Children's Use of Social Cues When Learning Conventions

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Abstract

In a series of two experiments we examined 5-year-old children's motivations for learning new conventional actions. Children watched two teachers open a novel container; the teachers differed in the non-functional, conventional actions they used in the process. In Experiment 1, one teacher spoke with a native accent and the other with a non-native accent. Children showed a preference for following the native-accented teacher, and this preference was interpreted as a motivation to match an in-group member. In Experiment 2, the speech accent of the teacher was crossed with explicit expressions of (un)certainty by the teachers. In this case, children preferred the more certain teacher, even when the certain teacher spoke with a non-native speech accent. This preference was taken as demonstrating a utilitarian motivation that led to choosing the teacher most likely to have useful information. Taken together these results suggest that by 5 years of age, children are motivated by both utilitarian and in-group considerations when selecting between sources of information; however, when forced to select between the two motivations utilitarian concerns take precedent.

Social conventions are a cornerstone of human culture. Within the domain of human knowledge conventions are unique. Unlike objective knowledge – such as how to build a bridge – their validity does not depend on how well they correspond to objective features of the world; however, conventions are also unlike strictly subjective elements such as personal opinions because their validity is not determined by individual preference. Instead, conventions constitute a type of knowledge that is both created and arbitrated by people. They are behaviors that are grounded in social interactions and they depend on the fact that they are shared within a social community (Kalish & Sabbagh, 2007).

A large number of phenomena are covered by the general term of social convention. These range from behaviors that have profound and obvious functional utility, such as language (e.g., Clark, 2007; Sabbagh & Henderson, 2007), or artifact function (German, Truxaw, & Defeyter, 2007), to behaviors that serve the purpose of marking social membership, such as politeness conventions and games (Rakoczy, 2007). What unites these disparate behaviors is the fact that their usefulness depends on their consensus adoption by a social community. The current studies consider how children join the consensus on conventions: How do they decide when a potential conventional behavior is one that they should adopt for themselves?

Given the disparate nature of conventions, it is likely that there are a large number of motivations that drive the adoption of individual conventions. However, two motivations seem to be particularly important: the expectation of eventual utility, and the desire to conform to the social in-group. The utilitarian motivation suggests that we follow social conventions because we believe that doing so will lead to some tangible benefit. In some cases, the nature of the benefit may be quite clear, for example, driving on the right side of the road. Failure to conform to this particular convention has very real consequences for safety and efficacy of travel. In other cases, the causal link between the convention and the benefit may be opaque. For example, an amateur cook may add ingredients to a recipe in a prescribed order without any understanding of why (or even whether) the order is important. She follows the order because a leader in her community does it and she has implicit faith that the directions will ultimately lead to a better functional outcome. On the other hand, in-group identification motivation suggests that

we follow our community's conventions because we identify with our community peer group and want to be like them. This motivation accounts well for social conventions that serve primarily as markers of social membership: the fundamental goal is to signal that one is a member of a particular social group.

If children are motivated by utilitarian concerns when adopting conventions, then they should be sensitive to whether their teacher has appropriate knowledge of a domain. One should follow the conventions of a master chef when learning about cooking, but not when building a bridge; the chef's expertise does not extend beyond the domain of cooking. More specifically, one must be able to identify and appropriately interpret which social cues signal the possession of critical information to be learned (e.g., Kalish & Sabbagh, 2007; Tomasello, 2008). There is a rapidly growing body of literature suggesting that by age four children have a remarkable ability to use a variety of different cues when differentiating between social sources of information. In a typical study, children are presented with two teachers who provide conflicting pieces of information – such as providing different labels for a novel object. The teachers differ along a particular dimension, and children's choice of which teacher they follow indicates their appreciation of the tested dimension. This method has shown that children are sensitive to several dimensions, including past reliability (Birch, Vauthier, & Bloom, 2008; Scofield & Behrend, 2008; Fitneva & Dunfield, 2010; Koenig, Clement, & Harris, 2004), certainty (Jaswal & Malone, 2007; Sabbagh & Baldwin 2001), age (Jaswal & Neely, 2006), consensus (Corriveau, Fusaro & Harris, 2009; Fusaro & Harris, 2008), and access to information (Robinson & Whitcombe, 2003). It seems clear, therefore, that pre-school

aged children are capable of appropriately assessing whether a teacher possesses the knowledge they want to acquire, and are thus well positioned to use a utilitarian motivation when learning conventions.

