Characterizing Children’s Responsiveness to Cues of Speaker Trustworthiness: Two Proposals

Melissa Koenig

&

Elizabeth Stephens

Institute of Child Development

University of Minnesota

*To appear in E. Robinson and S. Einav (Eds.), Trust and Skepticism: Children's Selective Learning from Testimony. Psychology Press: Cambridge, UK.*

**Abstract**: Testimonial exchanges are joint endeavors involving speakers and hearers. These testimonial exchanges have been the recent focus of a broad and productive research program and our review of this large literature will be guided by two main questions: 1) Given the evidence that children selectively respond to many *speaker* characteristics when deciding whom to trust or learn from, do they use all available cues to guide their selectivity or are they especially attuned to specific core or primary dimensions?, and 2) Given that children demonstrate selectivity in response to different testimonial *content*, namely, common or semantic information as well as idiosyncratic or episodic information, do they treat these two types of testimony differently? Using these questions as our guide, we make two proposals about testimonial exchanges. First, in line with recent proposals in adult social cognition, we suggest that children and adults evaluate speakers along two primary dimensions: competence and benevolence (or “moral warmth”, see Fiske, Cuddy & Glick, 2007). Second, consistent with recent proposals in epistemology, we caution against an overly broad treatment of testimony. We will argue for the importance of a ‘semantic’ vs. ‘episodic’ distinction on two grounds: 1) these two types of messages elicit different intuitions about what is involved in knowing by testimony, and 2) there are empirical reasons to think that the psychological processes that underlie reasoning about ‘semantic’ versus ‘episodic’ testimony may be qualitatively different.

1. **Two Primary Dimensions of Speaker Trustworthiness: Warmth and Competence**

In research on person perception, social psychologists have been long aware of a core set of ‘central traits’ that anchor our impressions of others (Caccippo et al., 1997; Fiske, 2007; Peeters, 2001). Using lists of trait adjectives, Asch (1946) may have been the first to demonstrate the power of ‘warm’ versus ‘cold’ traits in changing a person’s evaluation of someone else. Building on this research, Rosenberg et al., (1968) asked adult subjects to sort 64 traits (‘dominating’, ‘sentimental’, ‘frivolous’, ‘unhappy’, etc.) into groupings likely to cluster in a single person and found that traits clustered along two primary dimensions: the ‘social good-bad’ and the ‘intellectual good-bad’. More recent work by Wojciszke has shown that ‘competence’ and ‘morality’ account for 82% of the variance in adult perceptions of others’ everyday behaviors (Wojciszke, 1994; Wojciszke et al., 1998). The use of various labels for these dimensions has likely concealed the pervasive use that adults give to these two dimensions. However, as brought to light in a recent review by Fiske (TiCS, 2007), warmth and competence are the leading dimensions that “account almost entirely for how people characterize others.” (p. 77)

With this as backdrop, it is interesting that the last 10 years of research on children’s selective trust demonstrates children’s use of these same dimensions when evaluating speakers. In the standard task for assessing children’s selective trust in testimony (e.g., Koenig & Harris, 2005), two speakers, one consistently accurate and one consistently inaccurate, first provide labels for a series of familiar objects. Next, the speakers present conflicting labels or functions for novel objects. Children’s tendencies to ask the previously accurate speaker for help with a novel label and to selectively endorse the label provided by the previously accurate speaker over that offered by the inaccurate speaker constitute the outcome measures of interest. Applications of the selective trust paradigm have revealed that children as young as 2 years of age are capable of tracking speaker performance and taking it into account when deciding whom to trust in subsequent learning situations (e.g., Birch, Vauthier & Bloom, 2008; Clement et al., 2004; Ganea, Koenig & Millet, 2011; Koenig et al., 2004; Koenig & Harris, 2005; Koenig & Woodward, 2010). By age 7, children and adults treat even a single instance of speaker inaccuracy as reason to prefer another source (Fitneva & Dunfield, 2010). In fact, information about speaker competence may trump other relevant cues to speaker quality including age (Jaswal & Neely, 2006), accent (Corriveau, Kinzler & Harris, 2013), familiarity (Corriveau & Harris, 2009), and adherence to convention (Scofield, Gilpin, Pierucci & Morgan, 2013). Even infants appear sensitive to indications that a source or model is incompetent (Zmyj, Buttelman, Carpenter & Daum, 2010). Early in the second year of life, infants prefer to follow the gaze of an individual who consistently looked in boxes containing objects as opposed to one who consistently looked in empty boxes (Chow, Poulin-Dubois, & Lewis, 2008). Infants also look longer when speakers’ pointing gestures fail to coincide with the actual locations of previously labeled hidden objects (Gliga & Csibra, 2009) and when speakers provide inaccurate labels for familiar objects (Koenig & Echols, 2003). Young children attend to several indicators of a speaker’s state of uncertainty in addition to prior inaccuracy, including expressions of ignorance (Sabbagh & Baldwin, 2001), provision of insufficiently informative messages (Gillis & Nilsen, 2013; Gweon, Pelton & Schulz, 2011), lack of perceptual access to relevant information (Nurmsoo & Robinson, 2009), nonverbal cues of bystander dissent (e.g., head shaking; Fusaro & Harris, 2008; Fusaro & Harris, 2013), and disagreement with the consensus of a majority (Corriveau, Fusaro, & Harris, 2009). When presented with two characters who were described with trait adjectives (e.g., “smart”/“not smart”, “truthful/liar”) and were seen to behave in accord with those adjectives, children by age 3 preferred to learn from the smarter and more honest character (Lane, Wellman & Gelman, 2012). Young children also monitor speakers for specific competencies, or expertise. For example, preschoolers expect a mechanic to have greater knowledge than a doctor regarding the functions of machines, but attribute greater knowledge to a doctor regarding the functions of living things (Lutz & Keil, 2002). Preschoolers also differentiate between informants with causal knowledge and those with lexical knowledge and appropriately direct their questions accordingly (Kushnir, Vredenburgh, & Schneider, 2013). In sum, such findings converge in demonstrating that children, from a very early age, successfully track and attend to verbal and nonverbal cues that signal a person’s level of *competence*.

