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Children show a positivity bias in social learning such that they prefer to learn from those who are nice (over those who are mean; e.g., Lane, Wellman, & Gelman, 2013) and those who provide positive content in their speech (over negative content; Boseovski, 2012). The present study investigated the way that these biases function when children practice epistemic vigilance. Children heard stories about different informants who varied in both testimony (i.e., judgments that a painting was good or bad) and traits (i.e., nice or mean). Children were asked who they would endorse, who they would ask about a future painting, and their affiliation preferences. Children chose to endorse and ask the mean informant who provided positive testimony, but chose to affiliate with the nice informant who provided negative testimony. Endorsements of positive testimony increased with age. This study extends research on children's epistemic vigilance to indicate the biases children have for positive testimony when they selectively learn from others. The findings may help to inform teachers and caregivers about ways to establish more effective learning and social experiences.

IS IT TESTIMONY OR TRAIT? UNDERSTANDING CHILDREN'S
PREFERENCES FOR INFORMANTS

by

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CHAPTER I

INTRODUCTION

In many circumstances, especially in their early years, children must rely on others (i.e., informants) to obtain knowledge in realms of the world in which they are ignorant. This is not a foolproof way to acquire an understanding of the world, as informants may not always be accurate or honest (e.g., Mills, 2013). Given that children are exposed to information that could be incorrect, they are faced with the difficult task of filtering misinformation by weighing the differing characteristics of informants.

From a young age, children are selective about who and what they choose to believe. Of interest in the current study is how children selectively learn from informants based on informants' traits (i.e., whether they are nice or mean) and the type of evaluation that informants make about a work product (i.e., a positive or negative evaluation of a painting). In novel learning contexts, children prioritize information from informants with positive traits over negative traits (e.g., Landrum, Mills, & Johnston, 2013; Mascaro & Sperber, 2009, Study 1) and prioritize positive over negative content of speech (Boseovski, 2012). Children's perceptions of informants' traits and informants' evaluations have only been assessed independently. Of interest to the current study is how children weigh both informants' traits and informants' testimony when they are presented concurrently.

In the current study, children were introduced to a mean informant who gave a peer positive feedback on a painting and a nice informant who gave a peer negative feedback on a painting. Then, children were asked a variety of questions to determine which testimony they endorsed and to assess their preferences in who they would ask in the future. Children were also asked who they would like to be friends with, and provided attributions of each informant's trait and perceptions of how each informant would behave in the future. Implications of the study can help inform selective social learning literature in the ways that children practice epistemic vigilance when these two dimensions are presented concurrently. Specifically, the current study can help answer questions regarding how children consider differing positive and negative trait and testimony information in their epistemic and social decisions.

Selective Social Learning in Childhood

Research in the domain of social learning investigates the ways that children practice epistemic vigilance or filter misinformation from communicated contents (Mascaro & Sperber, 2009). In the traditional social learning paradigm, children are presented with the conflicting testimony of two informants who vary on a property of interest and provide conflicting labels for a novel item. Children are then asked what the name of the novel item is, and thus demonstrate preference for one informant over the other based on whose label they believe is correct. For example, Jaswal and Neely (2006) introduced children to one informant who labeled everyday items correctly (i.e., reliable) and another who labeled everyday items incorrectly (i.e., unreliable). The informants then provided conflicting labels for a novel object and the child was asked to name the object.

Three- and 4-year-olds endorsed the label given by the reliable informant as opposed to the unreliable informant. Three- and 4-year-olds continue to endorse reliable informant's labels and functions of novel objects when the other informant does not know the label of an object (Koenig & Harris, 2005, Experiment 3).

In addition to reliability in object label learning, children pay attention to informants' relative accuracy (e.g., Pasquini, Corriveau, Koenig, & Harris, 2007), their use of terms of certainty (Jaswal & Malone, 2007, Study 1), their intent (e.g., Jaswal, 2004), and their consensus from others (Corriveau, Fusaro, & Harris, 2009). Children develop a critical stance in selective social learning in their preschool years (e.g., Vanderbilt, Liu, & Heyman, 2011) that improves throughout childhood, as older children are able to weigh relevant dimensions of informants better than younger children (e.g., Boseovski, Hughes, & Miller, 2016; Brosseau-Liard & Birch, 2010; Feldman & Ruble, 1988). From preschool onward, children selectively choose information from others based on these differing characteristics (e.g., Poulin-Dubois & Brosseau-Liard, 2016), and do not treat all information given to them by others equally.

The traditional social learning paradigm has been extended beyond the realm of object labeling to understand how children make use of trait information, specifically in evaluative contexts. Traits are treated as psychological categories through which children can make inferences about properties, or future behaviors, that correspond with a relevant trait (Heyman & Gelman, 1999). Trait understanding begins at 2 years of age, when children readily use the traits "nice" and "mean" to label others (Bretherton & Beeghly, 1982). As they develop, children's understanding of traits becomes more complex. By

kindergarten, children understand that people who are nice have different motives and behaviors than those who are mean (Heyman & Gelman, 1999) and are able to infer emotional (Gnepp & Chilamkurti, 1988) and mental (Heyman & Gelman, 1999) states based on trait information. Older children have stronger understanding that traits are stable (Yuill, 1997) and have a better ability to attribute appropriate behaviors based on nice and mean trait labels (Landrum et al., 2013).

