker or the Russian speaker. A second coder assessed 50% of the videos for reliability, which was good (κ = .75, p < .001); I went back and reviewed any discrepancies. Preliminary analyses indicated no difference in children's forced-choice imitation behaviors by age or task order. Children showed a significant preference for one of the novel actions on the wooden toy: 47 children endorsed the table rolling action and 13 the hand rolling action, whether demonstrated by the English or Russian speaker, χ^2 (2, N = 64) = 48.219 p < .005; therefore I did not conduct further analyses of data with this stimulus. (This toy was used in a previous study, but the demonstrated hand rolling action was not contradicted by another speaker's action.)

For the hose stimulus, children were equally divided between endorsing the English speaker's action, the Russian speaker's action or neither (chi-square for

goodness-of-fit, χ^2 (2, N = 64) = 0.125, p = .939). A chi-square test of independence indicated that the patterns of speaker endorsement did not differ whether speakers were in the room or on video, χ^2(1, N = 64) = 1.164, p = .559 (see Table 2).

Table 2

The number of children who endorsed each speaker's novel action in the Forced-Choice Imitation task

Condition	English	Russian	Neither
Live	12	8	12
Video	10	12	10

Therefore, children were equally likely to endorse the novel action of an English speaker or a Russian speaker, and patterns of endorsement did not differ whether speakers were present or on video. Overall, children did not systematically choose to imitate the "in-group" speaker.

"One-Speaker" Word Learning. Children were coded as learning the novel word if they correctly chose the novel object labeled by the speaker rather than the other object. A second coder assessed 50% of the videos for reliability which was very good for the Russian (κ = .93, p < .001) and English (κ = .94, p < .001) speakers. Preliminary analyses revealed significant differences in word learning from both speakers based on age group (learning from the Russian speaker: χ^2(1, N = 63) = 4.661, p = .031, Cramer's V = .272; learning from the English speaker: χ^2(1, N = 63) = 4.870, p = .027, Cramer's V

= .278) so results are presented separately. There were no significant differences by task order.

In binomial tests, the number of 5-year-olds who learned a novel word from the Russian speaker (19 of 32) was not significantly different from chance (p = .377), nor was the number (10 of 31) of 3-year-olds (p = .071). Chi-square tests of independence indicated that learning rates for 5-year-olds did not differ whether the Russian speaker was present (8 of 16) or on video (11 of 16), $\chi^2(1, N = 32) = 1.166$, p = .280; the same was true for 3-year-olds (*Live*, 5 of 15; *Video* 5 of 16), $\chi^2(1, N = 31) = .015$, p = .91. Therefore, neither 5-year-olds nor 3-year-olds learned a novel word from a Russian speaker, even when she was the sole source of information and was present in the room.

There is the possibility that children could not understand the word-learning task when presented by a Russian speaker, but would do better if the English speaker taught them a word first, then the Russian speaker. However, there was no effect of speaker order on word learning from the Russian speaker, $\chi^2(1, N = 63) = .412$, p = .521

In binomial tests, the number of 5-year-olds who learned a novel word from the English speaker (25 of 32) was significantly greater than chance ($p < .005$). In contrast, the number of 3-year-olds who learned the word from the English speaker (16 of 31) was not. A chi-square test of independence indicated that learning rates for 5-year-olds did not differ whether the speaker was present (13 of 16) or on video (12 of 16), $\chi^2(1, N = 32) = 0.183$, p = .669; the same was the case for 3-year-olds (*Live*, 9 of 15; *Video*, 7 of 16), $\chi^2(1, N = 31) = 0.819$, p =.366.

Therefore, 5-year-olds, but not 3-year-olds, learned a novel word from an English speaker when she was the sole source of information, whether she was present in the

room or on video. The difficulty of the word-learning task and a simpler task that might be used in future research are discussed in the next chapter.

"Forced-Choice" Word Learning. In this task, children could either endorse the English speaker's novel label, the Russian speaker's novel label or neither. A second coder assessed 50% of the videos and reliability was very good ($\kappa = .89$).

A chi-square test for goodness-of-fit indicated that the number of 5-year-olds who endorsed the English speaker's label (26) was significantly greater than the number who endorsed the Russian speaker's label (0) or neither label (6), χ^2 (1, N = 32) = 12.5 , $p <$ .005, whereas the number of 3-year-olds who endorsed neither speaker's label (18) was significantly greater than the number who endorsed the English speaker's label (10) or the Russian speaker's label (4), χ^2 (2, N = 32) = 9.25 , p =.01.