Fewer in number but equally important are studies demonstrating children’s sensitivity to information that signals the benevolence or good motives of a speaker. Such sensitivity is evident very early in development. Infants as young as three months of age differentiate helpful and hindering actions and look longer when an actor approaches a previously hindering agent than when an actor approaches a previously helping agent (Hamlin, Wynn, & Bloom, 2010). Six- to 10-month-old infants model this attitude in their independent actions, choosing to reach for a helping actor over a neutral or hindering actor (Hamlin, Wynn, & Bloom, 2007). By preschool, children apply their sensitivity to moral information to guide their evaluations of speakers in novel learning situations. Three- to 5-year-old children selectively endorse novel information offered by previously benevolent speakers as opposed to both malevolent (Mascaro & Sperber, 2009) and neutral (Doebel & Koenig, 2013) speakers. Moreover, older preschoolers systematically reject advice provided by speakers described as liars (Mascaro & Sperber, 2009) and those who consistently tricked others in the past (Vanderbilt, Liu, & Heyman, 2011). Young children appear to evaluate speakers’ intentions independently from the outcomes of their advice and demonstrate a preference to accept advice from a helpful speaker over a deceptive speaker, even when the helpful speaker has proved to be consistently incorrect (Liu, Vanderbilt & Heyman, 2013). Preschoolers’ familiarity with a speaker also influences their selective learning. When offered conflicting novel information from a familiar teacher and an unknown source, 3- to 5-year-olds prefer the testimony of their teacher, a preference maintained by the youngest children even when their teacher commits blatant errors (Corriveau & Harris, 2009). Taken together, these findings illustrate that children also successfully track and attend to cues that signal a person’s *benevolence.*

These findings are consistent with the proposal that children, like adults, evaluate speakers along two primary dimensions: benevolence and competence. This proposal does not rule out the utility of other speaker characteristics; it only anticipates the dominance of these two. Of course, it remains to be seen how salient or useful any non-competence or non-benevolence dimension might prove to be in children’s learning given that benevolence and competence have largely dominated the characteristics that researchers have chosen to manipulate in their studies. One exception is a recent study by Fusaro, Corriveau, and Harris (2011), who found that when children were presented with two informants who differed in physical strength, children predicted that the stronger puppet would likely be smarter, nicer and more likely to know facts and new words. In contrast, children judged a more accurate puppet to be ‘smarter’ and likely to know more words but not stronger or nicer (see also Brosseau-Liard & Birch, 2010). Thus, while physical strength was a dimension that led to broad inferences for children, their inferences based on demonstrations of epistemic competence (i.e., correct naming) were more fine-tuned and accurate. Further research of this type will serve to clarify the conditions under which children appeal to less-epistemic, less-moral characteristics of speakers. In addition, it is important to bear in mind that when children (or adults) appear selective in the face of non-core dimensions like strength or attractiveness, it may be that their selectivity is in response to moral or epistemic cues (e.g., confidence, easy manner) that tend to correlate with these non-epistemic traits (Chaiken, 1979; Chaiken & Eagley, 1983).

According to Fiske (2007), adults evaluate positive versus negative information differently depending on whether the positive-negative information pertains to a person’s warmth or competence, and certain parallels exist in the developmental literature. For warmth, for example, adults promptly heed information that disconfirms, rather than confirms, a person’s warmth. Unfriendly behavior at a colleague’s party is likely to be seen as diagnostic of that person’s disposition; whereas friendly behavior is seen as socially prescribed. In a similar spirit, children are better at discriminating negatively-behaving agents from neutral ones than they are at discriminating positively-behaving agents from neutral ones (Doebel & Koenig, 2013; Vaish, Grossman & Woodward, 2008; Vaish, Carpenter & Tomasello, 2009). In contrast, adults tend to be forgiving of occasional but reasonable instances of incompetence as illustrated by absent-minded professors (Skowronski & Carlston, 1987; Fiske, 1980). As we discuss below, while children do sensitively heed errors marking incompetence (Corriveau, Meins & Harris, 2008; Koenig & Doebel, 2013; Koenig & Jaswal, 2011), children also prove capable of forgiving errors when excusable (Kondrad & Jaswal, 2012, Nurmsoo & Robinson, 2009).

Given this convergence with the adult literature, children’s use of cues to speaker morality and competence will strike many as an adaptive practice, especially when learning from testimony. After all, signs of a person’s competence or benevolence are good things to track if monitoring for signs of trustworthiness. As many have noted, the unreliability of testimony lies in the fact that informants can make mistakes (competence) and have interests that are not always in line with telling the truth (morality). However, questions concerning how well children monitor speakers for cues to benevolence and competence and how well this practice actually protects them from misinformation remain open, empirical questions. For us, the importance of these skills is that they illustrate that very young children, starting in infancy, are indeed rationally responsive (in the right directions) to considerations of speaker trustworthiness.