In contrast, if children are motivated by in-group identification, and are seeking to learn the appropriate way to do things in their social group, then they should be sensitive to cues the suggest a particular individual is a member of that social group. One important cue to social group status is the accent with which an individual speaks (Labov, 1966/2006). Adults can reliably categorize individual talkers by their speech accent and can determine whether or not they speak the local regional variety (cf. Clopper & Pisoni, 2004; Clopper, Rohrbeck & Wagner, in press). Moreover, adults make systematic social judgments about individuals solely on the basis of their speech accent, judging people who share their native accent and people who speak higher-prestige accents as more socially desirable (Anisfeld, Bogo & Lambert, 1962; Giles, 1970; Luhman, 1990; Clopper et al., in press).

Pre-school aged children also understand that language can act as a social marker.   For example, children associate speech in a language they don't know with unfamiliar clothing and housing styles, suggesting that speakers of such a language are in the child's out-group (Hirschfeld & Gelman, 1997). Moreover, recent work has shown that children can draw appropriate social inferences about the identity of a speaker's addressee as a function of the speech style (formal, casual, infant-directed) being spoken (Wagner, Greene-Havas & Gillespie, 2010). Beyond this general knowledge that language marks

social information, children also show a strong social preference for speakers of their native language from very early in development. Infants prefer to accept toys from speakers of their native language (Kinzler, Dupoux & Spelke, 2007) and pre-school aged children preferentially choose native speaking children as potential friends (Kinzler et al., 2007; Kinzler, Shutts, DeJesus & Spelke, 2009) and prefer items associated with them (Shutts, Kinzler, MeKee & Spelke, 2009). In addition, pre-school aged children show a preference for learning from a native accented speaker, even when the speaker's communication contains nothing but nonsense speech (Kinzler, Corriveau & Harris, 2011). It seems clear, therefore, that pre-school aged children are aware of the social marking abilities of language, and further, have a strong preference for members of their in-group; thus they are well positioned to adopt an in-group motivation when acquiring conventions.

Previous research therefore suggests that young children have the social-cognitive prerequisites needed to effectively adopt both utilitarian and in-group motivations for social learning. We turn next to consider one particular domain in which children must navigate social conventions, namely learning how to use artifacts. Although the purpose of a particular tool is constrained by its materials and properties, these constraints are under-determined (e.g., Bloom, 1996; German et al., 2007). A fork affords the ability to pick up food off a plate but it also affords the ability to comb your hair. Which of these two affordances is the appropriate use of a fork isn't implicit in the object, but instead a function of convention. We can push this example even further. Conventions not only affect what we use a tool for (eating), but also *how* we use the tool (we place it to the left

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of our plate, with the tines facing up; if we are American, we switch which hand holds it depending on whether it is being used alone or in concert with a knife). This second consideration, the *how* consideration, is particularly interesting because it affords no functional significance: it is a convention in the purest sense of the word.

Children appear to readily imitate such non-functional, conventional behaviors from an early age. In a classic study (Meltzoff, 1988), infants who watched an experimenter perform a familiar action (e.g. turning on a light) in an unfamiliar way (e.g. by using her head) frequently imitated the unfamiliar method. Moreover, their choice does not seem to be driven by a belief that the unfamiliar method was causally necessary. In later work (Gergely, Bekkering & Kiraly, 2002), infants did not imitate the unfamiliar action in all situations, but only when the experimenter chose to do it freely. More generally, children's production of obviously non-functional behaviors when achieving a goal has been termed *overimitation* (Lyons, Young & Keil, 2007). In seminal work by Lyons, pre-school aged children were shown how to open novel boxes to retrieve a prize. The demonstration included both functionally necessary actions as well as non-functional actions which were essentially social conventions. For example, the experimenter might ring a bell or knock on the side of the box before opening it. Children overwhelmingly chose to include these conventional actions when opening the box themselves. Interestingly, the tendency to overimitate appears to be a universal human tendency (Nielsen & Tomaselli, 2010) that is not observed in other species (Call & Tomsello, 1995).