A chi-square test of independence indicated that 5-year-olds were more likely to endorse the English speaker's label when speakers were on video than when they were present, χ^2 (1, N = 32) = 7.385, p = .007, Cramer's V = .480, whereas 3-year-olds' patterns of label endorsement did not differ by condition, χ^2(2, N = 32) = .622, p= .733 (see Table 3).

Table 3

The number of children who endorsed each speaker's novel label in the Forced-Choice Word Learning task

Age Group	Condition	English	Russian	Neither
5-year-olds	*Live*	10	0	6
	Video	16	0	0
3-year-olds	*Live*	6	2	8
	Video	4	2	10

Therefore, 5-year-olds, but not 3-year-olds, endorsed an English speaker's label when it conflicted with the Russian speaker's label. However, 5-year-olds who saw both speakers in the room endorsed the English speaker's label at lower rates than 5-year-olds who saw the speakers on video. One interpretation of this result is that 5-year-olds were more willing to consider the Russian speaker's label when she was present and were therefore more hesitant to endorse the English speaker's label as the only correct option. Note that, if participants did not endorse a label after being asked the fir98st time, the researcher gave a verbal reminder of each speaker's label. However, even with this additional memory prompt, over half of the 3-year-olds did not endorse a label. This may have been due to the task demand in which children had to verbally produce the answer rather than simply choosing an object.

Preference Tasks

"One-Speaker" Preference Tasks. In this task children saw each speaker individually choose one of two toys and then children could choose between the same two toys. I assessed the number of children that endorsed each speaker's toy choice. A second coder reviewed 50% of the videos and reliability was very good for the Russian speaker ($\kappa = .81$, $p < .001$) and the English speaker ($\kappa = .88$, $p < .001$). Preliminary analyses indicated no significant differences in toy endorsement by age group or task order.

In binomial tests, the number of children who chose to play with the same toy as the Russian speaker (36 of 64), and the English speaker (39 of 64) did not significantly differ from chance. A chi-square test of independence indicated that children's endorsement of the Russian speaker's toy did not differ whether she was present (21 of 32) or on video (15 of 32), $\chi^2(1, N = 64) = 2.286$, $p = .131$. Endorsement of the English speaker was slightly higher when the speaker was present (23 of 32) than on Video (16 of 32), $\chi^2 (1, N = 32) = 3.216$, $p = .073$, Cramer's $V = .224$. Overall, children did not systematically choose to play with the same toy as the one preferred by either speaker.

Forced-Choice Preference Tasks. Scores on the three forced-choice preference tasks were combined to calculate an overall preference score, comprising: a) to whom children chose to give a ball b) whose tool children endorsed, and c) who children chose to show them an additional toy. A second coder assessed 50% of videos and reliability was very good for all three tasks: toy-giving ($\kappa = .94$, $p < .001$), tool-choice ($\kappa = 1.0$, $p < .001$) and extra-viewing ($\kappa = .93$, $p < .001$). Children who chose the English speaker or the Russian speaker on at least two of the three forced-choice preference tasks were

coded as “Preferred English” or “Preferred Russian”. Preliminary analyses indicated no age group differences between overall preference scores. Comparisons of task order revealed a marginal difference that did not reach the conventional level of significance, $\chi^2(1, N = 64) = 3.216$, $p = .073$, Cramer’s $V = .224$; however, I present the results separately.

A chi-square test of independence indicated a significant difference in children’s overall preference scores by condition (split by task order), $\chi^2(3, N = 64) = 8.599$, $p = .035$, Cramer’s $V = .367$; children in the *Live/Preference First* condition were most likely to prefer the English speaker (see Table 4).

Table 4

The number of children who showed an overall preference for speaker by condition/task order

Condition	English	Russian
Live/Preference First	14	2
Live/Learning First	10	6
Video/Preference First	9	7
Video/Learning First	6	10

Therefore, children who saw the speakers Live in the room, and who were given the preference tasks first, were more likely to prefer the English speaker than the Russian speaker. One interpretation of these results is that the Russian speaker’s “out-group” distinction was more salient to the children when she was present in the room (recall that

all participants had little to no exposure to foreign speakers). However, children who spent time with her during the learning tasks warmed up to her and liked her more. See Table 5 for a breakdown of children's preferences on each of the three individual forced-choice preference tasks, which contributed to the total preference score.