Selective Social Learning: Incorporation of Traits

The first factor of interest in the current study concerned children's perceptions of informant benevolence. In one study, 3-year-olds were asked the contents of a box after hearing conflicting testimony from a nice and mean puppet who had looked inside the box (Mascaro & Sperber, 2009, Study 1). Since traits of benevolence do not provide information about which informant would be the most knowledgeable about the contents of a box, this study differed from studies where informants differed in reliability such that there wasn't a "correct" informant for children to trust. Instead of performing at chance levels, the majority of 3-year-olds endorsed the testimony of the nice puppet. This demonstrates that as early as 3 years of age, children use benevolence information to determine who to trust. Children's preferences for nice traits can be attributed to a positivity bias, which appears in early childhood and continues through middle childhood and is characterized in selective social learning by the attention and preference they show toward positive information or informants (Boseovski, 2010).

Children overextend information about informants' niceness and prioritize this information over other relevant factors. Landrum, Pflaum, and Mills (2016) introduced 4-

and 5-year-olds to nice, mean and neutral characters who were either bird experts or nonexperts. When asked to attribute nice and mean behaviors, preschoolers appropriately attributed nice behaviors to nice characters and mean behaviors to mean characters. When asked to attribute knowledge to informants, children incorrectly attributed both tangential knowledge and knowledge relevant to the expert's domain of the expertise to the nice nonexpert. Children overextended nice and mean information to irrelevant knowledge domains, and relied more heavily on benevolence information than relevant expertise information. Children did not demonstrate a similar incorporation of expertise in their behavior attributions, and instead relied exclusively on benevolence information. These findings demonstrate that the social features of niceness and meanness can influence judgments in ways that other characteristics (e.g., expertise) do not.

In a similar study where 3- to 5-year-olds were given information about a nice nonexpert and a mean eagle expert, children were again able to appropriately attribute nice behaviors to the nice informant and mean behaviors to the mean informant (Landrum et al., 2013, Experiment 3). Children were asked whose label was correct after the nice nonexpert and mean expert provided conflicting labels for items related to the expert's knowledge (e.g., something used to warm chicken eggs) and items that were neutral (e.g., something used to warm cold hands). Children demonstrated an inability to appropriately endorse the mean expert in his domain of expertise and endorsed the nice nonexpert in both neutral and expertise-relevant domains. Given that young children endorse relevant experts based on their domain-specific expertise and previous behaviors that exemplified their expertise (e.g., Kushnir, Vredenburgh, & Schneider, 2013;

Landrum et al., 2013, Experiment 1), this reluctance to do so appears to be based on the added benevolence information. Thus, there is considerable impact that the social traits of nice and mean have on children's judgments and trust of others that is not seen for other epistemic or social traits.

Younger children demonstrate greater extensions of nice and mean traits to unrelated realms than older children. For example, when children were told that a mean informant saw what was inside a box and a nice informant did not, 3-year-olds reported that the nice informant knew what was inside the box, despite the fact that they were told that the nice informant had not seen inside of it (Lane et al., 2013). Four-, 5- and 6-year-olds, however, did not show this bias, and correctly identified the knowledgeable, mean informant as knowing what was inside the box, despite his negatively-valenced trait. There is some evidence that with age, children are better able to associate characteristics with their appropriate domains, as fourth graders are able use relevant characteristics to solve associated problems while kindergarteners are not (Danovitch & Keil, 2007). In the current study, one might expect that with age, children would prefer the nice informant in their epistemic judgments. This is not because they perceive the nice informant to be more knowledgeable, but because they may have a better understanding that someone who is considered nice would likely not attempt to deceive them. Indeed, Mascaro and Sperber (2009, Study 3) found that with age, children showed greater mistrust in a mean informant, and were more likely to attribute this mistrust to knowledge that mean informants are likely to lie. In the case of the current study, one might expect older

children to be more willing to endorse and ask the nice, negative informant due to the more enduring positive trait information even in the face of one instance of negativity.

Selective Social Learning: Incorporation of Contents of Speech

The second factor of interest in the current study was concerned with the way that children responded to positive contents of speech. Boseovski (2012) showed 3- to 7-year-olds instances of protagonists who behaved positively or negatively and were later labeled as nice or mean by two informants. One informant consistently labeled the protagonists correctly (i.e., reliable) and the other informant consistently labeled the protagonists incorrectly (i.e., unreliable). Children were then shown a picture of two new protagonists who did not exhibit any behavior, and each informant provided conflicting labels for the protagonists; one was labeled mean and the other was labeled nice by the reliable informant. Children relied more on positive evaluative contents of speech than on reliability in endorsements, as the majority of children labeled the third-party protagonist as nice in both scenarios.

Children rely on the valence of positive and negative feedback in their endorsements and trait attributions above and beyond expertise and consensus information. Boseovski, Marble and Hughes (2017) found that children relied on the valence of evaluative feedback that informants gave on a peer's artwork or music over expertise and consensus information. Specifically, children believed informants who gave positive feedback were correct. In contrast, when evaluative testimony was framed as a less negatively-valenced ability judgment (i.e., it needed more work), children depended on expertise information as opposed to positive testimony. The impact of negative

testimony appeared to increase with age, as 6- to 9-year-olds gave more negative trait attributions to informants that provided negative evaluative testimony compared to 4- and 5-year-olds. Thus, with age, children had an increased aversion from negative evaluative testimony that impacted their trait attributions. Despite demonstrated ability to consider both expertise (e.g., Kushnir et al., 2013; Landrum et al., 2013, Experiment 1) and consensus (Corriveau et al., 2009), children weigh valence of testimony information more heavily in endorsements and trait attributions.