Lyons et al. (2007) showed that children could make accurate assessments about which steps were causally necessary to open the box and which were not. The fact that they chose to include the non-causally necessary steps, they argued, reflected social motivations. However, it is still quite unclear whether those social motivations were tied primarily to in-group considerations (children may have identified the experimenter as a member of her in-group) or to utilitarian considerations (children may believe there will be a long term payoff to including the convention even if it was not apparently necessary in the short term).

The current set of studies draws both from the literature on over-imitation as well as on the work on social source selection and combines them for the first time into a single experimental paradigm. The over-imitation literature has established non-functional actions as paradigmatic conventions. By presenting them alongside functional actions which are clearly critical to achieving a set goal (such as opening a box), the distinctive character of the conventions is highlighted – including the fact that conventions must be learned socially and cannot be inferred from the causal properties of the object in hand. To determine what motivates children to learn a convention, it is important that something that is unambiguously conventional be the center of the task. Moreover, the source selection paradigm provides a clear way to test specific factors that might influence children's motivations, and therefore is well suited to examine children's relative reliance on utilitarian and in-group motivations.

However, although there is ample evidence that children can consider a number of factors when selecting among social sources for information, the source selection literature has been limited in how it has approached different motivations. Much of the previous research has implicitly assumed that the children's motivation was to acquire accurate information. As a result, many of the studies paired an individual who possessed knowledge (reliable, certain) against one who did not (unreliable, uncertain). And some studies looking at speech accent as a cue have done so in the context of word learning (Behrend, Ransom & Schwartz, under review) where language is most likely a marker of accurate knowledge. Therefore, these studies only allow us insight into the utilitarian motivation for acquiring conventions. Similarly, investigations into children's willingness to rely on in-group markers such as speech accent (Kinzler et al., 2011) have also focused on a single cue, and therefore can only allow insight into one type of motivation – in that case, in-group motivations.

The following experiments directly investigate children's learning of social conventions and consider how they might be motivated by both in-group and utilitarian considerations. Because there is substantially less work in the field establishing that children can use speech accent as a cue for learning conventions, Experiment one is a replication of the Kinzler et al. (2011) finding that children preferentially learn from a teacher with a native accent over a teacher with a non-native accent. It is also an extension of that work, because it examines children's preferences with fully conventional, non-functional actions. Experiment two considers how children respond when the utilitarian and in-group motivations are pitted against one another through

contrasting cues. Following the work of Lyons, these studies use novel containers that are opened with a combination of functional actions and non-functional conventional actions. Of primary interest is which conventional actions children choose to adopt. Following the literature on social selection, children are presented with two teachers, each of whom demonstrates a different set of conventional actions. Children's own actions are coded for which of the two teachers they followed. Moreover, to add a measure of consistency, children were asked not only to open the novel container for themselves, but also to demonstrate how to open the container for a naïve adult (their caregiver).

EXPERIMENT 1: USING GROUP MEMBERSHIP CUES TO LEARN CONVENTIONS

Methods

Participants

Fifty-nine 5- to 6-year-old children *(M=* 72; 18*, range:* 61; 8 $-$ 89;27 *)* participated, either at a local science museum or in a university lab. Approximately half of the subjects were female, and the overwhelming majority of them were Caucasian. An additional seven participants were excluded due to experimenter error (3) or failure to complete at least 3 full trials (4). To insure that all children had roughly equivalent language exposure, the parents of all child participants were asked a brief set of questions about their language background. All children included in the study were reported to be typically developing monolingual speakers of American English, and none were reported

to have any regular contact with people who spoke with a foreign accent. An additional

thirteen children were excluded for not meeting these criteria.

Procedures

Children were seated next to an experimenter and their demonstration partner was seated

out of sight of the testing session (for all but 6 children, this partner was a parent). The

session began with the child watching the familiarization movie on a laptop computer,

and proceeded through four test trials.

The familiarization movie introduced the child to both of the teachers, including their

speech accent (see Figure 1). One teacher consistently spoke with a native American

English accent and the other teacher consistently used Mexican Spanish accented

English. To insure that children were responding to the accent and not physical

characteristics of the actors, the audio and video tracks of all the movies were created

separately and speech accent was counterbalanced with actor; thus for some children,

actor 1 appeared to speak with a native accent while for other children, actor 2 spoke with

the native accent. To facilitate this counterbalancing, the actors were filmed from the

back while speaking, so that their mouths could not be seen. The overall flavor of the

movies was similar to an instructional video: the actors faced the camera and waved

when introduced and when they completed each trial, but during the demonstrations, the

focus was on the containers, which were seen over the shoulder of the actors. During

familiarization, the actors appeared to speak while entering a room, with the camera

following them from behind.

