Chapter 7

The scope and origins of children’s assumption of conventionality

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A lot of what children know about the world, they figure out by first-hand experiences of the world. This type of knowledge, such as fundamental concepts about causality, space, and number, is arguably acquired via innate mechanisms, and likely to be found universally. A second major type of knowledge children acquire is idiosyncratic: it is extremely limited in scope, often pertaining to individual people, contexts, and times. A third type of knowledge children acquire is also socially and contextually bound, but it holds across individuals. Examples of this type of knowledge are the norms, practices, values, and means of communication a particular community endorses—in essence, cultural conventions.

An important question that has intrigued developmental psychologists for many years, is whether there are differences in the cognitive mechanisms deployed by children for acquiring these different types of knowledge. According to one view, for instance, ‘universal’ knowledge is likely acquired by children via innate domain-specific core mechanisms (e.g. Spelke, 2000). In turn, idiosyncratic and culture-specific knowledge may be acquired via an interplay between core cognitive capacities and input-related variables (e.g. Csibra & Gergely, 2006; Tomasello et al., 2005).

An additional important question related to this typology of knowledge that has not been addressed as intensively, however, regards children’s assumptions about who else has the knowledge. In order to function in the social world, children need to formulate assumptions about whether or not others share their understanding of physical causality, language, customs, or preferences.

Perhaps one of the most salient places where such an assessment is critical is in communication. Children need to assume whether others share with them the same symbolic system, so as to be capable of transmitting and deciphering messages effectively. For instance, if children are thirsty and want to ask for something to drink at a friend’s house, they need to know which words to use so as to have their desire satisfied. They may need to recognize that ‘oh-jay’ is
a somewhat idiosyncratic term used in their home to refer to orange juice, and that consequently a more certain term is ‘orange juice’. Similar considerations come into play when producing, or interpreting, symbols or communicative gestures. The typical gesture for signalling ‘ok’ in the United States carries a very different meaning in other places of the world. Sensitivity to such cultural variations is crucial to avoid misunderstandings and offenses.

Lewis (1969) defined this assumption about the shared nature of certain kinds of knowledge as ‘Conventionality’. In particular, Conventionality is the assumption that there are certain forms which are: (a) socially conveyed (as opposed to naturally available), (b) cognitively opaque (as opposed to self-evident), (c) arbitrary (as opposed to objectively truthful), (d) community-bound (as opposed to idiosyncratic or universal), and (e) prescriptively powerful within the community (as opposed to completely flexible). Of these characteristics, perhaps (c)–(e) are most distinctive of conventions. They imply that conventions are the preferred forms used, and expected to be used, by members of a given community, in order to convey certain meanings.

In her pioneering work on the development of conventionality, Eve Clark described how children make assumptions about the existence of preferred linguistic forms to convey meanings, and discussed the kinds of inferences this assumption allows children to make about people’s uses of conventional or non-conventional forms (Clark, 1988, 1990). Recently, a growing number of studies indicate that this assumption might apply not only to the domain of language, but also to symbols, tool use, and game rules (see Kalish & Sabbagh, 2007).

This extension of the domain of conventionality makes manifest a critical puzzle regarding the origins and scope of children’s assumptions about the distribution of knowledge. Namely, much of what children learn about the world is conveyed by people (Harris & Koenig, 2006). A lot of this information—in particular the type of information children arguably assume to be conventional—is cognitively opaque and arbitrary—i.e. there are no obvious reasons to expect people to know and understand this type of information. At the same time, young children are somewhat notorious for their difficulty in tracing the sources of their knowledge. In particular, children often err in believing they have always known a piece of information they have just acquired (Taylor et al., 1994). Given these considerations, do children indeed differentiate between types of socially conveyed information in terms of their knowledge distribution? And if so, how do they do it?

The goal of the present chapter is to review some of the findings pertinent to this question, assess possible explanations for them, and propose some new directions for research on this issue.
The extant data

As defined above, conventionality entails two critical presuppositions about the shared nature of knowledge. One presupposition has to do with what forms are assumed to be conventional, and the other with who knows these forms.

In spite of the considerations, pointed out above, endorsing scepticism as to children’s capacity to modulate their assumptions about the distribution of different kinds of knowledge, evidence has been accumulating that they in fact do so. As we shall see, from a relatively young age children seem to hold different assumptions, even between somewhat similar types of information, as to what or who is conventional.

What is conventional?