Table 5

The number of children who chose the English speaker versus the Russian speaker for the three Forced-Choice preference tasks

	Toy Giving		Tool Choice		"Extra Viewing"	
Condition	English	Russian	English	Russian	English	Russian
Live/Preference First	10	4	12	4	12	4
Live/Learning First	9	7	8	8	11	5
Video/Preference First	9	7	9	7	9	7
Video/Learning First	7	9	8	8	7	9

Chi-square tests of independence indicated no significant difference between conditions (split by task order) on the Toy Giving task (χ^2 (3, N = 64) = 2.328, p = .507); the Tool Choice task (χ^2 (3, N = 64) = 2.755, p = .431); or the Extra Viewing task (χ^2 (3, N = 64) = 3.873, p = .276). Overall, participants in the *Live/Preference First* condition demonstrated the same pattern of performance (choosing the native speaker) on all three tasks.

Comparing Learning & Preferences

To see if children who preferred the Russian speaker were more likely to learn from her, I conducted a chi-square test of independence, which demonstrated that the children were equally likely to over-imitate the Russian speaker χ^2 (1, N = 64) = .105, p = .746 and learn her novel word χ^2 (1, N = 64) = .065, p = .799, whether they preferred her or the English speaker. Therefore, preferences did not appear to affect willingness to learn from the Russian speaker. Similarly, learning from the Russian speaker did not affect preferences. Children who over-imitated the Russian speaker were not more likely to prefer her over the English speaker (χ^2 (1, N = 64) = .105, p = .746) and children who learned a word from the Russian speaker were not more likely to prefer her over the English speaker (χ^2(1, N = 64) = .065, p = .799).

Extension Tasks

Pilot testing indicated that the computerized preference extension tasks were difficult for 3-year-olds. This may be due to the fact that the extension tasks were given at the end of the experimental session and 3-year-olds were tired or because they found it difficult to reason abstractly about friendship choices. Therefore only 5-year-olds completed these tasks. In addition to condition (split by task order), I tested to see if children who preferred the Russian speaker they had seen in the study (e.g., were coded as "Preferred Russian" on the three forced-choice tasks) would be more likely than children who preferred the English speaker on those tasks to subsequently "like" unknown Russian speakers on the computerized extension task.

"One-speaker" Extension task. Participants were shown a photograph and listened to an audio clip of unknown English and Russian-speaking children. Participants rated how much they would like to play with each child (1 = "not at all", 2 = "a little" 3 = "a lot") and I calculated participants' mean ratings of the English-speaking and Russian-speaking children separately. I conducted a 2 (condition: *Live* or *Video*) by 2 (study preference: English or Russian speaker) between-groups multivariate ANOVA on participants' mean ratings of the unknown English and Russian speakers. There were no significant differences in mean ratings of English speaking children or Russian speaking children by condition ($F(2,27) = .664$, $p = .523$, Wilks' Lambda = .953, $\eta_p^2 = .047$) or participants' previous preference for the Russian or English speaker from the study ($F(2,27) = .797$, $p = .461$, Wilks' Lambda = .944, $\eta_p^2 = .056$; see Table 6 for mean ratings).

Table 6

Children's mean ratings of the unknown English and Russian children in the computerized Extension task.

Condition	Study Preference	English	Russian
Live	*Preferred English*	2.27 (.696)	2.27 (.754)
	Preferred Russian	2.07 (.723)	2.00 (.791)
Video	*Preferred English*	2.38 (.518)	2.25 (.707)
	Preferred Russian	2.21 (.665)	1.81 (.799)

Note. Ratings were on a 3-point scale indicating how much participants wanted to play with the child they saw in the photograph: 1 = "not at all", 2 = "a little" 3 = "a lot". Standard deviations are in parentheses.

Forced-Choice Extension task. In this task participants were shown three pairs of photographs (with accompanying audio clips) of an unknown English-speaker and Russian speaker, and had to choose with whom they would rather play. I coded the number of children who preferred the English speaker on 2 of the 3 choices versus the number of children who preferred the Russian speaker on 2 of the 3 choices. A chi-square goodness-of-fit test indicated that the number of children who preferred the English speakers (25) significantly differed from the number who preferred the Russian speakers (6) or neither set of speakers (1), χ^2 (2, N = 32) = 30.063, p <.005. A chi-square test of independence indicated no significant difference on forced-choice extension task answers based on children's previous preference for the Russian or English speaker from the study, χ^2 (1, N = 31) = 2.451, p = .117 or condition (split by task order): χ^2 (3, N = 31) = 1.026, p = .795.