Every participant saw four trials, each with a different novel container. Each trial consisted of the same steps. (1) Participants watched a movie in which one teacher demonstrated how to open the container and then watched another movie in which the second teacher demonstrated how to open the container. In the demonstrations, the teachers both physically performed all the actions and described what they were doing as they did it. (2) After the demonstrations, participants were given the actual container and asked to open it to retrieve a small object. The behavior in this part of the trial was coded as the participants' imitation. (3) After the imitation, the object was replaced and the container closed up, and the participant's demonstration partner was brought to the testing area. The participant was then asked to demonstrate how to open the container to their partner. The behavior in this part of the trial was coded as the participants' demonstration. Participants were praised for their performance, regardless of what actions they performed.

Stimuli

The four novel containers and their associated actions are shown in Figure 2. Three actions were demonstrated for each container; for half of the containers, two of these actions were functionally required to open the container and for the other containers, only one was required to functionally open the container. The remaining actions were non-functional and served as proxies for conventions. The functionally necessary actions were held constant across the teachers (they were actually necessary for opening the container); each teacher, however, used different non-functional actions. The pairings of

particular non-functional actions with both speech accents and actors were fully counterbalanced.

Coding

The analyses of interest focused on the non-functional, conventional actions. Because this was an open-ended task that did not force children to restrict their choices to a single teacher, the speech accent of the teacher was treated as an independent variable. Thus for both the imitation and demonstration phases of each trial, participants were scored for the number of non-functional actions they performed that followed the native speaking teacher as well as the number of non-functional actions that followed the non-native accented speaking teacher. The scores for each teacher ranged from 0 to 2, reflecting the number of actions that were followed. Note that the scores for each teacher are logically independent of each other: children could choose to follow only a single teacher in a trial, but they could also produce actions from both teachers, or they could opt to omit the non-functional actions altogether. In fact, this latter possibility was an infrequent occurrence.

Results

All participants performed the functional actions 100% of the time and retrieved the object within the container on every trial. This finding is not surprising as these actions were modeled in identical ways by both teachers and they were necessary to open the containers. Moreover, participants overwhelmingly opted to include non-functional actions in their performances, omitting them entirely on only 3.9% of opening events.

Across the four trials, participants saw a total of 6 non-functional actions from each teacher. Figure 3 shows the average number of participants' non-functional actions that followed each speaker during the imitation phase and during the demonstration phase. An ANOVA was conducted with Experimental phase (Imitation vs. Demonstration) and Speech accent (Native vs. Non-Native) as independent variables and the number of performed actions as the dependent variable. The results found a main effect for Speech accent ($F (1, 58) = 35.5$, $p < 0.001$) but no effect for Experimental phase and no significant interaction.

We next looked at various ways in which participants might be consistent in their imitations. First, we asked whether participants were consistent across the imitation and the demonstration phases of the tasks. Correlations between these two phases for each individual trial of children's inclusion of the non-functional actions of the Native speaker ($r = .83$, $p < .001$) and the Non-Native speaker ($r = .80$, $p < .001$) were quite high, indicating that children performed largely the same actions when opening each container for the second time. Next, we asked if children's preference for following the Native speaker extended to all four containers, and found that it did. Paired t-tests comparing the number of Native and Non-Native actions performed for each item showed children performed more Native actions for each, and further, that the difference was significant for three of the four items individually (container 1: $t(58) = 3.4$, $p < .001$; container 2: $t(58) = 1.53$, n.s.; container 3: $t(58) = 4.15$, $p < .001$; container 4: $t(56) = 2.8$, $p < .007$). Finally, we asked if children were consistent within individual trials: did they follow only one teacher per container, or did they create a sequence that combined actions from both

teachers? Approximately half of the children (51%) did use as least one combination sequence that drew from both teachers on a single container. However, few children used such sequences on more than one trial, and overall, such combination sequences accounted for only 12% of all the opening events. Given their rarity, it seems most likely that these combination sequences reflect momentary cognitive difficulties, such as a difficulty in monitoring the sources of the actions, rather than any considered strategy on the children's part. Thus, children's preference for following the Native speaker was consistent within each opening event, across phases of the trial, and across all the different containers.