1. **Against a Unitary Treatment of Testimony**

Although most agree that testimony generally serves as a means to verbally communicate true information, this characterization risks being overly broad, overlooks the fact that testimonial exchanges vary considerably across situations, and neglects the possibility that this variation could have important implications for testimonial learning. For example, within the realm of assertions, many have articulated the importance of a shared communication, linguistic, and conceptual system. For Davidson (1984), “we can no more agree than disagree with someone without much mutuality” or “what is shared does not in general call for comment; it is too dull, trite or familiar to stand notice (p. 199).” Wittgenstein did not favor views that argued for the centrality of any single speech act (from which all others are derived) but he made explicit that “if language is to be a means of communication there must be agreement” in definitions and judgments and distinguished these from our more singular “opinions” (para 242, 1954). Coady (1992) draws a distinction between cases where “witness and audience are active explorers of a common world,” as in language, and cases of “natural testimony,” where examples include “giving someone directions to the post office, reporting what happened in an accident, ..., and telling someone the result of the last race or cricket score.” (p. 38) In concert with these distinctions and other considerations, more modern theorists like Lackey (2008), Lipton (1998) and McMyler (2011) agree that it is unlikely that testimony picks out an epistemically unified kind. As we continue to argue here, we too wish to avoid a unitary conception of testimony, and of testimonial knowledge, that puts in the same box knowledge that was arrived at by different routes and considerations.

Here we focus on one basic way in which testimony varies with respect to *content,* namely, what we call ‘transient-episodic’ versus ‘semantic-conceptual’ content. To avoid confusion with the use of such terms in other literatures, by ‘episodic’ testimony we mean assertions of facts tied to a specific time and place, and by ‘semantic’ testimony we mean assertions about generalizable, conventional, scientific, or conceptual knowledge. On an intuitive basis alone, assertions about episodic facts can be differentiated from those regarding conventional, scientific, and conceptual information (McMyler, 2011; see also Mills, 2013). Assertions of episodic facts are often constrained to specific events, and their truth is based on the authority of individual speakers with informative access to relevant aspects of an episode. In contrast, conventional, scientific, and conceptual information is broadly shared, generalizable knowledge based on the authority of a cultural, scholarly, or other (potentially unknown) collective source. Second, direct observation is often impossible in the cases of common testimony, leaving others’ testimony as the sole route to knowledge acquisition. Third, a speaker’s perceptual access to the local details of the episode will serve as a source of warrant or support for episodic claims but not as easily for conventional, semantic, or generic ones (see also Chapter 4). The very presence of such inherent differences across content domains casts doubt on a unitary theoretical treatment of testimonial learning as well as the idea that children approach testimonial learning situations in a uniform manner. Rather, the processes underlying children’s testimonial learning likely differ according to the content of the message. The aim of the remainder of the section will be to substantiate this robust intuitive distinction and reveal important differences in children’s selective learning from testimony in semantic and episodic information domains.

In what follows, we turn to the selective trust literature to spell out the psychological differences in children’s learning from semantic and episodic testimony. We group these differences into 3 categories: (1) informant tracking/source memory; (2) significance of errors; and (3) epistemic credentials.

*Informant Tracking*. In unmarked cases (i.e., where a speaker’s benevolence or competence is not in question), when children are presented with a single speaker who offers up a piece of testimony – be it semantic or episodic in its content, children tend to accept that information. In countless experimental studies of word learning, for example, children willingly accept information from an unmarked, unfamiliar speaker (Carey & Bartlett, 1978; Woodward, Markman & Fitzsimmons, 1994; Jaswal & Hansen, 2006). Indeed, work by Jaswal and colleagues shows that 2- to 3-year-old children are willing to re-categorize a perceptually deviant dog-like animal based on the simple, conventional report of an informant (e.g., “That’s a cat.”) (Jaswal, 2004; Jaswal & Markman, 2007; Jaswal & Malone, 2007; see also Chapter 9). Such results are not confined to the preschool years: Chan and Tardif (2013) examined the categorization decisions of American and Chinese kindergartners and second graders. Their task was to classify prototypical objects, for which they had high levels of prior knowledge, and ambiguous objects (that could be appropriately classified multiple ways), for which they had lower levels of prior knowledge. They first performed the task with a teacher, who mislabeled the objects to be categorized and then performed the task a second time in the teacher’s absence. All children were more likely to endorse labels that conflicted with their own perceptual judgments when they had weak prior knowledge of the objects, and the older children exhibited this effect most robustly.

Similarly, for cases of episodic reports from a single speaker who appears benevolent or competent, children accept what they are told. In research by Ganea and colleagues, 2-year-old children witnessed an object’s location (on the table) or physical state (dry) and were then told by an informant about a change (“moved to the cupboard” or “ is now wet”). By 30-months, when children were asked to retrieve the object, they updated their knowledge and retrieved the appropriate object (i.e., the wet one or the one from the cupboard) based solely on someone’s episodic testimony. Also, in work by Jaswal (2010), 30-month-old children readily changed their initial judgment about the whereabouts of an object that had been sent down a tubular device into one of three cups based on the episodic testimony of a nearby informant. Thus, for cases of both semantic and episodic testimony from a seemingly benevolent or competent speaker, we see that children (and adults) typically accept what they have been told.

Given children’s willingness to accept testimony of both semantic and episodic types, we are not arguing for differences in credulity in the unmarked cases. However, we suggest that beliefs gained from episodic testimony are more likely to carry with them knowledge of the source than are common cultural or semantic beliefs (e.g., about the names of things). Because semantic beliefs are so widespread and the testimonial practice that supports them so pervasive, we are unlikely to track and remember source information for commonly held information. In contrast, we are more likely to remember the source of many episodic claims such as where my lost keys have been hiding, who won the weekend’s football game, and what the best restaurant is in town. These episodic claims and the beliefs they engender are not commonly held, making their sources more memorable and easier to track.