Common versus proper names

Clark (1988) argued that children operate under the assumption that people know the names of objects, and use these names to refer to the appropriate objects. Consequently, Clark reasoned, if a person uses a novel name in the presence of both familiar and novel objects, children shall infer that the person probably does not have a familiar object in mind. And indeed children do so (Markman & Wachtel, 1988). Importantly, however, children could be responding in such a way not because of assumptions about speakers’ knowledge and intentions, but rather because of other representational biases, for instance, constraints about one-to-one mappings.

In order to address whether children draw this type of inference based on presuppositions about speakers’ knowledge—as argued by Clark—Diesendruck and Markson (2001) directly modulated speakers’ access to object names. In one study, 3-year-olds were shown pairs of novel objects, and were taught a novel name for one of the objects. For half of the children, the same speaker who taught children the initial novel name then asked them for the referent of a different novel name. For the other half, a speaker who was absent during children’s exposure to the first novel name, asked children for the referent of a different novel name. Diesendruck and Markson found that children in both conditions selected the object without a name as the referent of the second novel name, and did so to the same extent in both conditions. In other words, children drew the same inference about an absent speaker’s referential intent as they did about a present speaker’s. Crucially, when explicitly asked, most children responded that they thought the absent speaker knew the initial novel name they had been taught. That is, children indeed assumed that common object names are known even to absent speakers.
Recent studies indicate that even infants seem to hold this assumption. For instance, 19-month-olds expect two different individuals to refer to a novel object with the same name (Graham et al., 2006; Henderson & Graham, 2005), and 13-month-olds—but not 9-month-olds—are surprised if different individuals use the same name for two different objects (Buresh & Woodward, 2007). In sum, from a young age, children believe that common object names are conventional knowledge of speakers of their language.

Importantly, however, the finding that children assume that speakers know common object names, does not rule out the possibility that children’s responses in the above studies were not driven by such an assumption, but rather resulted from representational constraints. A critical piece of evidence needed to rule out the representational explanation concerns cases where children assume that speakers do not know a particular form, and consequently, respond differently. One case that seems to fit this bill involves children’s expectations about people’s knowledge of proper names.

Studies show that children believe only speakers who are familiar with an individual entity (e.g. a pet) can know the proper name of that entity (Birch & Bloom, 2002). Given this premise, Diesendruck (2005) employed the same methodology used by Diesendruck and Markson (2001) to assess 3- and 4-year-olds’ inferences about speakers’ intents when using novel proper names, instead of common names. In this study, children were taught a novel proper name for one of two novel creatures, either in the presence or the absence of a second speaker. The second speaker then asked children for the referent of a novel common name. In contrast to the findings from Diesendruck and Markson where children systematically selected the novel object, here they responded randomly to an absent speaker’s request. In other words, they did not expect an absent speaker to know the proper name of a creature that children had been taught, and thus were willing to admit of the possibility that the speaker might have been referring to the creature they had a proper name for. This finding thus reinforces (a) the conclusion that children’s inferences in this type of task indeed derives from considerations of speakers’ knowledge and not from representational constraints, and (b) the notion that while children expect speakers of their language to know the common names of objects, they do not have such expectation with regards to proper names.

Rules versus arbitrary facts or preferences

Similar kinds of distinctions regarding the conventionality of knowledge have been documented outside the domain of language. For instance, Rakoczy and colleagues have investigated children’s expectations about rules of games (e.g. Rakoczy, 2008;
Rakoczy et al., 2008). In most of their studies, the primary aspect of conventionality assessed was not children’s assumptions about knowledge per se, but rather their expectations about the normativity of the knowledge. For instance, in one of their studies, Rakoczy et al. (2008) taught 2- to 3-year-olds how to play a novel game, and then, in the critical conditions, children saw an experimenter violate the previously established ‘game-rules’. Rakoczy and colleagues found that even 2-year-olds would often explicitly protest against the new experimenter, explaining to him/her how they were supposed to play the game. In other words, children treated the game-rules not as arbitrary choices, but as social conventions with prescriptive force. Indirectly, the study also showed that children assumed other members of their cultural community should have known these rules.