Discussion

This experiment found that pre-school aged children selectively learn non-functional conventional actions from a native speaker over a non-native-accented speaker. This result is a conceptual replication of Kinzler et al. (2011), extending that work to the domain of fully conventional actions. These results suggest, therefore, that one important factor influencing children's acquisition of conventions is the desire to behave as other members of their in-group do.

EXPERIMENT 2: GROUP MEMBERSHIP VS. INDIVIDUAL CERTAINTY CUES

The previous experiment showed that children consider group membership when deciding which social conventions to adopt. In Experiment 2, we pitted in-group

motivations against utilitarian ones by contrasting cues to group membership with speaker certainty while demonstrating how to open the containers.

Methods

Participants

Thirty-four 5- to 6-year-old children (*M*= 66;12*, range*= 60;7-74;1*)* participated, either at a local science museum or in a university lab. Approximately half of the subjects were female, and the overwhelming majority of them were Caucasian. One additional participant was excluded for failing to complete at least 3 full trials. All children included in the study were reported to be typically developing monolingual speakers of American English, and none were reported to have any regular contact with people who spoke with a foreign accent (and no additional children failing to meet these criteria participated in this study).

Stimuli And Procedures

The stimuli and procedures were identical to those of Experiment 2 with the following exception. For each child, one of the teachers expressed uncertainty during her demonstration. In particular, before each step in the sequence, she would add a hesitation filler (*um.. er*) and the phrase *I think*. The same teacher was uncertain throughout all four trials. The certain speaker used the script from Experiment 1. Across participants, the pairing of uncertainty and accent was manipulated, so that half the children saw a consistently uncertain native accented teacher paired with a consistently certain non-native-accented teacher while half the children saw a consistently uncertain non-native-

accented teacher paired with a consistently certain native accented teacher. Children

were randomly assigned to one of these two conditions.

Coding

The coding procedures were identical to those in Experiment 1.

Results

As in Experiment 1, all participants performed the functional actions 100% of the time

and retrieved the object within the container on every trial. The non-functional,

conventional actions were included on the vast majority of trials, and were omitted

completely on only 0.7% of trials. Figure 4 shows the average number of participants'

non-functional actions that followed each speaker for the two certainty conditions (when

the Native speaker was certain and when the Non-Native speaker was certain). An

ANOVA was conducted with Speaker Certainty as a between subjects factor (Native

Speaker Certain vs. Non-Native Speaker Certain) and Experimental phase (Imitation vs.

Demonstration) and Speech accent (Native vs. Non-Native) as within subjects factors; the

number of performed actions was the dependent variable. The results found a main effect

for Speech accent ($F_{(1, 32)} = 7.31$, $p < 0.011$) and an interaction between Speaker

Certainty and Speech accent ($F_{(1, 32)} = 17.0$, $p < .001$). No other main effects or

interactions were significant. The significant interaction between Speaker Certainty and

Speech accent reflects children's preference for following a teacher who sounds certain:

children preferentially followed the certain teacher's actions regardless of her speech

accent. Follow-up t-tests showed that children significantly preferred to follow the

Native over the Non-Native speaking teacher when the Native speaker was certain (t (16) = 9.02, p < .001) and marginally preferred to follow the Non-Native speaking teacher over the Native one when the Non-Native speaker was certain (t (16) = 1.34, p = 0.10). Moreover, children significantly preferred to follow the Certain Native speaker over the less certain Native speaker (t (16) = 4.7, p < .001) as well as the Certain Non-Native speaker over the less certain Non-Native speaker (t (16) = 5.08, p < .001). These results are shown in Figure 4.

We also investigated children's consistency in this experiment, suspecting that because two factors influenced their behavior, they might also show greater variability in their performance. However, as in the previous experiment, children were highly consistent in their choices along all the dimensions we examined. There was a high correlation between the imitation and demonstration phases of each trial in terms of the inclusions of the non-functional actions of both the native speaker (r = .87, p < .001) and the non-native speaker (r = .91, p < .001). Moreover, the critical interaction between the Speaker Certainty factor and Speech accent was found to be significant for three of the four containers individually (container 1: F (1,32) = 4.8, p < .036; container 2: F (1, 33) = 3.0, p < .10; container 3: F (1, 33) = 7.1, p < .012; container 4: F (1, 33) = 5.0, p < .033). And finally, there were very few instances of children combining the non-functional actions of both teachers into a single sequence for a container. Only 38% of the children ever performed a combination sequence, and such sequences accounted for only 11% of all opening events. Moreover, there was no significant difference in the rate of these combination sequences depending on which teacher was certain. Thus, as in Experiment

1, children were quite consistent in their preferences within each opening event, across phases of the trial, and across all the different containers.