In unmarked cases that do not involve error or speaker uncertainly, we are unaware of research that has directly examined children’s source tracking or memory when offered semantic and episodic information in a single experiment. However, there are indirect suggestions in the literature that children and adults may monitor the source of a claim more successfully when presented with unmarked episodic information as opposed to semantic information. Preschoolers tend to exhibit strikingly poor source monitoring during semantic learning. For example, 4- and 5-year-olds reported always having known recently learned (nonobvious) animal facts, scientific demonstrations, and color words (4-year-olds only), and expected their peers to know this information as well (Taylor, Esbensen, & Bennett, 1994). In an additional study, preschoolers committed the same error after learning Japanese counting words, but their monitoring performance improved substantially when the linguistic component of the learning task was deemphasized (e.g., “learning how to *count* in Japanese” as opposed to “learning the *meaning* of Japanese counting words;’ Esbensen, Taylor, & Stoess, 1997). Preschoolers demonstrated similarly high monitoring performance when learning about the contents of drawers, with 4- and 5-year-olds accurately recalling sources of knowledge at near ceiling levels (Gopnik & Graf, 1988; although obvious procedural differences prevent direct comparison between this and the studies by Esbensen and colleagues).

Research on the relationship between adult language comprehension and belief formation provides additional support for the possibility that differential monitoring processes are engaged for unmarked semantic versus episodic claims. Gilbert, Krull, and Malone (1990) presented adults with a series of assertions containing semantic information such as the meaning of “Hopi” vocabulary words (Study 1) or novel animal facts (Study 3) that were subsequently tagged as true or false. During some of the presentations, participants were distracted by auditory tones and requisite key presses. Results indicated that distracted adults were more likely to mistakenly judge assertions previously tagged as false to be true than they were to mistakenly judge assertions previously tagged as true to be false, suggesting that distraction led to decreased monitoring of the falsity of claims. However, the effect was eliminated in subsequent research employing the same task, and thus monitoring was spared, when assertions contained episodic messages that were informative when false (Hasson, Simmons, & Todorov, 2005). On the basis of these findings, it seems at least plausible that success in monitoring sources associated with statements may depend on the content of information, and, specifically, that monitoring may be engaged more effectively in response to episodic assertions. Future research should address this possibility with both children and adults.

*Significance of errors*. Recent evidence suggests that young children’s responses to speaker errors vary according to whether episodic or semantic information has been asserted. Specifically, younger preschoolers, and at times older preschoolers and school-aged children, exhibit lower responsiveness to speaker errors in cases of episodic assertions compared to cases of object labeling, and they seem to weight semantic errors more heavily when deciding whom to trust in future interactions. When searching for treats, for instance, 3-year-olds continuously endorsed the locations indicated by a speaker in spite of him being explicitly described as a “big liar who always tells lies” (Mascaro & Sperber, 2009). Similarly, preschoolers playing a finding game repeatedly searched for stickers in the locations reported by a speaker who had tricked multiple ‘finders’ in the past (Vanderbilt, Liu, & Heyman, 2011). In research by Jaswal, after witnessing an object roll down a transparent tube and correctly predicting its location, 30-month-old children repeatedly changed their view and chose to believe an adult’s incorrect report of where the object landed (Jaswal, 2010). In fact, children did not become increasingly skeptical over the course of 6 trials. Finally, Jaswal, Croft, Setia, and Cole (2010) showed that 3-year-olds consistently followed the advice of an inaccurate and deceptive informant (over 8 trials) when incorrect sticker locations were communicated through testimony (see Chapter 9). To sum, children’s sensitivity to the competence or accuracy of informants may decrease when the content is episodic, or event-related. It may be that such errors are less unusual (or more readily explained) because events are often transient, fleeting, or non-recurrent. Another possibility (that warrants empirical exploration) is that differences in the tasks used to assess selective learning in semantic and episodic domains may influence children’s performance. Note also that we are not suggesting that children are entirely insensitive to error in the episodic cases (see evidence from Ganea, Koenig & Millett (2011), but that sensitivity to episodic error may be less robust and evident later in development.

In sharp contrast, children appear vigilant and selective in the face of even a small number of semantic errors. Thirteen- and sixteen-month-old infants indicate their surprise in reaction to labeling errors of an adult (Gliga & Csibra, 2009; Koenig & Echols, 2003). Toddlers by 24 months modulate their willingness to learn from a speaker who recently committed three semantic errors (Koenig & Woodward, 2010). Evidence suggests that 3-year-olds mistrust inaccurate sources paired with neutral ones, and generalize that mistrust across types of information (Corriveau, Meints & Harris, 2009; Koenig & Jaswal, 2011). In research by Pasquini, Corriveau, Koenig & Harris (2007), 3-year-olds’ selective learning was less affected by the number of semantic errors committed and more by whether the informant had erred or not. Finally, research in our laboratory has demonstrated that preschoolers exhibit a greater selective preference for a previously accurate informant in novel learning situations after being exposed to object labeling errors as opposed to errors in reporting object locations (Stephens & Koenig, in prep). In light of these findings, we speculate that repeated object misnamings call into question an informant’s competence because they represent violations of information held *in common*, leading to selective mistrust. Moreover, instances of preschoolers’ unchecked credulity in tasks applying episodic inaccuracy may be attributable in part to the fact that episodic errors are often event-specific, transient, and idiosyncratic in nature.