The above conclusion is not true, however, of all kinds of socially conveyed information. Some of the studies on naming mentioned earlier, contrasted children’s assumptions about common names with their assumptions about arbitrary facts or personal preferences. Differently from what had been found with regards to object names, these studies revealed that preschoolers do not expect an absent speaker to know facts that they had been taught about the objects (Diesendruck & Markson, 2001), 19-month-olds do not generalize personal preferences across people (Graham et al., 2006), and 9- and 13-month-olds are not surprised if different people have different goals (Buresh & Woodward, 2007). Thus, not only do children make differential assumptions about the conventionality of linguistic labels, but they also make them in regard to other types of socially conveyed information, marking some as culturally bound, and others as idiosyncratic.

Object function versus object use

One final domain in which children seem to have nuanced expectations about the extent to which knowledge is conventional, is object functions. On the one hand, when exposed to an adult using an object for a given function, 2-and-a-half-year-olds expect others to use that object for the same function (Casler & Kelemen, 2005), and under certain circumstances, actively protest if others use the object for a different function (Casler et al., 2009). In turn, when asked to solve a novel problem, 5-year-olds are quite competent at using familiar objects in creative, non-conventional ways (German & Defeyter, 2000). As German and colleagues noted, it seems that children hold an assumption of conventionality with regard to what objects are for, but are more flexible with respect to the actual uses of objects (Defeyter et al., 2009; German et al., 2007; see also Jaswal & Neely, 2006). Interestingly, it may be the case that early on in development, when first learning about the use of an object, children may be quick to fixate
that use of the object as the use of the object (Matan & Carey, 2001). With time, children may come to appreciate that while objects were created for a particular purpose, their use is somewhat arbitrary—at which point, they might relax their expectation about object uses. Curiously, adults seem to often fall back onto that initial conservative construal of objects (see German et al., 2007; Kelemen & Rosset, 2009, for similar ideas).

**Who is conventional?**

Another way by which to assess children's assumptions about the distribution of knowledge has to do with the social boundaries of the assumption. Namely, having learned a piece of information, who else do children presuppose also knows that piece of information? As I discussed earlier, this is a critical assumption, because it allows children to navigate effectively in the social world. Figuring out what is conventional, allows children to presuppose that others know many of the same things they themselves know. They can understand that it is appropriate to ask a stranger for ‘orange juice’, but it would be ineffective to ask the stranger for ‘my favourite drink’. The second part of the presupposition of conventionality, however, sets limits on which strangers know even the most general of socially conveyed knowledge. English-speakers know what ‘orange juice’ is, but speakers of other languages may not. This is what sets apart conventional from universal knowledge. The critical challenge to children in this regard, then, is figuring out who shares their conventions. Excessive liberalism is inappropriate because children are bound to encounter people who hold different conventions than their own. Excessive conservatism is also likely to be inconvenient because it would lead children to check every time anew, whether or not a stranger shares their conventions. And indeed, studies are beginning to show that children do make certain systematic distinctions, generalizing their conventions to some, but not all, others.

**Speakers versus non-speakers of the child’s language**

In general terms, one should hold an assumption of conventionality only towards members of one’s cultural community. A study by Diesendruck (2005) indicates that, in the domain of language, by 4-years of age children seem to be aware of this stipulation. In this study, Hebrew-English bilingual children were exposed to either a bilingual speaker like them, or a monolingual speaker of Hebrew. After the experimenter taught children an English novel name to one of two novel objects, either one of the speakers asked children for the referent of a novel Hebrew name. The rationale was that children should select the unnamed object only in response to a speaker who they believe knows a name for the other object. Diesendruck found that children did so only in response
to the bilingual speaker, implying they did not believe the monolingual Hebrew-
speaker knew a name for the object children had been taught an English
name.

Knowledgeable versus ignorant speakers and users
Children seem capable of administering their deployment of an assumption of
conventionality not only based on categorical distinctions—for example
speakers of one’s language—but also based on more context-specific distinc-
tions. A number of studies show that even prior to their second birthday,
children manifest scepticism towards speakers who consistently mislabel or
misuse familiar objects. In particular, by 3 years of age, children prefer learning
object names and functions for novel objects from agents who have been reli-
able knowledgeable of familiar object names or functions than from agents
who are ignorant of familiar object names or functions (Birch et al., 2008;
Koenig & Harris; 2005; Koenig et al., 2004; Sabbagh & Baldwin, 2001). By 4 years,
children manifest even more sophisticated sensitivities to agents’ knowledge.
For instance, they take into account a speaker’s relative performance (e.g.
whether he/she got 75% or 25% of the answers right, Pasquini et al., 2007), and
whether the speaker manifested knowledge of core causal properties of objects
or of superficial ones (Sobel & Corriveau, 2010). In fact, a speaker’s prior
record of reliability in object naming even trumps other presumed markers of
expertise such as age, in orienting children from whom to learn (Jaswal &
Neely, 2006).