Discussion

This experiment replicated the results from the previous experiment: pre-school aged children showed an overall preference to imitate the non-functional actions of the native-accented teacher over the non-native-accented teacher. However, this preference was tempered by an interaction with speaker certainty. Children showed a preference for the more certain speaker, regardless of accent. When the native speaker was certain, children's preference for this teacher was extremely robust, and when the non-native speaker was more certain than the native one, children imitated the non-native speaker more than the native one. Thus, children appear to be more highly motivated by utilitarian concerns: they prefer most of all to follow a teacher who sounds confident that she possesses necessary knowledge.

GENERAL DISCUSSION

What motivates children to learn about conventions? Conventions are, by definition, actions that are not causally necessary to achieve a particular outcome, but instead derive their power from a social consensus of their importance. The acquisition of conventions is therefore fundamentally a social learning task. The results from these studies suggest that children are driven by both in-group and utilitarian motivations when learning conventions. When given the choice between learning conventions from an in-group and an out-group member (where group membership is signaled by speech accent), pre-

school aged children preferentially learned from the in-group member; When given the choice between learning from a teacher who appears to possess useful information over one who does not (where the possession of knowledge is signaled by how certain a speaker sounds) children preferentially learned from the teacher who sounded certain of what they were doing. Moreover, when forced to choose between a teacher who was an in-group member and one who sounded certain, children preferred the certain teacher. It therefore appears that utilitarian concerns outweigh in-group concerns in this task.

Putting aside the question of who children prefer to learn from, it is worth noting a more basic result found here, namely the fact that the children reliably produced non-functional conventional actions. These results provide a robust replication of the Lyons et al. (2007) overimitation findings. When learning how to open a novel container, children do not simply reproduce the causally necessary actions, but also produce actions that have no functional connection to the outcome of opening the container. Children's learning is therefore not focused solely on the structural features of the containers themselves, but encompasses the larger social learning situation. A reviewer further pointed out that this work also shows how eager children were to make use of socially related inferences. In this task, children received the most information about the causal steps for opening the box– both of the teachers performed those actions in the same way. One might, therefore, expect that children would focus on these consistent actions at the expense of the more individualized non-functional preferences of the teachers. However, this was not the case: even though children saw the non-functional actions performed by only one teacher, they still reliably produced them. To be fair, we did not provide an independent

assessment of children's understanding of which actions in this task were in fact functionally necessary; and although it is highly unlikely that children of this age believed that an action like tapping on the side of the box was required to open it, it is possible that the children viewed the teachers as offering alternative functional methods for opening the box. If this unlikely alternative is in fact true, it does not undermine the key findings of this work but merely shifts them slightly: On this alternative story, children are sensitive to the social learning situation when deciding among equally functional methods (e.g. Kinzler et al. 2011).

Considering the choice of which teacher's conventions to adopt, children appear to be deliberate and consistent in their choices. Having adopted a particular conventional action(s), children maintain the same ones when asked to demonstrate how to open the container a second time.   Moreover, children's choice of which teacher to follow was consistent within each trial: for each particular container, most children followed only a single teacher. This latter kind of consistency suggests that children were creating action representations that were linked to specific teachers. They were not just producing all of the actions they had seen performed on a given container but were restricting themselves to following the actions of a particular individual person. Children's consistency suggests that children's choices were driven by properties of the teachers in this task.

As noted, children's choice of teachers was influenced both by cues to in-group membership (speech accent) and by cues to possession of relevant knowledge (certainty). We have argued that these two kinds of cues tap into two different motivations, but it is

worth considering whether the cues used really do clearly link to the two motivations, and also whether the two kinds of motivations are really distinct from each other.