Interestingly, young children are willing to excuse errors made for both semantic and episodic information. For example, when learning episodic information such as the color or texture of hidden objects, preschoolers excused a previously inaccurate speaker who erred only while lacking visual access and chose to accept the speaker’s word against their own when she had a positional advantage (Nurmsoo & Robinson, 2009b; Robinson & Whitcombe, 2003). Similarly, when learning semantic information, research by Kondrad and Jaswal (2012) shows that children forgive understandable semantic mistakes. In one condition, 4- and 5-year-old children were presented with two informants who had only a partial view of an object they were to name (e.g., the handle of a comb that also looked like that of a brush). Crucially, both informants provided inaccurate labels but one informant’s errors were closer to the mark (e.g., “a brush”) than the other informant’s errors (e.g., a “thunderstorm”) Children consistently agreed with the “close” informant, even though the inaccuracy of these “close” errors was revealed after each trial. Children also preferred the labels provided by the “close” informant for novel unambiguous objects. This work on error forgiveness is important in that clarifies that, in the eyes of a young child, it is the *inexplicable* semantic errors that really hurt the authority and call into doubt the competence of an informant.

*Epistemic Credentials.* For semantic information, one wants to learn and use labels accepted by one’s own community or group. In contrast, for episodic information, one wants to learn from those who happen to be in a ‘better position’ to know. For episodic reports, this often amounts to having first-hand access to information or having a positional advantage. Interestingly, in work by Brosseau-Liard & Birch (2011) that directly compared episodic learning (e.g., learning which of two objects was in a box) to semantic learning trials (e.g., learning the name of the object in a box), preschoolers appeared more likely to take into account a speaker’s history of accuracy when learning novel semantic information than when learning novel episodic information. Children perceived prior accuracy as less predictive of knowledge in the episodic learning situations (where factors such as a speaker’s perceptual access were of greater importance; Brosseau-Liard & Birch, 2011). In contrast, children favor sources with proven linguistic and conceptual knowledge when learning semantic information. For example, when learning novel labels, preschoolers prefer to learn from a speaker who accurately reported conceptual information such as nonobvious internal properties of objects (e.g., whether they were made of “red stuff” or “green stuff”) over one who accurately reported objects’ nonobvious, but potentially visible, external properties (e.g., whether they had red or green stickers on the back; Sobel & Corriveau, 2010). Preschoolers also selectively accepted novel labels from the speaker who previously labeled objects correctly over one who successfully activated or fixed objects, privileging evidence of conceptual competence (Kushnir et al., 2013). When learning novel conceptual information, children’s inferences regarding the internal properties of objects were influenced more by linguistic information (i.e., whether it shared a label with another object with the property in question) than by an object’s visual appearance (i.e., whether it looked like a another object with the property in question); interestingly, this effect was seen only when the labels were provided by a previously accurate or competent source (Kim, Kalish, & Harris, 2012).

In sharp contrast, in episodic learning situations, children privilege information such as perceptual access, and sometimes do so over semantic accuracy. For example, when figuring out which block would activate a novel machine, preschoolers endorsed the block indicated by an informant who was not blindfolded and thus in a position to apply her knowledge (Kushnir, Wellman, & Gelman, 2008). Young children also recognize when a source has more informative perceptual access than they themselves do and selectively accept suggestions conflicting with their own judgments accordingly (Robinson & Whitcombe), even when a source has been inaccurate in the past (Nurmsoo & Robinson, 2009). Similarly, as mentioned above, young children ignore prior accuracy information and exclusively rely on an informant’s relevant perceptual access when learning episodic facts such as which of two objects is hidden in a given location (Brosseau-Liard & Birch, 2011). Young children also appreciate the specific relevance of perceptual access to episodic learning situations. When learning about external, visible characteristics of unfamiliar animals and individuals, 6-year-olds chose to rely on visual inspection to acquire information; but, when learning about internal, invisible qualities, they chose to direct questions to individuals with relevant established expertise (Fitneva, Lam, & Dunfield, 2013). Preschoolers have higher confidence in the location or properties of an object after seeing it for themselves over being told from a speaker, especially if the speaker lacks informative access to the object (Clement, Koenig, & Harris, 2004; Robinson, Haigh, & Nurmsoo, 2008). Finally, even infants preferred to follow the gaze (indicating the potential presence of an object) of an individual who looked with interest in boxes containing objects as opposed to one who looked in empty boxes (Poulin-Dubois & Chow, 2009). In summary, when learning episodic information, children often favor evidence concerning a speaker’s positional advantage or relevant perceptual access.

There is plenty of evidence that children as young as 3 (if not younger) attribute knowledge to people who perceive information, but not to those who don’t (O’Neill, 1996; Pratt & Bryant, 1990; Meltzoff & Brooks, 2008), and the finding that children appreciate a causal link between perceiving something and knowing about it has been long established. The research reviewed above goes beyond this by indicating that when evaluating a certain kind of *testimony*, namely, assertions, children privilege evidence of a speaker’s positional advantage (and do so over prior accuracy). However, in a recent study, Lane et al., (2012) found that children did not privilege access over a trait description (“Sam is smart”) until 5- to 6 years of age. Children were asked to attribute knowledge to a “smart” character who lacked access to the contents of a box and a “not smart” character who indeed had access to the box’s contents. Three-year-olds used the trait information, rather than perceptual access, to infer informants’ knowledge. Only the oldest children (and adults) distinguished between the information conveyed by a positive trait and the more specific indicators of knowledge regarding the box’s contents. The understanding that perceptual access should be privileged over other types of information (e.g., trait descriptions) in some learning situations takes time to develop.