In conjunction with children's reluctance to provide negative feedback (e.g., Boseovski, 2012; Boseovski & Lee, 2006), Heyman, Fu and Lee (2013) proposed a selective skepticism hypothesis, where children are more skeptical of negative evaluative feedback than positive evaluative feedback. This hypothesis concerns children's belief in credibility of feedback based on its valence, where children are more likely to reject the credibility of negative feedback because positivity bias is associated with the belief that negative feedback is inaccurate. Indeed, Heyman and colleagues found that both 7- and 10-year-old children were more skeptical of negative feedback than positive feedback, regardless of whether feedback was provided by a peer or teacher, with more skepticism shown in 7-year-olds. Children's selective skepticism may bias them toward positive feedback to reduce the dissonance between the feedback they hear and their own positive beliefs, especially in middle childhood.

Boseovski and Thurman (2014) found further evidence of the impact of positive testimony in middle childhood. Three- to 7-year-olds were given information about a novel animal that was either positive (i.e., that the animal enjoyed children) or negative

(i.e., that the animal hunted other creatures) from a maternal figure or zookeeper, and then were asked who they believed was right about the novel animal (i.e., endorsement). Six- and 7-year-olds were more likely to endorse based on positive testimony but considered expertise through their endorsements of the positive zookeeper more often than the positive maternal figure. Conversely, 3- to 5-year-olds relied more heavily on expertise and endorsed the zookeeper as correct, especially when the zookeeper provided negative information. This likely reflected a negativity bias in childhood for information surrounding personal safety (Vaish, Grossmann, & Woodward, 2008). Children who endorsed the positive informant illustrated this verbal preference and were more likely to touch the novel animal (via the BAT; Field & Lawson, 2003). Thus, with age, children were more likely to favor positive evaluative testimony over relevant expertise in endorsements of informants' knowledge about novel animals.

Children's preference for positive over negative contents of speech may help them to persevere through the task of weighing different pieces of information in an attempt to seek the truth (Boseovski, 2010). Children are reluctant to believe negative information; thus, they may prioritize positive information because it is consistent with their own beliefs. Given that positivity bias exists into middle childhood, it is important to understand the way that young children apply this bias in learning contexts.

The Impact of Cognitive Development on Social Learning

Children exhibit biases in epistemic decision-making, and differences in epistemic preferences may be related to differences in inhibitory control. Although young children verbalize that a person can possess traits that conflict in valence (e.g., nice and not

smart), it requires more cognitive effort to consider and remember cross-valence traits in comparison to consistent-valence traits (Heyman, Gee, & Giles, 2003). To consider both the trait and testimony of two informants, children must shift their attention and inhibit previous knowledge. The current study used the Dimensional Change Cart Sort task (Zelazo, 2006) to examine if inhibitory control was meaningful in children's preferences. This measure has children sort cards on a variety of dimensions, with increasing difficulty overtime and a final score is calculated based on appropriate assortment.

The Impact of Essentialism on Social Learning

Of further interest was whether children's essentialist beliefs influence epistemic vigilance. Trait essentialism is concerned with the degree to which people believe that traits are stable and not malleable (Heyman, 2009). Children who hold more essentialist beliefs may focus more on the stability of trait information, whereas those who hold less essentialist beliefs may be less influenced by trait information, as they believe traits have the possibility for change. Indeed, Heyman and Giles (2004) found that children who held stronger beliefs about the stability and lack of malleability of traits were more likely to infer a trait based on a single behavior than those who did not hold these beliefs.

Children's essentialist beliefs were assessed using modified trait essentialism measure (Gelman, Heyman, & Legare, 2007; Heyman & Dweck, 1998) to investigate the way that these beliefs may impact epistemic vigilance. The questions evaluated children's biases in traits regarding their presence from birth, ability to change, environmental impact, sociomoral stability, cross-situation generality, and biological basis. Children were asked these questions for different people who possessed both nice and mean traits.

The current study incorporated a measure on trait essentialism to assess whether essentialist beliefs are correlated with the main dependent measures.

Current Study

The vast majority of previous research has investigated children's positivity biases in both trait preference (e.g., Mascaro & Sperber, 2009) and content preference (Boseovski, 2012) independently. The current study took a novel approach of manipulating informants' social traits (nice or mean) and verbalized contents of speech (positive or negative) to examine the way children's epistemic vigilance and social preferences were impacted by each domain. Children were introduced to informants who provided subjective judgments about a peer's painting so that the criteria for evaluation were ambiguous (e.g., Boseovski et al., 2016; Mills & Landrum, 2012). Specifically, children were introduced to a nice informant who provided negative testimony about a peer's painting (i.e., nice, negative) and a mean informant who provided positive testimony about a peer's painting (i.e., mean, positive) and were asked about their learning and social preferences, as well as their social judgments.

Given the evidence for developmental differences in trait understanding (e.g., Heyman & Gelman, 1999, 2000) and positivity bias (Boseovski, 2010), children 4 to 8 years of age were investigated. Children in this age range are able to use relevant features of both traits (e.g., Mascaro & Sperber, 2009) and testimonies (e.g., Gillis & Nilsen, 2013), both of which improve with age. Children in this age range demonstrate a positivity bias in selective social learning that develops with age such that children are

better able to make differential judgments based on different realms where positivity is shown (e.g., Stipek & Daniels, 1990).