The first concern is about what speech accent is actually doing in this task. In both experiments, children preferred to learn from a native speaker over a non-native one, and we have argued that this preference reflects a preference for in-group over out-group members. While speech accent is clearly a marker of in-group membership, it is also possible that non-native speech may be more difficult to understand. Pilot testing with the non-native materials showed that children would reliably follow a non-native teacher when she was the only teacher presented, so it is not the case that the non-native teacher was simply too hard to follow. But it is still possible that the non-native teacher was marginally more difficult to understand and that children's preference for the native teacher simply reflects a preference for marginally easier instructions. This possibility cannot be ruled out with the current materials, but if true, it makes the results of Experiment 2 all the more striking. Recall that in Experiment 2, children preferred the Non-native speaker more when she was also the certain teacher. If intelligibility is the critical distinction between the speech accents, these results would suggest that children prefer a teacher who seems to know what she's doing even if she can't convey that knowledge as effectively as one who doesn't.

A related possibility takes the opposite approach: it may be that children favor the native teacher simply because the native speech seems more familiar. Children's preference may not reflect any appreciation of an in-group/out-group distinction, but simply a

preference for speech similar to what they know. This possibility also cannot be ruled out with the current materials, but as with the previous case, if it is true, it only serves to make the results of Experiment 2 more impressive. Parallel to the case of intelligibility, children's preference for a familiar speaker was strongly tempered by the certainty of the speaker. Both this analysis and the previous one concerning intelligibility suggest that the certainty cue, and by extension the utilitarian motivation, are profoundly important for children when learning conventions.

An alternative analysis of speech accent suggested by a reviewer stems from the particular materials used. Because there was only a single native speaker and a single non-native speaker in the task, it is possible that the non-native speaker as an individual person did not sound as nice, or as trustworthy, or as good of a teacher as the native speaker did as a person. The native speaker preference, therefore, may reflect a preference for a particular person, and not a particular accent. The results in Experiment 2 make this possibility unlikely – children did not prefer to follow the native teacher when she sounded less certain; thus the non-native speaker was not so unfriendly that she was discounted across the board. Moreover, precisely because speech accent is a cue to group membership, it is expected that children will perceive the non-native speaker as less socially desirable than the native speaker. Previous work on the social perception of speech accents has found that listeners rate speakers of lower prestige and non-local accents as less desirable on a number of social dimensions (Giles, 1970; Luhman, 1990; Clopper et al., 2012); moreover, this result appears to hold even when the very same person speaks in two different accents (Anisfeld, et al., 1962), suggesting it is not

properties of the person, but associations to the accent that drive the social evaluations. The non-native speaker in the current experiments had ample experience working with young children and matched the native speaker in general for tone and pacing; moreover, the content of her speech was identical to the native speaker because both followed the same script. To the extent that the non-native teacher was perceived as less socially desirable, we attribute the difference to precisely the element being tested – her speech accent.

A larger issue, however, is whether speech accent is solely a cue to group membership (which it clearly is), or whether it might also be an implicit cue to the knowledge base of the teacher. In situations where the domain of knowledge is language itself, such as word learning, the accent of the speaker does signal the speaker's access to knowledge. A native speaker does provide better information about the pronunciation of a new word than a non-native speaker, and it is a reasonable assumption that a native speaker might also have better information about a word's meaning as well. In this case, the cue and the relevant knowledge base are directly connected. However, even outside the domain of language, speech accent might be treated as a marker of other kinds of specialized knowledge. For example, it seems fair to predict that someone speaking Japanese will know more about how to use chopsticks than someone speaking Swahili. In this case, the link between the speech and the specialized knowledge requires an additional inference: people who speak Japanese are likely to be from Japan and people from Japan are likely to know how to use local cultural artifacts such as chopsticks.

One might imagine the children in the current experiments making a similar sort of inference based on speech accent. The form of the inference could range from something quite general – e.g. people in my in-group know how to do everything better than people outside of it – to something much more specific – e.g. these containers are for my use and therefore people within my in-group will likely know the best way to open them. The current work cannot distinguish between the possibility that children prefer to follow native speakers because they simply want to be like other members of their in-group and the possibility that children believe that members of their in-group possess more reliable knowledge. Regardless, it is interesting to note that neither kind of preference for in-group members can fully compete with an explicit cue to a teacher's knowledge level such as an expression of certainty. If children do prefer native speakers because they infer such speakers have better knowledge in these experiments, that inference can largely be cancelled if the native speaker sounds unsure of herself.