**Summary**

In light of this review, we argue that (1) children monitor speakers according to the primary dimensions of competence and warmth and (2) that testimony’s extensive variation with respect to testimonial *content* resists a unitary treatment. The current literature on children’s selective trust suggests that preschoolers are sensitive to the distinction between semantic and episodic testimony in terms of their *informant monitoring*, *sensitivity to error*, and evaluations of speakers’ *epistemic credentials* in accordance with the type of testimony presented.

The distinction between semantic and episodic testimony has been raised previously in the literature. For example, Fitneva and Dunfield (2010) write, “one of the potentially important differences is that knowledge regarding common objects is widely distributed. In contrast, knowledge about what a person has done in some specific, spatio-temporal context is narrowly distributed (p. 1383).” As discussed by Nurmsoo and Robinson (2009), who found no evidence for selectivity when semantic errors derived from a blindfolded speaker: “Perhaps children are [..] less cautious when they are offered [episodic] knowledge such as which object happens to be in a container at a particular moment in time (p. 46).” And, according to Brosseau-Liard and Birch (2011), who directly compared children’s learning of episodic messages with semantic messages, “situation-specific cues are only informative about someone’s knowledge in a particular situation: The fact that Sally looks inside a box […] tells us nothing about how knowledgeable she will be on other occasions, even a very similar one (p. 1789).” In support of these ideas, it was our aim to give the distinction between episodic tellings and semantic messages a fuller, more complete treatment here and to more extensively characterize the ways in which children’s testimonial learning may indeed depend upon different types of information and associated cognitive processes.

We have focused here on a single distinction – episodic tellings vs. shared or semantic practices – because we believe there to be suggestive evidence from children and adults to support the idea that children may treat these two types of claims differently. There are undoubtedly other types of claims that deserve careful consideration. In a recent article, Woolley and Ghossainy (2013), argue that claims regarding the reality status of new entities may initially be resisted by young children, in part because their own first-hand experience does not support such claims. Also, McMyler (2007) argues on intuitive and analytic grounds for an epistemic distinction – knowing at first- vs. second-hand – and distinguishes testimonial knowledge by appealing to the extent to which the listener has independent evidence that bears on the claim. The more independent evidence that’s available to a listener, the more ‘first-hand’ the knowledge becomes and less trust in the speaker becomes required. Given that epistemic analyses of testimony resist a unitary treatment, we anticipate that our trust in testimony is likely to take different forms as well.

**References**

Asch, S. E. (1946). Forming impressions of personality. *Journal of Abnormal and Social Psychology*, *41*, 258-290.

Birch, S. A., Vauthier, S. A., & Bloom, P. (2008). Three- and four-year-olds spontaneously use others’ past performance to guide their learning. *Cognition*, *107*, 1018-1034.

Brosseau-Liard, P. E. & Birch, S. A. (2011). Epistemic states and traits: Preschoolers appreciate the differential informativeness of situation-specific and person-specific cues to knowledge. *Child Development*, *82*, 1788-1796.

Cacioppo, J. T., Gardner, W. L., & Bernston, G. G. (1997). Beyond bipolar conceptualizations and measures: The case of attitudes and evaluative space. *Personality and Social Psychology Review*, *1*, 3-25.

Carey, S. & Bartlett, E. (1978). Acquiring a single new word. *Papers and Reports on Child Language Development*, *15*, 17-29.

Chaiken, S. (1979). “Communicator Physical Attractiveness and Persuasion.”

*Journal of Personality and Social Psychology*, 37(8): 1387-1397.

Chaiken, Shelly & Eagly, A (1983). “Communication Modality as a Determinant of

Persuasion: The Role of Communicator Salience.” *Journal of Personality and*

*Social Psychology*, 45(2): 241-256.

Chan, C. C. Y., & Tardif, T. (2013). Knowing better: The role of prior knowledge and culture in trust in testimony. *Developmental Psychology*, *49*, 591-601.

Clement, F., Koenig, M. A., & Harris, P. L. (2004). The ontogenesis of trust. *Mind & Language*, *19*, 360-379.

Coady, C. A. J. (1992). *Testimony: A Philosophical Study*. New York, NY: Oxford University Press.

Corriveau, K. H., Fusaro, M., & Harris, P. L. (2008). Going with the flow: Preschoolers prefer nondissenters as informants. *Psychological Science*, *20*, 372-377.

Corriveau, K. H. & Harris, P. L. (2009). Choosing your informant: Weighing familiarity and recent accuracy. *Developmental Science*, *12*, 426-437.

Corriveau, K. H., Harris, P. L., Meins, E., Fernyhough, C., Arnott, B., Elliott, L., … & De Rosnay, M. (2009). Young children’s trust in their mother’s claims: Longitudinal links with attachment security in infancy. *Child Development*, *80*, 750-761.

Corriveau, K. H., Kinzler, K. D., & Harris, P. L. (2013). Accuracy trumps accent in children’s endorsement of object labels. *Developmental Pychology*, *49*, 470-479.

Corriveau, K. H., Meints, K, & Harris, P. L. (2009). Early tracking of informant accuracy and inaccuracy. *Developmental Psychology*, *27*, 331-342.

Chow, V., Poulin-Dubois, D., & Lewis, J. (2008). To see or not to see: Infants prefer to follow the gaze of a reliable looker. *Developmental Science*, *11*, 761-770.

Davidson, D. (1984). *Truth and Interpretation*. Claredon, New York.

Doebel, S. & Koenig, M. A. (2013). Children’s use of moral behavior in selective trust: Discrimination versus learning. *Developmental Psychology*, *49*, 462-469.

Esbensen, B. M., Taylor, M., & Stoess, C. (1997). Children’s behavioral understanding of knowledge acquisition. *Cognitive Development*, *12*, 53-84.