Importantly, the fact that children are capable of taking into account an
agent’s prior record of reliability when learning new information, does not
necessarily imply that they take this into account when assessing the conven-
tionality of the information agents convey. Some indirect evidence that they
nonetheless do so, was revealed in studies on children’s appreciation of game
rules (Rakoczy et al., 2009). In that study, Rakoczy et al. found that 4-year-olds
not only preferred to imitate the rules of a game as enacted by a puppet who
had been previously accurate in his actions on objects, but further believed
that the reliable puppet’s rules constituted the right way to play the game.

In order to address this issue more directly, we have recently completed a
series of studies in which we modulated an agent’s prior record of reliability in
terms of either object naming or use, and then assessed whether or not children
uphold an assumption of conventionality towards the agent (Diesendruck
et al., 2010). In the first study, we familiarized children to one of two speakers: a
‘knowledgeable’ speaker who reliably named familiar objects with their conven-
tional basic-level names, or an ‘ignorant’ speaker who reliably named familiar
objects with the wrong basic-level names. We then showed children pairs of
objects, consisting of a familiar and a novel object, and the speaker—either knowledgeable or ignorant—asked children for the referent of a novel name. As I have described earlier, the typical answer children give in this kind of situation is to pick the novel object. However, we reasoned that if children’s answer is driven by considerations of whether or not the requester knows the name of the familiar object in the pair, then in the present study we should find a difference between the two groups of children. Namely, children exposed to an ignorant speaker may suspect that he/she does not know the name of the familiar object in the test-pair. Consequently, they may be more likely to infer that the speaker’s novel label actually refers to the familiar object. And indeed, we found that children do so.

Further studies showed that children are quite tolerant in terms of assessing a speaker’s knowledge. Thus if instead of using basic-level familiar names to name objects (e.g. ‘dog’), the speaker used a correct superordinate name for the object (e.g. ‘animal’), children treated the speaker just as they had the knowledgeable speaker of Study 1. Finally, we found that children modulated their inferences about an agent’s intent based on the agent’s prior record of accuracy also in the domain of object uses. That is, an agent who is ignorant of familiar object uses is more likely than a knowledgeable user or familiar objects, to use another familiar object for a novel function.

Taken together, these studies reveal that young children modulate their application of an assumption of conventionality towards agents, according to contextual and dynamic evidence about an agent’s knowledge.

Summary of data
The picture emerging from the data reviewed above on the scope of conventionality is that, within a short period of time, children create seemingly systematic boundaries on what and who is conventional. That is, they assume that only certain types of information are known by others, and only certain others know this type of information. The question thus becomes, how do they do so?

Current accounts of the origins of conventionality
Limited theory of mind
It has been widely documented that until the age of 4 or 5 years, children have difficulties understanding that others might have different representations of reality than they do, perhaps especially at an explicit level (see Wellman & Liu, 2004; cf. Onishi & Baillargeon, 2005). According to Sabbagh and Henderson (2007), this limitation in children’s socio-cognitive capacity may have implications to their assumptions about the distribution of knowledge.
Namely, young children might assume that everything they know, others know as well. This claim is consistent with children’s difficulty tracing the origins of their own knowledge (Taylor et al., 1994), and their heightened susceptibility to a ‘curse of knowledge’—that is, children’s and adults’ tendency to overestimate how widespread a piece of knowledge is once they have acquired it (Birch & Bloom, 2003).

According to this account, early on in development children hold a somewhat promiscuous assumption about what and who is conventional. With the development of a more sophisticated understanding about the fact that people may hold different representations of reality, and about the processes by which people come to have knowledge, children might update their assumption.

**Pedagogy**

Recently, Csibra and Gergely (2006) have argued that one of the primary means by which children acquire cultural knowledge is by ‘simply’ being taught. The argument is that, on the one hand, adults have a natural disposition to transmit knowledge to others, and do so by ostensively making reference to information that is relevant in the child’s context. Crucially, on the other hand, children are equipped with the cognitive capacities to recognize these cues, and interpret them accordingly. In particular, children assume that the knowledge they are ‘taught’ in such a way is *general*, insofar as it relates not only to particular instances or events, but rather to categories, and it is *universal*, in the sense that it is not unique to the individual who has taught them, but rather can be assumed to be known by all. Consistent with this account, initial studies show that infants respond differently to situations where they are given ostensive cues compared to situations where these cues are absent. In particular, ostensive cues seem to imply to children that the action being demonstrated is relevant and purposeful, and consequently, children should play close attention to all its details (Topal et al., 2008).