Overall the results of the extension tasks suggest that if forced to choose, 5-year-olds prefer to be friends with a native speaker; however if allowed to assess children individually, they like native and foreign speakers equally. Additionally, preferences from the study did not affect preferences for unknown speakers. One interpretation of this result is that getting to know and like one foreign speaker (live or on video) is not enough to ameliorate an in-group preference for unknown speakers (when forced to choose between native and foreign speakers).

CHAPTER VII

GENERAL DISCUSSION

The present study investigated whether preschool children are "cultural learners" selectively learning from social in-group versus out-group members. Using different methods than those used in previous research led to informative differences in the results. Preschool children learned about novel objects from both an in-group and out-group speaker when each speaker individually presented information. Children's learning was not affected by whether speakers were present in the room or on video. Thus, it is unlikely that preschool children have a bias (innate or otherwise) to selectively learn from cultural in-group members versus out-group members.

Specifically, the results of the present study suggest that 3- to 5-year-olds can learn non-linguistic information (a sequence of behaviors to achieve a goal) from a foreign speaker whether she is present in the room or on video. In this study the foreign speaker acted intentionally over a number of tasks, and provided social cues (such as eye contact and repetition) to indicate that she was offering relevant information. With this evidence that the speaker was intentionally conveying information, preschool children's ingrained social learning skills may have overridden any hesitation they felt about learning from a cultural "out-group" member.

My results contrast with those of Buttelmann and colleagues (2012) who used a between-subjects design in which participants only saw one speaker, and found that 14-month-olds imitated unusual actions of a native speaker shown on video whereas those

who saw a foreign speaker on video did not. Differences in the participants' age may be one reason for the contrasting results. Because my participants were older, they may have had more highly developed social learning skills compared to those of young toddlers (e.g., they may have been more likely to notice the intentional cues of a foreign demonstrator on video). Although in both studies children completed tasks in which they were given information from only one speaker, there is a procedural difference that may have led the participants in the present research to "warm up" more to the foreign speaker. Between sole-information tasks, my native and foreign speaker were seen together (on the screen or in the room) neutrally sitting right next to each other; this may have led children to trust the foreign speaker more than they would have if she were seen by herself (and the only source of information) throughout the whole session. In a follow-up study, I plan to use a between-subjects design in which participants will either see a native or foreign speaker alone. This will allow me to use one bilingual person as the speaker (as in Buttelmann et al., 2012) to ensure that the only difference between the speakers is the language spoken and to investigate whether preschoolers will learn from a foreign speaker when she is not seen with a native speaker.

Using a strict over-imitation coding criterion, the results from the present study and Buttelmann et al.'s are more similar. Three-year-olds (my younger group) who saw the foreign speaker on video learned all three steps, but they did not reproduce her *exact behavioral sequence* (they immediately completed the effective action, and then went back and stuck in the irrelevant action before retrieving the sticker). Buttelmann et al.'s 14-month-old participants learned how objects worked from a foreign speaker (e.g., that pushing a button would make a light turn on) but did not reproduce that person's unusual

actions (e.g., pushing the button with their head) at the same rate as they did for a native speaker (they tended to complete the action in their own way rather than copying the modeler's method). In the present study, 3-year-olds' level of attentiveness to the Russian speaker in the *Video* condition was lower than in the other conditions, however, attentiveness overall was high and did not predict learning. In contrast, Buttelmann et al. did not find a difference in children's attentiveness between those who saw videos of a native speaker and those who saw videos of a foreign speaker. These conflicting results demonstrate the need for more systematic research, using different age groups, presentation mediums and study design, to determine if and when young children demonstrate cultural learning biases. If learning biases are only present at certain ages or for certain tasks, it casts doubt on the argument that in-group biases are pervasive in guiding selective learning. In fact, if a bias to learn from cultural in-group members was present at age 14 months, one could argue it should only get stronger with age, as children gain more experience identifying and selectively learning from cultural in-group members. However, our results show development in the opposite direction: both 3- and 5-year-olds were willing to learn both from a cultural out-group member and an in-group member.