Fiske, S. T. (1980). Attention and weight in person perception: The impact of negative and extreme behavior. *Journal of Personality and Social Psychology*,  *38*, 889-906.

Fiske, S. T., Cuddy, A. J. C., & Glick, P. (2007). Universal dimensions of social cognition: Warmth and competence. *Trends in Cognitive Sciences*, *11*, 77-83.

Fitneva, S. A. & Dunfield, K. A. (2010). Selective information seeking after a single encounter. *Developmental Psychology*, *46*, 1380-1384.

Fitneva, S. A., Lam, N. H. L., & Dunfield, K. A. (2013). The development of children’s information gathering: To look or to ask? *Developmental Psychology*, *49*, 533-542.

Fusaro, M. & Harris, P. L. (2008). Children assess informant reliability using bystanders’ non-verbal cues. *Developmental Science*, *11*, 771-777.

Fusaro, M. & Harris, P. L. (2013). Dax gets the nod: Toddlers detect and use social cues to evaluate testimony. *Developmental Psychology*, *49*, 514-522.

Ganea, P. A., Koenig, M. A., & Millett, K. G. (2011). Changing your mind about things unseen: Toddlers’ sensitivity to prior reliability. *Journal of Experimental Child Psychology*, *109*, 445-453.

Gilbert, D. T., Krull, D. S., & Malone, P. S. (1990). Unbelieving the unbelievable: Some problems in the rejection of false information. *Journal of Personality and Social Psychology*, *59*, 601-613.

Gillis, R. L. & Nilsen, E. S. (2013). Children’s use of information quality to establish speaker preferences. *Developmental Psychology*, *49*, 480-490.

Gliga, T. & Csibra, G. (2009). One-year-old infants appreciate the referential nature of deictic gestures and words. *Psychological Science*, *20*, 347-353.

Gopnik, A. & Graf, P. (1988). Knowing how you know: Young children’s ability to identify and remember the source of their beliefs.  *Child Development*, *59*, 1366-1371.

Gweon, H., Pelton, H., & Schulz, L. E. (2011). Adults and school-aged children accurately evaluate sins of omission in pedagogical contexts. In *Proceedings of the 33rd Annual Conference of the Cognitive Science Society*.

Hamlin, J. K., Wynn, K., & Bloom, P. (2007). Social evaluation by preverbal infants. *Nature*, *450*, 557-559.

Hamlin, J. K., Wynn, K., & Bloom, P. (2010). Three-month-olds show a negativity bias in their social evaluations. *Developmental Science*, *13*, 923-929.

Hasson, U., Simmons, J. P., & Todorov, A. (2005). Believe it or not: On the possibility of suspending belief. *Psychological Science*, *16*, 566-571.

Jaswal, V. K. (2004). Preschoolers’ sensitivity to speaker intent in category induction. *Child Development*, *75*, 1871-1885.

Jaswal, V. K. (2010). Believing what you’re told: Young children’s trust in unexpected testimony about the physical world. *Cognitive Psychology*, *61*, 248-272.

Jaswal, V. K., Croft, A. C., Setia, A. R., & Cole, C. A. (2010). Young children have a specific, highly robust bias to trust testimony.  *Psychological Science*, *21*, 1541-1547.

Jaswal, V. K. & Hansen, M. B. (2006). Learning words: Children disregard some pragmatic information that conflicts with mutual exclusivity. *Developmental Science*, *9*, 158-165.

Jaswal, V. K. & Malone, L. S. (2007). Turning believers into skeptics: 3-year-olds’ sensitivity to cues to speaker credibility. *Journal of Cognition and Development*, *8*, 263-283.

Jaswal, V. K. & Markman, E. M. (2007). Looks aren’t everything: 24-month-olds’ willingness to accept unexpected labels. *Journal of Cognition and Development*, *8*, 93-111.

Jaswal, V. K. & Neely, L. A. (2006). Adults don’t always know best: Preschoolers use past reliability over age when learning new words. *Psychological Science*, *17*, 757-758.

Kim, S., Kalish, C. W., & Harris, P. L. (2012). Speaker reliability guides children’s inductive inferences about novel properties. *Cognitive Development*, *27*, 114-125.

Koenig, M. A., Clement, F., & Harris, P. L. (2004). Trust in testimony: Children’s use of true and false statements. *Psychological Science*, *15*, 694-698.

Koenig, M. A. & Echols, C. H. (2003). Infants’ understanding of false labeling events: The referential roles of words and the speakers who use them. *Cognition*, *87*, 179-208.

Koenig, M. A. & Harris, P. L. (2005). Preschoolers mistrust ignorant and inaccurate speakers. *Child Development*, *76*, 1261-1277.

Koenig, M. A. & Jaswal, V. K. (2011). Characterizing children’s expectations about expertise and incompetence: Halo or pitchfork effects? *Child Development*, *82*, 1634-1647.

Koenig, M. A. & Woodward, A. L. (2010). Sensitivity of 24-month-olds to the prior accuracy of the source: Possible mechanisms. *Developmental Psychology*, *46*, 815-826.

Kondrad, R. L. & Jaswal, V. K. (2012). Explaining the errors away: Young children forgive understandable semantic mistakes. *Cognitive Development*, *27*, 126-135.

Kushnir, T., Vredenburgh, C. Schneider, L. A. (2013). “Who can help me fix this toy?” The distinction between causal knowledge and word knowledge guides preschoolers’ selective requests for information. *Developmental Psychology*, *49*, 446-453.

Kushnir, T., Wellman, H. M., & Gelman, S. A. (2008). The role of preschoolers’ social understanding in evaluating the informativeness of causal interventions. *Cognition*, *107*, 1084-1092.