It is interesting to note that while the above two accounts are similarly liberal in their predictions regarding the scope of conventionality—stipulating that early on, children assume that *every-thing* they know, *every-body* knows as well—they differ in their assumptions about what constitute default contexts of learning. In particular, the limited theory of mind account seems to suggest that in the absence of any evidence to the contrary, children assume that a new piece of information to which they have been exposed, is in fact public knowledge. An implication of this suggestion would be that in order for a given piece of information to be assumed not to be public knowledge, then that piece of information would have to be somehow marked as such. In turn, the pedagogy account could be taken to argue the exact opposite. Namely, that when information
is transmitted to children via pedagogical cues, then the information is taken
to be universal. Thus, perhaps in the absence of such cues, children might for-
mulate narrower assumptions about the generality and universality of the
information.

In order to assess these alternatives, what are needed are studies of the mech-
anisms and cues children rely on for determining whether or not information
is conventional. In fact, these are the studies needed to account for the nuanced
pattern regarding conventionality revealed in the data reviewed earlier. As we
have seen, already prior to their second birthday, children differentiate between
socially conveyed information that is assumed to be shared by others (e.g.
labels) and information that is idiosyncratic (e.g. preferences; Buress &
Woodward, 2007; Graham et al., 2006). Thus, whatever default assumptions
children might hold about the epistemological status of new information,
studies are need to identify the processes that eventually lead children to
assume conventionality only towards some things, and some people.

A view from cultural acquisition

Borrowing from Tomasello and colleagues’ discussions of cultural acquisition
(Tomasello et al., 2005), we suggest that at a broad level, children apply an
assumption of conventionality primarily to forms that are arbitrary and thus
have opaque meaning, and that emanate from people. For instance, there is
nothing about the object telephone to indicate that the word used to refer to it
should be ‘telephone’, and there is very little in its form to determine its function.
Yet all English-speakers and users call it by the same name, and use it for the
same purpose. This basic realization, that certain arbitrary forms are produced
by, and get their meanings from, people, ‘invites’ children to try to understand
these forms by analysing how people use these forms. We propose that herein lay
the cues children thus use, to define the domain of conventionality. Namely,
cues about how people use certain forms—which will inform what is conven-
tional, and cues about who uses the forms—which will inform primarily who
is conventional.

Cues about what is conventional

Intentionality

Arguably, intentionality is a critical factor in children’s word learning (see
Akhtar & Tomasello, 2000; Baldwin, 1991; Bloom, 2000, for reviews), under-
standing of artefacts (Bloom, 1996; Kelemen, 1999), communicative gestures
(Campbell & Namy, 2003), and symbolic representations (Bloom & Markson,
1998; Gelman & Ebeling, 1998). The idea being put forth here, is that the
intentionality of the action in which the form is embedded serves as one of the basic cues children rely on to determine whether or not a form is conventional. Putting it simply, forms embedded in intentional acts are candidates for being conventional.

There is some initial evidence consistent with this idea. For instance, toddlers treat intentionally demonstrated uses of objects as conventional (Casler & Kelemen, 2005, 2007). In a recent study, we addressed this idea more directly by manipulating the intentionality of the demonstration. In this study, 2- and 3-year-olds were exposed to an actor who either intentionally or accidentally demonstrated the use of a novel object (Wohlgelernter et al., 2010). Children were subsequently asked a series of questions assessing the conventionality of the function, such as how would others use the object, and what the purpose of the object was. It was found that children were more likely to respond that others would use the object for the same function demonstrated by the actor, when the demonstration had been intentional rather than accidental. A similar pattern was found for the question about the objects’ purpose. In a second study, children observed two puppets imitate either the intentional or the accidental demonstration. The children responded that the latter puppet was wrong in doing so. In sum, cues about the intentionality of how a form is demonstrated influences not only children’s assumptions about the conventional nature of the form, but also their expectations about what others should learn.