Children's epistemic and social preferences were assessed through a variety of forced-choice and open-ended questions. Children were asked who was correct about the painting (i.e., endorsement) and who they would ask about another painting (i.e., ask question), followed up with explanations for both. Both of these questions were used to assess preferential trust given the observed differences in how children respond to each question. Some research has shown children are more likely to ask a positively-valenced informant than endorse a positively-valenced informant (Koenig, Clément, & Harris, 2004). The differences between the two measures could lie in the construct; when children choose to ask an informant, they may rely on their desire to affiliate with the informant, whereas endorsement of an informant may lie more heavily on the informant's testimony (Lane et al., 2013). Affiliation was assessed by asking children which informant they would prefer to be friends with and why they preferred that informant.

Children's perceptions of stability, traits, and honesty were assessed through a variety of forced-choice and open-ended questions. Children's evaluations in the stability of traits or testimony was assessed through what they believed each informant would say in a similar situation in the future. A trait attribution measure was included to assess children's general trait impressions. Finally, a measure was given to analyze children's perceptions of the informants' honesty. There is evidence that young children consider other's intentions, even when the outcomes are negative (e.g., Heyman & Gelman, 1999); thus, insight into children's perceptions of honesty in testimony could help understand

how children interpret the mental states of others based on their given testimonies and traits, and how this may influence preferential trust.

A consistent-valence baseline condition was conducted prior to the cross-valence main condition, such that children were introduced to a nice informant who provided positive testimony, and a mean informant who provided negative testimony. This condition served to show how children would respond at baseline when the informants did not possess conflicting traits and testimonies.

It has been well established that children have biases in who they prefer to learn from in the realms of content of speech and evaluative traits of informants, but it is unclear how children's evaluations of informants might change in situations where these conflict. The current study aids in understanding the degree to which children are sensitive to positive and negative trait and testimony information, how they use this information to make decisions about who and what they trust, and how this may change across development. This information can help teachers, parents, and caregivers establish ways to best inform children to make for more positive and effective learning experiences (e.g., presenting information in a more constructive way to encourage children's acceptance of the information).

Hypotheses

In the consistent-valence baseline condition, I expected that children would prefer both positive traits and testimony over negative traits and testimony, as supported by the overwhelming positivity bias literature that demonstrates that children prefer positive traits and testimonies over negative traits and testimonies.

Given children's positivity bias, I expected that children would endorse, ask and affiliate with the nice, negative informant over the mean, positive informant in the cross-valence main condition. The more global characteristic of traits may be easier for children to rely on than a one-time instance of testimony (e.g., Heyman, 2009), shown in the current study by a preference for the global characteristic of niceness.

I anticipated a main effect of age for preference in the nice, negative informant, such that older children would prefer this informant more than younger children. Older children have a better understanding of the stability of traits and are better at associating traits with other relevant qualities (e.g., Boseovski & Lee, 2006; Boseovski & Lee, 2008; Yuill, 1997). This understanding may help older children contextualize trait information to prefer the stable nature of the positive trait over the single instance of positive testimony. Further, older children are able to weigh relevant dimensions better than younger children (e.g., Boseovski et al., 2016; Feldman & Ruble, 1988), in this case, favoring the positive trait over the positive testimony due to its stable nature.

In the realm of cognitive development, I predicted that the selection of the nice, negative informant would be positively correlated with inhibitory control. Children with greater inhibitory control may be better able to inhibit the one instance of positivity to favor the more lasting trait label of nice. Lastly, I predicted a positive correlation between preference for the nice, negative informant and essentialist beliefs. Those who hold entity beliefs that traits are stable and not malleable would prefer the nice, negative informant, given the more positive trait label as compared to the mean, positive informant.

CHAPTER II

METHOD

Participants

The final sample for the cross-valence main condition consisted of 123 children between 4 to 8 years of age: 24 4-year-olds ($M = 54.7$ months, $SD = 3.5$, 8 boys and 16 girls), 25 5-year-olds ($M = 64.5$ months, $SD = 3.2$, 16 boys and 9 girls), 25 6-year-olds ($M = 77.4$ months, $SD = 2.6$, 13 boys and 12 girls), 25 7-year-olds ($M = 90.0$ months, $SD = 3.5$, 16 boys and 9 girls), and 24 8-year-olds ($M = 101.7$ months, $SD = 3.2$, 10 boys and 14 girls). Participants were of diverse ethnic/racial backgrounds: 56.9% White, 24.4% Black, 5.7% identified as mixed, 4.1% identified as other, and 8.9% chose not to report on this variable.

The final sample for the consistent-valence baseline condition consisted of 20 children between 4 to 8 years of age: Four 4-year-olds ($M = 55.0$ months, $SD = 2.5$, two boys and two girls), four 5-year-olds ($M = 66.3$ months, $SD = 1.0$, no boys and four girls), four 6-year-olds ($M = 77.9$ months, $SD = 1.0$, four boys and no girls), four 7-year-olds ($M = 89.5$ months, $SD = 3.1$, one boy and three girls), and four 8-year-olds ($M = 102.8$ months, $SD = 4.8$, three boys and one girl). Participants were of diverse ethnic/racial backgrounds: 60% White, 10% Black, 5% identified as mixed, 5% identified as other, and 20% chose not to report on this variable.

The majority of participants in both conditions were from middle- to upper-class families that were recruited through a laboratory database of children in Greensboro, North Carolina. Children were tested by a female experimenter in private rooms located at their preschools or in a developmental science laboratory. All participants had signed consent from a parent or legal guardian and were asked if they would like to participate prior to testing. In addition to verbal assent, participants aged 7 to 8 years filled out written assent forms. Testing took about 15 minutes per participant.