The current study enhances what we know about young children's over-imitation. First, the results indicate that 3-year-olds who see a speaker's face on video (and thus can discern her intentional "cues") can over-imitate her actions; this finding confirms McGuigan and colleagues' (2007) interpretation of 3-year-olds' failure to over-imitate from video when they only saw a speaker's hands (they reasoned that the children needed the intentional cues to realize that this was behavior that could be imitated). Additionally,

children in the present study over-imitated a foreign speaker. This result aligns with Nielsen and Tomaselli's (2010) finding that 2-to 13-year-old children from remote areas in the Kalahari Desert in Africa imitated the irrelevant actions of an English-speaking demonstrator who was there "in person". Nielsen and colleagues (2008) have argued that young children imitate whatever a social partner does, even if it's a seemingly irrelevant action, to affiliate with the demonstrator. In fact, he found that 4-to-5-year-olds imitated more irrelevant actions when the demonstrator was present during testing than on video (Nielsen & Blank, 2011). However, the results of the present study suggest that 3- to 5-years, children's over-imitation is more of an automatic response to copy others faithfully (e.g., Lyons, et al., 2007), as participants over-imitated both native and foreign speakers and did so whether the speakers were in the room or on video. In the present study, the native and foreign speakers were not present when the children were tested (in the "live" conditions" they left the room before testing); thus, it is unlikely that participants were over- imitating to affiliate with the demonstrator. However, the results do not completely rule out the fact that children could have had social goals in mind; children may have over-imitated to please the researcher, who remained in the room during testing.

In contrast to children's willingness to precisely imitate the speaker, neither the 3-year-olds nor the 5-year-olds learned a novel word from a foreign speaker, even when she was present in the environment and the sole source of information. One interpretation is that preschool children consider the *type* of information a foreign speaker offers to determine if it is likely to be relevant to them as members of a cultural in-group (in this case, as members of a particular language community). Children may realize that a foreign speaker is not a good source of information for a *new word* (conventional

information decided upon by a language group), but is a perfectly fine source of information that is less conventional (such as how to use a new object).

An alternative interpretation involves the task demands of learning a word from someone speaking another language. When offered a word by the Russian speaker, children had to hold in mind two pieces of novel linguistic information: the Russian phrase for "this one" (*etet)* and the novel label "fep or dax". Children in our study already knew the English words, "this one" making it easier to focus on the new supposedly-English label "fep or dax"; thus, the task may have been easier when it involved information offered by the English speaker. In line with an explanation based on task difficulty, 5-year-olds had no problem learning from the native speaker, whereas 3-year-olds did not reliably learn a new word from either speaker. In a follow-up study, I will attempt to equate task difficulty in learning a novel label from a native or a foreign speaker (e.g., each speaker could utter only one label and then use non-verbal cues to indicate the referent — see Tomasello, et al., 1996). This will allow me to determine if children are actively monitoring the relevance of linguistic-vs-non-linguistic information offered by a person from a different language community.

When forced to choose, neither 3-year-olds nor 5-year-olds reliably endorsed the English speaker's use of a novel object. In fact, children were evenly split between copying the English speaker's action, the Russian speaker's action or neither speaker (e.g., they made up a new use for the object). This result demonstrates preschool children's willingness to accept that a novel object can have multiple uses (e.g., see Birch, et al., 2008; Defeyter, et al., 2009). In contrast, Kinzler et al. (2011) reported that 5-year-olds, when forced to choose, selectively endorsed novel object functions

demonstrated by native speakers. Because I also included word learning and preference tasks in the same study, I shortened the novel object endorsement task. First, I only tested children's object use endorsement once. Kinzler and colleagues (2011) had four trials with different novel objects. Asking children multiple times about different objects might have increased children's willingness to respond to at least a portion of the trials. I also did not preface the endorsement task in the typical way (in these studies, children first choose from whom they would like to gather information, and then are reminded of the information each speaker offered, before they are given a chance to respond). These procedural supports from the typical trust-in-information paradigm may increase participants' responsiveness and allow for clear patterns to emerge over several trials. However, the fact that children in my study did not endorse the English speaker's actions more often than those of the Russian speaker indicates that children do not automatically assume that a native speaker knows the *only* correct way to use a novel object. That is, even when a foreign speaker's information conflicted with a native speaker's, one-third of the participants in the current study learned and endorsed the foreign speaker's action.