Lackey, J., (2008). *Learning from Words: Testimony as a Source of Knowledge.* Oxford University Press: Oxford.

Lane, J. D., Wellman, H. M., & Gelman, S. A. (2012). Informants’ traits weigh heavily in young children’s trust in testimony and in their epistemic inferences. *Child Development*. doi: 10.1111/cdev.12029

Lipton, P. (1998). The epistemology of testimony. *Studies in History and Philosophy of Science*, *29*, 1-32.

Liu, D. Vanderbilt, K. E., & Heyman, G. D. (2013). Selective trust: Children’s use of intention and outcome of past testimony. *Developmental Psychology*, *49*, 439-445.

Lutz, D. J. & Keil, F. C. (2002). Early understanding of the division of cognitive labor. *Child Devevlopment*, *73*, 1073-1084.

Mascaro, O. & Sperber, D. (2009). The moral, epistemic, and mindreading components of children’s vigilance towards deception. *Cognition*, *112*, 367-280.

McMyler, B. (2007). Knowing at second hand. *Inquiry*, *50*, 511-540.

McMyler, B. (2011). *Testimony, Trust, and Authority*. New York, NY: Oxford University Press.

Meltzoff, A. N. & Brooks, R. (2008). Self experience as a mechanism for learning about others: A training study in social cognition. *Developmental Psychology*, *44*, 1257-1265.

Mills, C. M. (2013). Knowing when to doubt: Developing a critical stance when learning from others. *Developmental Psychology*, *49*, 404-418.

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*, 23-27.

Nurmsoo, E. & Robinson, E. J. (2009). Identifying unreliable informants: Do children excuse past inaccuracy?. *Developmental Science*, *12*, 41-47.

O’Neill, D. K. (1996). Two-year-old children’s sensitivity to a parent’s knowledge state when making requests. *Child Development*, *67*, 659-677.

Pasquini, E. S., Corriveau, K. H., Koenig, M. A., & Harris, P. L. (2007). Preschoolers monitor the relative accuracy of informants. *Developmental Psychology*, *43*, 1216-1226.

Peeters, G., (2002). From good and bad to can and must: subjective necessity of acts associated with positively and negatively valued stimuli. *European Journal of Social Psychology*, 32, 125-136.

Pratt, C. & Bryant, P. (1990). Children understand that looking leads to knowing (so long as they are looking into a single barrel). *Child Development*, *61*, 973-982.

Robinson, E. J., Haigh, S. N., & Nurmsoo, E. (2008). Children’s working understanding of knowledge sources: Confidence in knowledge gained from testimony. *Cognitive Development*, *23*, 105-118.

Robinson, E. J. & Whitcombe, E. L. (2003). Children’s suggestibility in relation to their understanding about sources of knowledge. *Child Development*, *74*, 48-62.

Rosenberg, S., Nelson, C., & Vivekananthan, P. S. (1968). A multidimensional approach to the structure of personality impressions. *Journal of Personality and Social Psychology*, *9*, 283-294.

Sabbagh, M. A. & Baldwin, D. A. (2001). Learning words from knowledgeable versus ignorant speakers: Links between preschoolers’ theory of mind and semantic development. *Child Development*, *72*, 1054-1070.

Scofield, J., Gilpin, A. T., Pierucci, J., & Morgan, R. (2013). Matters of accuracy and conventionality: Prior accuracy guides children’s evaluations of others’ actions.  *Developmental Psychology*, *49*, 432-438.

Skowronski, J. J. & Carlston, D. E. (1987). Social judgment and social memory: The role of cue diagnosticity in negativity, positivity, and extremity biases. *Journal of Personality and Social Psychology*, *52*, 689-699.

Sobel, D. M. & Corriveau, K. H. (2010). Children monitor individuals’ expertise for word learning. *Child Development*, *81*, 669-679.

Stephens, E. C. & Koenig, M. A. (in prep). The error is key: Preschoolers’ selective learning in semantic and episodic domains.

Taylor, M., Esbensen, B. M., & Bennett, R. T. (1994). Children’s understanding of knowledge acquisition: The tendency for children to report that they have always known what they have just learned. *Child Development*, *65*, 1581-1604.

Vaish, A., Carpenter, M., & Tomasello, M. (2009). Sympathy through affective perspective taking and its relation to prosocial behavior in toddlers. *Developmental Psychology*, *45*, 534-543.

Vaish, A., Grossman, T., & Woodward, A. (2008). Not all emotions are created equal: The negativity bias in social-emotional development. *Psychological Bulletin*, *134*, 383-403.

Vanderbilt, K. E., Liu, D., & Heyman, G. D. (2011). The development of distrust. *Child Development*, *82*, 1372-1380.

Wittgenstein, L. (1968). *On Certainty*. Blackwell Publishing.

Wojciszke, B. (1994). Multiple meanings of behavior: Construing actions in terms of competence and morality. *Journal of Personality and Social Psychology*, *67*, 222-232.

Wojciszke, B., Bazinska, R., & Jaworski, M. (1998). On the dominance of moral categories in impression formation. *Personality and Social Psychology Bulletin*, *24*, 1251-1263.

Woodward, A. L., Markman, E. M., & Fizsimmons, C. M. (1994). Rapid word learning in 13- and 18-month-olds. *Developmental Psychology*, *30*, 553-566.

Zmyj, N., Buttelmann, D., Carpenter, M. J., & Daum, M. M. (2010). The reliability of a model influences 14-month-olds’ imitation. *Journal of Experimental Child Psychology, 106,* 208-220.