Materials

Children were first shown a cartoon of an artist next to an easel that contained a painting faced in the opposite direction of the child. Throughout the task, children were shown cartoon pictures of a mean informant and a nice informant. The informants were female, as is customary in most selective social learning research (e.g., Brosseau-Liard & Birch, 2010; Johnston, Mills, & Landrum, 2015). Informants were differentiated by hair and dress color which were randomized for each participant with randomizer.org. Informants had differing facial expressions to reflect their traits, as keeping affect on informants' faces throughout stories helps aid children's memory (e.g., Landrum et al., 2013; Landrum et al., 2016). Later, when children were given testimony information, there was a cartoon statement bubble above the informant with a smiling face or frowning face, to indicate her relevant testimony. Piloting was conducted to ensure that testimony information was not confounded by facial expression used to represent trait information during informant introductions and manipulation checks. See Appendix A for examples of stimuli used.

Design

The only independent variable in both conditions was participant age. In the consistent-valence baseline condition, children were introduced to a nice informant who gave a peer positive feedback and a mean informant who gave a peer negative feedback. In the cross-valence main condition, children were introduced to a nice informant who gave a peer negative feedback and a mean informant who gave a peer positive feedback (i.e., cross-valence as compared to the baseline study).

Children received information about each informant in a fixed order; each child received trait information prior to testimony information, as order effects have not been found in studies that have presented children with two different characteristics of informants (see Johnston et al., 2015, Experiment 2).

Procedure

Before testing, the researcher introduced herself and stated that she would be telling the participant stories, followed by several questions about the stories to which there were no right or wrong answers. Children were then asked if they would like to participate in the study. All children provided verbal assent (and written assent if they were over the age of 7 years).

Following assent, children were shown a picture of a third-party protagonist named Mary next to an easel that was faced toward her. Mary was introduced as a person who “paints every once in a while, and paints a picture during art class one day.” The third-party protagonist was purposefully not defined with expertise or benevolence given that either trait could have influenced how talented children perceived her to be. The

view of the painting was obstructed so that children would not be able to make their own personal inferences about the quality of the painting.

Children were then presented with a picture of the first informant while the experimenter introduced the informant, “This is Amy/Colleen. Amy/Colleen is really nice/mean”. Order of which informant was introduced first was counterbalanced, and names of informants were randomized. Children were then shown new pictures of the same informant staring at the easel that contained the painting mentioned previously. The informant had a thought bubble above her head containing the relevant facial and nonverbal expressions to indicate her testimony (e.g., a frowning face with a thumb down) as the researcher stated, “Amy/Colleen has taken many art classes. Amy/Colleen also looks at the painting done by Mary and she says that it looks very good/bad.” Children were then presented with manipulation checks on the informant’s trait and testimony in counterbalanced order. If children did not pass a manipulation check, the researcher repeated the information and children were then given a second opportunity to pass the manipulation check. Children who did not pass the second manipulation check were excluded. The same procedure was repeated with the characteristics of second informant.

Procedures were identical in the consistent-valence baseline condition and in the cross-valence main condition, with the exception of trait and testimony pairings for each informant. In the consistent-valence baseline condition, children were introduced to one nice informant who said that Mary’s painting was good and one mean informant who said that Mary’s painting was bad. In the cross-valence main condition, children were

introduced to one nice informant who said that Mary's painting was bad and one mean informant who said that Mary's painting was good.

After children were told the stories about each informant (lasting approximately 5 minutes) and passed all four manipulation checks, they were asked a series of questions to indicate their social and epistemic preferences, as well as their perceptions of stability and trait attributions. Children who passed the manipulation checks after a maximum of one reminder indicated that they remembered relevant information about the informants. Questions were presented in a fixed order (i.e., endorsement, ask question, stability, trait attribution, affiliation, honesty).

Endorsement. Endorsement was measured through asking children, "Who do you think is right about the painting, Amy or Colleen?" The order of informant presented first was randomized. Children were then asked why they chose that informant. If children provided an answer that did not indicate their endorsement based on the chosen informant's trait or testimony, the researcher asked, "Do you think she is right because she's nice/mean or because she said that Mary's painting was good/bad?" Order of dimension presented first was randomized. This follow-up question indicated what part of the informant (her trait or her testimony) children relied on in their endorsement.

Ask question. To assess children's preference in who they would ask about a future painting, children were asked, "Who would you ask about another painting, Amy or Colleen?" The order of informant presented first was randomized. Children were then asked why they chose that informant. If children provided an answer that did not indicate their preference to ask based on their chosen informant's trait or testimony, the researcher

asked, “Would you ask her because she’s nice/mean or because she said that Mary’s painting was good/bad?” Order of dimension presented first was randomized. This follow-up question indicated what part of the informant (her trait or her testimony) children relied on in who they preferred to ask.

Affiliation. To measure children’s desire to affiliate with one of the two informants, children were asked, “Who would you rather be friends with, Amy or Colleen?” The order of informant presented first was randomized. After indicating a preference, children were again asked why they preferred to be friends with the chosen informant. If children provided an answer that did not indicate their desire to affiliate based on their chosen informant’s trait or testimony, the researcher asked, “Do you want to be friends with her because she’s nice/mean or because she said the painting was good/bad?” The order of dimension presented first was randomized. This follow-up question helped indicate children’s reliance on testimony or trait information for affiliation preferences.

Honesty. To measure children’s perceptions of who was most honest of the two informants, children were asked, “Who do you think is more honest, Amy or Colleen?” The order of informant presented first was randomized. After indicating a preference, children were asked why they perceived their chosen informant to be more honest.