When forced to choose, preschool children may be more likely to expect a novel object to have only one "correct" *label*, than they are to expect it to have only one "correct" function. In line with this conclusion, 5-year-olds were more likely to endorse a native speaker's label than a foreign speaker's label for a novel object. Also, if children did not consider the speakers' social-category information (language) at all, they should have chosen the novel label at chance, yet none of the 5-year-olds endorsed the Russian speaker's label. Of interest, in the *Live* condition 6 (of 16) 5-year-olds did not want to choose (e.g., said "I don't know") when asked what the object was called, whereas none

of the 5-year-olds in the *Video* condition were unwilling to choose (they all endorsed the English speaker). One interpretation is that when a foreign speaker was in the room, right across from children, they had a harder time disregarding her information and thus could not decide on one "correct" label for the object. Without the typical "supports" (e.g., reminders, several iterations of questioning, etc.) used to test young preschoolers in trust-in-information studies, our results for 3-year-olds differed from what is typically found (e.g., Pasquini, et al., 2007). These younger children did not want to choose the label offered by one speaker over the label offered by the other (more than half did not endorse either label). Overall, 5-year-olds' word learning on the forced-choice task does suggest that when a speaker's social-category is obviously relevant to the information she is providing, children use her social category to selectively learn from a cultural in-group member.

In the present study, when the speakers were present in the room, the number of children who preferred a native speaker was equal to the number who preferred a foreign speaker — as long as they were asked preference questions later, after interacting with speakers during the learning tasks. When the speakers were on video, children chose equally between the two (regardless of when they were asked preference questions). Children who briefly saw the foreign and native speaker and then were immediately asked preference questions were the only ones to show an in-group preference. This suggests that when children have no previous history to go on, and are presented with an unfamiliar person in their environment, they prefer the familiar.

For the groups who waited to do the preference tasks, several factors may have contributed to their acceptance of the foreign speaker. First, they spent some with her —

approximately10 minutes in which she was in and out of the room for different learning tasks. However, a foreign speaker's mere presence in the environment might not motivate children to "like" her more (i.e., if she simply came in the room but sat in a corner for 10 minutes), although this could be experimentally tested. Additionally, the English-speaking experimenter, the native (English) speaker, and the child's parent did not express any alarm at the presence of the foreign speaker or shy away from her, thus implicitly accepting her as a perfectly fine person with whom to interact. Similarly, parents allowed their children to watch the video clips of the foreign speaker, and children may have taken this permission as an implicit approval of the people on the video. Additionally, simply playing with the same toys as the foreign speaker (whether in person or with the same toys they saw her playing with on the video) during the imitation and word learning games may have encouraged young children to subsequently like her in the preference tasks.

Of the three forced-choice preference tasks, the one that elicited the most in-group preferences by the children in the live condition was the "extra viewing" task, in which they had to pick which speaker they wanted to show them a toy. Children in the live condition who were given the "extra viewing" task before any extensive interaction with the foreign speaker may have viewed the outcome of this task as having a higher "cost" because they actually had to interact with their chosen speaker face-to-face. In contrast, video may offer a "safe" psychological distance (DeLoache, 2000) from which to experience people who are different from the self. Under these safe conditions, children in the video condition may have been curious to see a bit more of the foreign speaker:

They were equally likely to choose her or the English speaker for the "extra-viewing" task.

Overall, the results of our study align with some social psychology research that overwhelmingly demonstrates the positive effects of intergroup contact in reducing prejudice (see Pettigrew & Tropp, 2006 for a meta-analysis). Some factors in the current study are in line with those suggested by Allport (1954) to support the beneficial effects of intergroup contact, including the support of authorities (e.g., in this case the experimenter and children's parents) as well as the presence of common goals (e.g., retrieval of the sticker, playing with the same toys). Researchers have demonstrated that even *vicarious* extended experience with out-group individuals can reduce in-group biases, such as reading stories about in-group members befriending out-group members (Cameron et al., 2006) or having "parasocial" contact (seeing media portrayals of out-group members and developing a feeling of affiliation with them – Schiappa, Gregg & Hewes, 2005). Factors such as these may partly explain why, after being introduced to an individual "character" on video (i.e., the Russian speaker) in our study, children did not show an in-group bias.

Of relevance to the "contact" explanation of our results, a mediator of the effect of intergroup contact is intergroup anxiety, which can potentially inhibit the positive effects of intergroup contact (Voci & Hewstone, 2003, as cited in Pettigrew & Tropp, 2006). In the present study, a few children showed evidence of anxiety (e.g., crying, running back to their parents) when the foreign speaker present in the room first began to talk. In future studies, I could examine whether individual differences in young children's response to novel individuals would mediate the effectiveness of intergroup

contact in reducing in-group biases. Possibly, some children would be more likely to benefit, at least initially, from indirect contact.