These experiments have shown that pre-school aged children are motivated by both in-group and utilitarian concerns when learning conventions, and that utilitarian motivations seem to be weighted somewhat more strongly. It should be noted that we are not arguing that these are the only possible motivations children have for learning conventions, nor do we mean to suggest that children must choose between them. In fact, at a deep level, the two kinds of motivations actually collapse onto each other. After all, appropriately marking one's membership in a group is a viable function for a convention to have; wanting to be like other in-group members does have functional utility. Moreover, all conventions are subject to a societal standard and can be done correctly or incorrectly.

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For highly functional conventions, such as which side of the road to drive on, the

penalties for being incorrect are quite high; but even for conventions that simply serve to

mark social membership, such as putting the knife to the right of the plate, there are

social penalties for being incorrect. The utilitarian motivation predicts that one will

prefer a knowledgeable teacher, but for conventions that are primarily about marking

social membership, that means a teacher who is knowledgeable about what happens in

the in-group. The results from these experiments suggest that pre-school aged children

pay attention to cues to in-group status and access to relevant knowledge, making these

children well positioned to learn social conventions of all varieties.

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Figure 1. Schematics of a sample trial

| Familiarization audio: |
| Hello! I am so glad you came here today so that I can show you some new toys. The toys are in the next room. I have to walk down the hall to get to the next room. Here is the room with the toys! |

Teaching movies for Container #2	
Teacher 1	Teacher 2

Hello! I have this toy that I want to show you. This is how I play with it to get the prize. First, I take off this black part like this.

| Then I put the black part in the hole like this | Then I attach the black part to the other side like this. |

Then, I twist the door to get the prize.

Figure 2 The four novel containers and the functional and non-functional conventional actions used with each. The numbers in () indicate the order in which each action was performed


	Image	Functional Actions	Non-Functional Actions
Container 1		Tilt box (1) Open inner egg (3)	Tap inner egg on outer egg (2) OR Tap inner egg on star (2)
Container 2		Remove funnel (1) Twist open door (3)	Attach funnel with Velcro to other side (2) OR Stick funnel into hole on other side (2)
Container 3		Lift box off (3)	Spin extended handle (1) Scratch circle on surface (2) OR Spin bulb on top (1) Knock on bulb (2)
Container 4		Pull off top (3)	Drum on top (1) Shake (2) OR Beat on sides (1) Roll (2)
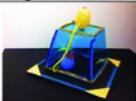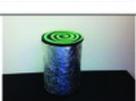
Figure 3 The mean number of non-functional conventional actions performed during the imitation and demonstration phases. Children performed significantly more of the actions modeled by the native speaker than the non-native speaker.
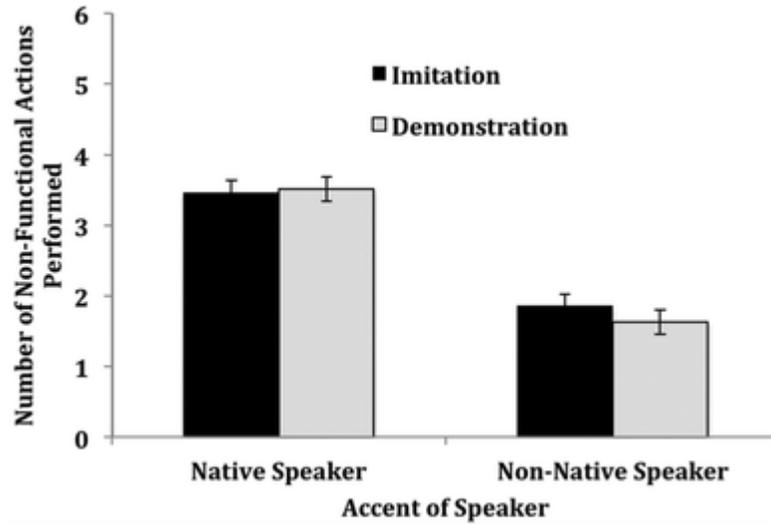
Figure 4. The mean number of non-functional conventional actions performed. The

imitation and demonstration phases have been combined as there was no significant

difference between them. The effect of certainty is seen in the interaction betwee factors:

Children followed the native speaker when the native speaker was more certain, and they

followed the non-native speaker when the non-native speaker was more certain.