Consistency

Another cue children might rely on for defining what is conventional is the consistency with which the form is used, both by the same person and across people. The idea is that the more consistent a form is, the more likely that it manifests a ‘correct’ way to do or express something.

Some recent studies indicate that young children indeed are sensitive to this dimension in determining the conventionality of a form. Specifically, children’s determination of what an object was for, was influenced by whether a majority of actors agreed on its use (Siegel & Callanan, 2007). In fact, children seem to be influenced not only by across-individuals consistency, but also by within-individual consistency. Thus, we found that children were more likely to believe an object’s function was conventional if an actor repeatedly performed the function in the same way three consecutive times, than if the actor performed the function in a slightly different way each time (Wohlgelernter et al., 2010).

Coordination

A third cue children might rely on in determining the conventionality of a form is whether or not the action in which the form is embedded involves coordination.
between individuals. The argument is that children will be more likely to treat
as conventional those forms whose use by an individual depend on and/or
affect the actions of another individual. Evidence for the role of coordination in
children’s assumption of conventionality comes from the work on games
described earlier (e.g. Rakoczy, 2008; Rakoczy et al., 2008). In these studies,
when children were tested in a condition in which the participant violating one
of the game-rules had not committed to participate in the game, children did
not protest as much. In fact, children are also capable of delimiting the contexts
in which the coordination holds. For instance, if they stipulate within the con-
text of a pretend-game certain rules, they understand that these rules no longer
apply if the parties involved in the coordination decide to switch or abandon
the pretence situation (Weisberg & Bloom, 2009; Wyman et al., 2009).

Semantic and pragmatic cues
A final cue children might rely on for deciding whether or not certain forms
are conventional may come in a fairly direct way from how parents present
forms to children (Callanan et al., 2007). For instance, Callanan and Sabbagh
(2004) found that, when interacting with their children, parents typically
engage in labelling strategies that may convey to children that there is a best
way to refer to objects. Thus, parents may correct children’s mislabelling or
misuse of objects, some times explicitly stating that, ‘that is not how you call/
use it’. Callanan et al. (2007) noted that parents also seem to provide children
with subtle semantic cues about the existence of preferred ways for using certain
objects, such as using a generic noun-form to describe object functions. It is known
that generic language consistently leads even young children to consider the
information as being generalizable across instances, rather than unique to a
referent (Cimpian & Markman, 2009; Gelman, 2009).

Cues about who is conventional
Dynamic cues
One type of cue children might rely on when deciding whether or not the form
demonstrated by a particular person is conventional, has to do with subtle cues
about the agent him/herself. In particular, children are sensitive to cues about
people’s confidence in their use of a form. In fact, children are influenced by
both, explicit statements of ignorance (Jaswal & Malone, 2007; Nurmsoo &
Robinson, 2009), and nonverbal expressions of puzzlement (Birch et al., 2009;
Fusaro & Harris, 2008).

Stable cues
In order to determine whether or not a person is conventional, children might
rely not only on online, idiosyncratic information about the person, but also
on more permanent characteristics. In particular, children might pay attention to the social category to which the person belongs. For instance, children believe that adults are knowledgeable about ‘adult’ themes, but that their peers are more knowledgeable about ‘kid’ themes (VanderBorght & Jaswal, 2009). Moreover, from a young age, children selectively attend to same-gender individuals as models for learning (Ruble et al., 2006) and preference (Shutts et al., 2010). In fact, children seem to rather learn from individuals who share with them even somewhat transient characteristics, such as toy preferences, than from those who do not (Fawcett & Markson, 2010).

This line of work brings up the possibility that the early development of social categories may in part aid children in recognizing relevant purveyors of conventional knowledge. In other words, 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’. This argument seems in line with recent claims by evolutionary psychologists that one of the primary functions of social groups may have been to track alliances (Cosmides et al., 2003).

In fact, this conclusion regarding the function of social groups seems to mesh well with many of the recent theories about cultural acquisition. For instance, Tomasello and colleagues point out that one of the unique features of human cognition that allowed the development of culture is the capacity and motivation to share intentional states (Tomasello et al., 2005). This, in turn, had become crucial due to the survival advantages of collaboration for many human activities. One could argue, however, that a necessary step prior to engaging in sharing one’s intentional states with others, is identifying who the other is: a potential collaborator or a competitor? In other words, social categorization would need to precede this process.