In previous studies looking at children's preferences for in-group speakers (using photos/audio clips of multiple exemplars of out-group members), young children *on average* have preferred native speakers. For instance, Kinzler and her colleagues (2007) showed participants 8 pairs of speakers. In contrast, children in our study were asked three times about one individual out-group speaker, and they were less likely to show an in-group bias. When reasoning about one in-group speaker versus one out-group speaker, children may have been more focused on fairness than on group membership (e.g., choosing a native speaker on one task and then a foreign speaker on another). In accord with this explanation, over half (55%) of the participants in the current study chose the out-group speaker on at least one of the three preference tasks. Several researchers have demonstrated that children are often more concerned with fairness than group membership in experimental tasks (e.g., see Killen, Pisacane, Lee-Kim, & Ardila-Ray, 2001, Schmidt et al., 2012).

Overall, many children liked the Russian speaker, even when she was on video, but this did not transfer to liking unknown Russian speakers during the extension task, where participants were reasoning based on photos with accompanying audio clips. An in-group preference on the extension task only appeared when children were forced to choose. 5-year-olds in the present study were more likely to choose to play with unknown English speakers than non-native speakers, which replicates previous studies (e.g., Kinzler et al. 2007). I also included a "One-speaker" extension task, in which participants rated unknown English and Russian speakers individually. Five-year-olds

rated the English and Russian speakers equally; thus they did not demonstrate an in-group bias. An explanation for the divergent results across studies might be that an initial bias to prefer the familiar can be overcome when children are given experience with an individual out-group member (some research indicates even "parasocial" experience via video may be sufficient), or when they are asked about one individual at a time.

Our results suggest that *preferences* are not necessarily linked to *learning biases*. Task order did not have an effect on children's learning; "priming" children to like one speaker over the other by asking preference questions first did not affect children's willingness to learn from a foreign speaker. For instance, children who preferred the English speaker were not less likely to learn from the Russian speaker. Thus we did not find evidence for a "halo" effect; preferring a speaker did not lead children to think she would be a better source of information than another speaker (See Brousseau-Laird and Birch's 2010 study for the converse relation, in which 5-year-olds thought accurate informants would also be nice).

Our results do not support the existence of a hard-wired mechanism by which children use a speaker's language to form enduring preferences and to guide learning. The specificity of such a claim is problematic. Many have suggested the possibility that evolution has endowed humans with a mechanism for reasoning about the social world; however, it is unlikely this mechanism was adapted for reasoning about *specific* social group divisions such as those based on language (e.g., Bigler & Liben, 2007; see also Atran's and Gelman's responses in Gil-White (2001)). Researchers interested in social categorization are not unique in looking to evolutionary causes for individual behavior. Social learning theorists also have invoked evolutionary explanations for the distinctive

social cognitive abilities of humans (e.g., Csibra & Gergeley, 2006; Leslie, 1994; Tomasello, 1999). Yet as Elman and colleagues (1996) write:

> it is certainly possible, indeed likely, that uniquely human activities have played some role in the evolution of a uniquely human brain. This does not mean, however, that we are entitled to leap directly from 'special' content to 'special' mechanisms. (p. 361)

Using research methods from multiple disciplines may be one way to truly investigate how evolution may have contributed to human social cognition. For example, neuroscience research can shed some light on what an adapted mechanism for reasoning about social groups might look like in the brain (e.g., as fMRI research has done for social behaviors such as processing faces — Kanwisher, McDermott & Chun, 1997). Yet even identifying delineated brain regions specific to certain social behaviors does not offer definitive support for evolutionary adaptations, as it is still possible that evolution endowed humans with domain-general mechanisms that become highly specialized through early and sustained experience (e.g., Gauthier, Tarr, Anderson, Skudlarski, & Gore, 1999). Mesoudi (2009) calls for psychologists interested in evolutionary causes to consider Cultural Evolutionary Theory, an interdisciplinary field that attempts to link individual-level phenomena from psychology with population-level models used in anthropology (e.g., Boyd and Richerson, 2005, as cited in Mesoudi, 2009) to determine human behaviors that truly may have been adapted by evolution.