Stability. To assess whether children relied on testimony or trait information in indicating stability over time, children were asked what each informant would say in a future situation with a different painting. Children were told, “Let’s pretend it’s the next day, and Amy/Colleen comes to school. She sees that another student, Heather, has

painted picture. What do you think she will say about Heather's painting?" The order of informant presented first was randomized. If children did not provide an answer that indicated good or bad, the researcher asked, "Will she say that Heather's painting is good, bad, or not good or bad?" Order of the words good and bad was randomized in follow-up questions.

Trait attribution. To measure children's perceptions of each informant's social trait, children were asked, "What do you think of Amy/Colleen? What kind of person is she?" The order of informant presented first was randomized. If children did not provide an answer that was indicative of benevolence, the researcher asked, "Is she nice, mean or not nice or not mean?" Order of the words nice and mean was randomized in follow-up questions.

Data coding. Two raters independently coded explanations for the endorsement, ask question, affiliation and honesty dependent variables. Children's responses were coded based on their explanations for selecting their chosen informant on each dependent variable, and follow-up responses when their explanations were irrelevant. Explanations that reflected selecting an informant to avoid selection of the other informant (e.g., an endorsement of the mean, positive informant because the nice informant said the painting was bad) were coded as avoidance of nonchosen informant. Explanations that were irrelevant (e.g., "I don't know") were coded as other. All other responses were coded based on the informant children selected for each dependent measure. Explanations for selection of the mean, positive informant were coded for preference of positive testimony (e.g., "She said the painting was good") or preference for mean trait (e.g., "She's mean").

Explanations for selection of the nice, negative informant were coded for preference for negative testimony (e.g., “She said the painting was bad”) or preference for positive trait (e.g., “She’s nice”). After completing a trial set of 50 participants, coders met once to review the coding protocol and resolve discrepancies to improve reliability.

Secondary measures. After the main measures, children completed the Dimensional Change Card Sort (DCCS; Zelazo, 2006) to assess inhibitory control (Appendix B). Lastly, children completed a modified trait essentialism measure (Gelman et al., 2007; Heyman & Dweck, 1998). See Appendix C for full measure. Characters were introduced with both trait labels and descriptions of prior behaviors (Landrum et al., 2013). Sex of characters in the essentialism measure were matched to the participant’s sex and order of character (i.e., nice or mean) presented first was randomized.

CHAPTER III

RESULTS

One child from the consistent-valence baseline condition (one 4-year-old) and five children from the cross-valence main condition (four 4-year-olds and one 6-year-old) were excluded for failure to pass the manipulation check. In addition, one 5-year-old in the cross-valence main condition was excluded for failure to cooperate with the protocol. In the cross-valence main condition, two children would not choose between the two informants when they were asked about their affiliation preference. Additionally, the honesty measure and secondary measures were added in the middle of testing, thus only 75 children answered who they believed was more honest, 92 children completed the essentialism measure, and 115 completed the inhibitory control measure.

Consistent-Valence Baseline Condition

In the consistent-valence baseline condition, participants received a score of 0 if they preferred the nice, positive informant and a score of 1 if they preferred the mean, negative informant. In general, participants overwhelmingly selected the nice, positive informant over the mean, negative informant in their endorsements ($M= 0.00$, $SD= 0.00$), who they preferred to ask ($M= .05$, $SD= .22$), and their preferences in affiliation ($M= 0.00$, $SD= 0.00$). For trait and stability perceptions, children were assigned a score of 0 if

they provided a response that was inconsistent the trait and testimony of both informants, a score of 1 if they provided a response that was consistent with the trait and testimony of one informant and inconsistent with the trait and testimony of the other informant, and a score of 2 if they provided a response that was consistent with the trait and testimony of both informants. In both their trait attributions ($M= 2.00$, $SD= 0.00$) and perceptions of stability ($M= 1.95$, $SD= 0.22$), children overwhelmingly responded consistently with each informant's testimony and trait (i.e., attributed niceness and predicted positive testimony for the nice, positive informant, and attributed meanness and predicted negative testimony for the mean, negative informant).

Cross-Valence Main Condition

In the cross-valence main condition, separate logistic regression analyses of the contribution of standardized age in months as the independent variable were conducted on endorsement, ask question, affiliation, and honesty attribution as dichotomous dependent variables. Children received a score of 0 for endorsing, asking, affiliating with, or attributing more honesty to the nice, negative informant and a score of 1 for endorsing, asking, affiliating with, or attributing more honesty to the mean, positive informant. See Figure 1 for means and standard errors of endorsement, ask question and affiliation dependent measures by age group.