Similarly, Harris and Koenig (2006) noted that much of the knowledge—particularly cultural knowledge—that children acquire, they do so by trusting the testimony of others. Here again, in order for children to acquire the somewhat coherent set of values and beliefs that characterize their culture, they will need to discriminate between sources of testimony. Moreover, it is quite likely that dynamic cues about candidate sources, such as the ones described above, will not suffice. Alternative sources can be equally persuasive that one’s destiny is determined by Allah, Jesus, Jehovah, or Buddha. Consequently, which one the child ends up trusting will likely need to be defined by the social group the child identifies as hers.

**Constraints on candidate cues**

It is important to point out that one of the critical constraints for identifying potential candidate cues that may help children limit the scope of conventionality
Children and Conventionality

is a developmental one. Namely, given the evidence reviewed above about how early the narrowing of an assumption of conventionality occurs, then evidently the mechanisms that allow children to exercise such narrowing must be available to them from a young age. We believe that all the cues mentioned above—both about what and who is conventional—satisfy this constraint. For instance, even infants are sensitive to the intentionality of people’s behaviour (e.g. Meltzoff, 1995; Woodward, 1998), and show remarkable capacity to track statistical regularities in a stream of input (Saffran et al., 1996). Recent studies have also started to reveal remarkable understanding in infants of complex social interactions and relationships (Hamlin et al., 2007), and a budding sensitivity to social groups (Kinzler et al., 2007). In sum, the cognitive infrastructure required for children to develop a nuanced assumption of conventionality based on the cues listed above, is arguably in place by children’s second year of life—the age at which they most consistently demonstrate such nuances.

Future directions

Listed above are a few of the capacities likely to influence the fine-tuning of an assumption of conventionality, and the developmental constraint these capacities need to meet. In most cases, the influence of these capacities on conventionality has been tested in only one or two domains. Evidently, in order to assess the potential of these capacities as explanations for the acquisition of an assumption regarding cultural conventions, more domains must be studied. A second recommendation is that future studies assess the discriminatory validity of the capacities. For instance, while intentionality may help children differentiate between conventional and accidental information, it does not differentiate between conventional and idiosyncratic information. For instance, personal preferences—which are typically delivered intentionally—are not treated as conventional. It is possible, then, that while certain of the cues are necessary for an assumption of conventionality, they are not sufficient. Thus, while intentionality may not be sufficient to discriminate between personal preferences and cultural norms, intentionality + cross-individuals consistency might. A final recommendation for future research is to address further characteristics of conventions. Most of the studies conducted thus far within this literature, have focused on the community-boundedness and prescriptive power of conventions. It would be valuable for researchers to tackle children’s understanding of other characteristics of conventions. For instance, there is very little research on children’s understanding of the arbitrariness of cultural conventions—that is, conventions do not reflect objective truths about the world and thus may not be held universally. Interestingly, this kind of research could draw inspiration from work on similar questions conducted with regards to children’s
understanding of the arbitrariness of morality (Levy et al., 1995; Smetana, 1981) and categorization (Kalish, 1998; Rhodes & Gelman, 2009).

Conclusions
From early on in development, children assume that certain pieces of information to which they are exposed, are shared by members of their cultural community. This is indeed a crucial developmental achievement because much of what children need to know to function adaptively in the world is knowledge that is socially constructed and bound. In many ways, defining what is conventional is akin to defining what is cultural. One of the main challenges facing researchers in this area is to define how children distinguish between knowledge that can be assumed to be shared by other members of their cultural community, from knowledge that is either particular—and thus does not generalize to other instances—or local—and thus does not apply universally across people.

The evidence we reviewed regarding both, what and who children treat as conventional, shows that indeed from a young age, children are neither completely generalists nor universalists. While this conclusion does not deny the possibility that children start off with a promiscuous conventionality, eventually learning how to filter out certain types of knowledge or people, the evidence reviewed here highlights the need for a developmentally sensitive account of the process by which children make these distinctions. I have proposed a number of mechanisms, known to be available to children at the relevant ages, which can help children figure out the domain of conventions. Much more work still lies ahead in order to verify the role of these mechanisms in the various aspects of an assumption of conventionality. What seems evident, nonetheless, is that such a programme of research is not only viable, but it is in fact both theoretically and empirically ripe.

References
21 Nurmsoo, E. & Robinson, E. J. (2009). Children’s trust in previously inaccurate informants who were well or poorly informed: When past errors can be excused. *Child Development*, 80, 23–7.