Preschool children demonstrate both naïve sociological thinking (e.g., Hirschfeld, 2001) and naïve psychological thinking (e.g., Wellman & Gelman, 1992), whether they

are endowed by evolution with specific insights and biases or simply learn these through early experience. Children of this age use *social group* membership to guide their reasoning about other people (e.g., Diesendruck and haLevi, 2006; Hirschfeld, 1996). Despite the fact that children's "theory of mind" (naïve psychology) has been a hot topic in psychology for several decades, Rhodes (2013) points out that research clearly demonstrates that "pre-school age children often weight the causal features specified by naïve sociology (e.g., categories, norms) more heavily than individual mental states (e.g., traits, desires) to predict individual action" (p. 1914). However, preschool children use evidence of an individual's mental state (e.g., his or her previous accuracy) to decide from whom to learn. Thus when reasoning about someone's trustworthiness as an information source, that person's mental state may "trump" her social category. In our study, I gave children no mental state information about the speakers (e.g., previous accuracy or expertise), so children may have presumed that either speaker was a perfectly fine source of information. The results of our study suggest that children do not rely on social-category information to guide learning (unless information is clearly conventional and they are forced to choose between conflicting sources), but I did not directly compare children's use of social-category information to their use of individual mental state information. One recent study has directly compared a speaker's accuracy and information about that person's social-category information (accent) and demonstrated that by the age of 4 years, children relied on a speaker's accuracy to guide learning, regardless of her accent (Corriveau, Kinzler & Harris, 2013). This finding was particularly striking because the informants offered novel label information (i.e., a domain in which one might expect a native speaker to be preferentially trusted).

Nevertheless, children still learned based on a speaker's accuracy (not accent). These results, along with those of the present study, cast doubt on previous claims that children's attention to a speaker's accent may systematically guide selective learning (Kinzler et al., 2011). Children also privilege accuracy over age (another social category): young children trusted information provided by an accurate child over an inaccurate adult (Jaswal & Neely, 2006). Therefore, when it comes to learning, young children may (wisely) attend to a prospective teacher's mental state more than her social category.

In our study, the only situation in which the children used a speaker's social category to guide learning was when they were forced to choose between two conflicting *labels* for an object, a situation in which the speaker's social category (language) was relevant to the information she was providing (an object label). This finding suggests that children may use social-category information when deciding between informants for clearly relevant information. However, the clear connection between a speaker's language and word learning may be a highly salient social-category-to-information link that preschool children can easily recognize. Or children may consider any social category (ethnicity, age, race, shirt-color) when deciding whether to trust an informant if the information being offered is noticeably linked to *that specific* social category. For example, children trusted information provided by another child rather than an adult when the subject was how to operate a new toy (VanderBorght & Jaswal, 2009). Therefore, preschoolers may use social-category information as one characteristic (among many) to guide learning, but they may only do so when a speaker's social category is clearly relevant to the information being shared. Rather than "culturally-

constrained" learners, I believe that preschoolers are flexible students of the social world, with the ability to discriminate among teachers if given clear reason to do so, but whose default is to trust the information provided to them.

APPENDIX A

Russian-English Translation of all Speaker Utterances in the Study

Language Demonstration

Привет, меня зовут Жаклина.

"Hi! My name is Jaquelene" (or Eliz would say her name in Russian)

Смотри, лошадка! Лошадка скачет галопом по столу.

"Look, a horse! The horse is galloping on the table."

Смотри, черепаха! Черепаха скачет по моей руке.

"Look, a turtle! The turtle is jumping on my hand."

Смотри, овец! Овец прыгает в ведре. Пока!

"Look, a sheep! The sheep is jumping in the bucket. Bye!"

"One-Speaker" Imitation Task

Привет! Пока!

"Hi! Bye!"

Forced-Choice Imitation Task

Я делаю это. Я Делаю это.

"I do this. I do this."

"One-Speaker" Word Learning Task

Ууу! Утка. Утка. Ууу! Машина. Машина.

"ooo! Duck. Duck. ooo! Car. Car."

Ууу! Fep! Fep! Ууу! Этот! Этот!

“ooo! Fep! Fep! Ooo! This one! This one!” (note, “fep” was counterbalanced with the word “dax”)

Ууу! Ложка! Ложка.

“Ooo! Spoon! Spoon.”

Ложка? Ложка?

“Spoon? Spoon?”

Fep? Fep?

“Fep? Fep?”

Forced-Choice Word Learning Task

Ууу! Время! Время!

“Ooo vrema! Vrema!” (note, “vrema” was counterbalanced with the word “jukta”)

“One-Speaker” Preference Task

Привет! Хм, я хочу это! Пока!

“Hi! hm, I want this one! Bye!”

Forced-Choice Preference Task

Я использую этот.

“I use this one.”

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