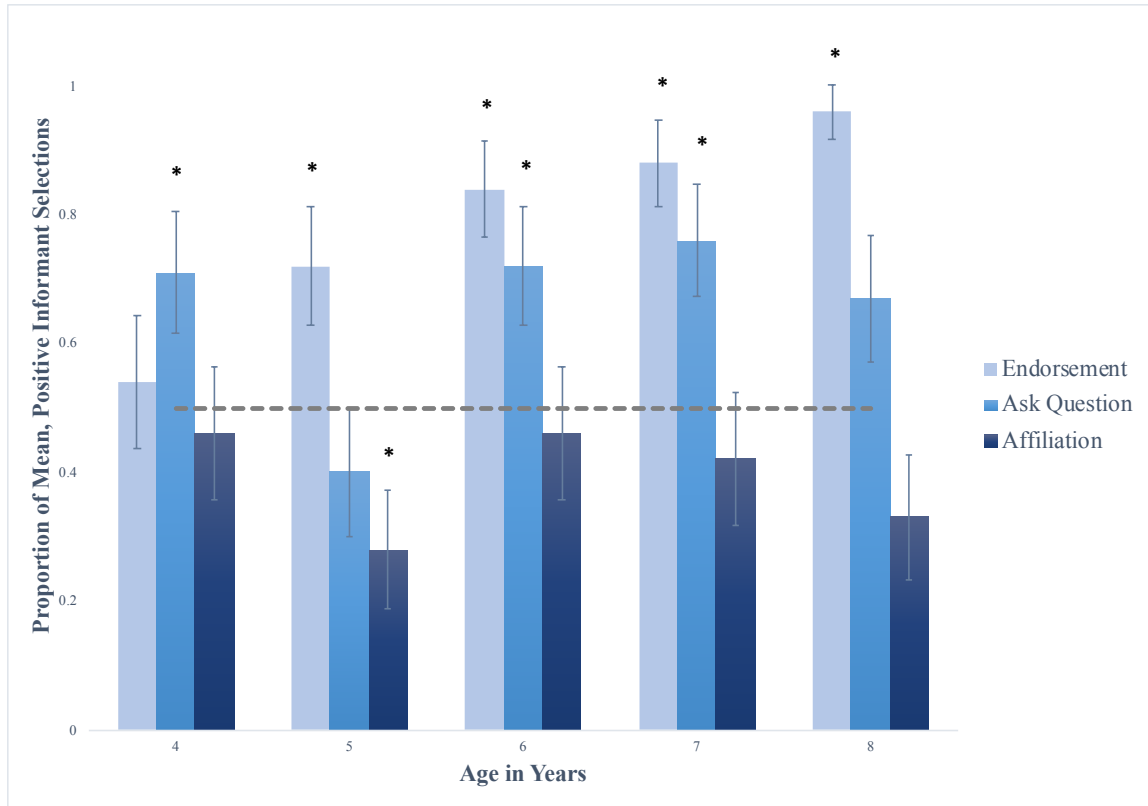


Figure 1. Means of Endorsement, Ask Question and Affiliation Dependent Variables by Age. Error bars represent standard errors. Dependent variables were scored such that 0 indicated a preference for the nice informant with negative testimony and 1 indicated a preference for the mean informant with positive testimony.

Endorsement. The overall model was significant for endorsement, $\chi^2(1, N=123)=13.77, p<.001$, Nagelkerke $R^2=.17$. There was a significant effect of age ($\beta=1.02$, $Wald=11.35, p=.001$). Older children endorsed the mean, positive informant more than younger children. Two-tailed t-tests against chance revealed that children preferred to endorse the mean, positive informant more often than would be expected by chance, $t(122)=7.81, p<.001$. Only 4-year-olds did not differ from chance, $t(23)=.40, p=.692$, all other age groups systematically endorsed the mean, positive informant. See Table 1 for tests against chance by age.

Table 1

Tests Against Chance for Endorsement, Ask Question and Affiliation by Age

Age	Endorsement	Ask Question	Affiliation
4	t(23)= 0.40, $p = .692$	t(23)= 2.20, $p = .038$	t(23)= -0.40, $p = .692$
5	t(24)= 2.40, $p = .024$	t(24)= -1.00, $p = .327$	t(24)= -2.40, $p = .024$
6	t(24)= 4.54, $p < .001$	t(24)= 2.40, $p = .024$	t(23)= -0.40, $p = .692$
7	t(24)= 5.73, $p < .001$	t(24)= 2.98, $p = .006$	t(23)= -0.81, $p = .426$
8	t(23)= 11.00, $p < .001$	t(23)= 1.70, $p = .103$	t(23)= -1.70, $p = .103$

Note. Dependent variable scores: 0 = selection of nice, negative informant 1= selection of mean, positive informant.

Endorsement justification. Responses to why children endorsed an informant were coded into the following categories: preference for positive testimony (74.8%), preference for nice trait (17.1%), preference for negative testimony (4.1%), preference for mean trait (1.6%), avoidance of nonchosen informant (1.6%), and other (0.8%). Cohen's Kappa was .94.

Ask question. The overall model was not significant for the ask question, $\chi^2(1, N = 123) = 1.52, p = .218$, Nagelkerke $R^2 = .02$. There was no significant effect of age ($\beta = .26, Wald = 1.50, p = .221$). A two-tailed t-test against chance indicated that children were more likely than expected by chance to ask the mean, positive informant, $t(122) = 3.48, p < .001$. See Table 1 for tests against chance by age.

Ask question justification. Responses to why children asked an informant were coded into the following categories: preference for positive testimony (59.3%), preference for nice trait (24.4%), preference for negative testimony (10.6%), preference

for mean trait (3.3%), avoidance of nonchosen informant (1.6%), and other (0.8%).

Cohen's Kappa was .97.

Affiliation. The overall model was not significant for affiliation, $\chi^2(1, N= 121)= .06, p= .808$, Nagelkerke $R^2= .00$. There was no significant effect of age, ($\beta= -.05, Wald= .06, p= .808$). A two-tailed t-test against chance revealed that children preferred to affiliate with the nice, negative informant more often than would be expected by chance, $t(120)= -2.51, p= .013$. See Table 1 for tests against chance by age.

Next, participants were grouped according to their responses for the endorsement and ask question (see Figure 2). Those who endorsed the mean, positive informant did not systematically prefer either informant in affiliation preferences, $t(94)= -1.12, p= .261$. The same pattern was found for the ask question; children who preferred to ask the mean, positive informant did not systematically prefer either informant in their affiliation preferences, $t(77)= -.23, p= .823$. Children who endorsed the nice, negative informant systematically preferred to affiliate with the nice, negative informant, $t(25)= -3.90, p< .001$. Once again, the same pattern was found with the ask question where children who preferred to ask the nice, negative informant also preferred to affiliate with her, $t(42)= -4.63, p< .001$.

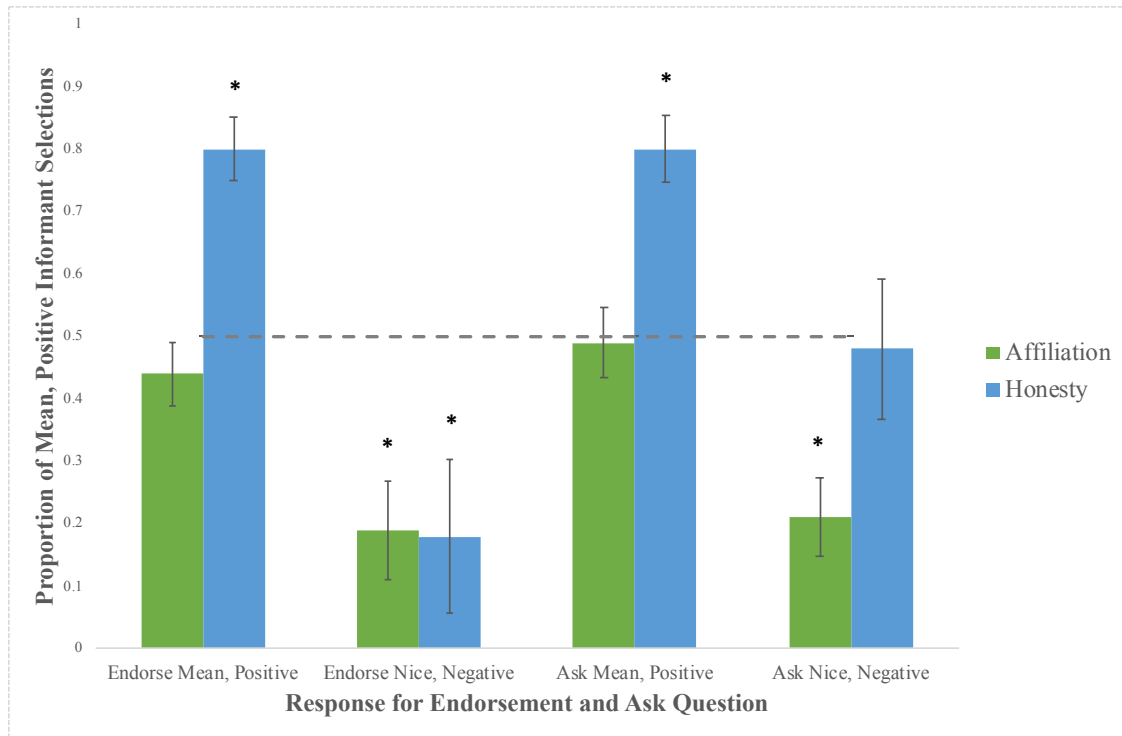


Figure 2. Means of Affiliation and Honesty Dependent Variables Grouped by Response on Endorsement and Ask Question. Error bars represent standard errors. Dependent variables were scored such that 0 indicated a preference for the nice informant with negative testimony and 1 indicated the mean informant with positive testimony.

Affiliation justification. Responses to why children affiliated with an informant were coded into the following categories: preference for positive testimony (33.6%), preference for nice trait (55.3%), preference for negative testimony (3.3%), preference for mean trait (1.6%), avoidance of nonchosen informant (0.8%), and other (0.8%). Cohen's Kappa was .97.

Honesty. The overall model was not significant for honesty, $\chi^2(1, N= 76)= .23$, $p= .630$, Nagelkerke $R^2= .00$. There was no significant effect of age ($\beta= .15$, $Wald= .23$, $p= .630$). A two-tailed t-test against chance revealed that children selected the mean,

positive informant as honest more often than would be expected by chance, $t(75)=4.02$, $p<.001$.

Children were once again split into groups based on their responses for endorsement and ask question (see Figure 2). Those who endorsed the mean, positive informant believed that this informant was more honest than would be expected by chance, $t(64)=6.00$, $p<.001$. The same pattern was found with the ask question, where those who preferred to ask the mean, positive informant believed this informant was more honest $t(54)=5.51$, $p<.001$. Children who endorsed the nice, negative informant believed she was more honest than would be expected by chance, $t(10)=-2.61$, $p=.026$. Children who preferred the nice, negative informant for the ask question, however, were not systematic in who they believed was more honest, $t(20)=-0.21$, $p=.833$.

Honesty justification. Responses to why children asked an informant were coded into the following categories: preference for positive testimony (57.9%), preference for nice trait (14.5%), preference for negative testimony (6.6%), preference for mean trait (3.9%), avoidance of nonchosen informant (5.3%), and other (11.8%). Cohen's Kappa was .78.

Stability. To examine if children relied on testimony valence or trait valence in their stability impressions, children were assigned a score of 0 for a response that matched the valence of the informant's testimony, a score of .5 for a response of "not good or bad", and a score of 1 for a response that matched the valence of the informant's trait. A total stability score ranging from 0 (i.e., responses consistent with the valence of both informants' testimonies) to 2 (i.e., responses consistent with the valence of both

informants' traits) was compiled by adding each child's stability response for both informants. A chi-square test revealed no association between age and compiled stability, $\chi^2(16, N=123)=14.00, p=.599$. A two-tailed t-test against chance revealed that children did not rely on traits or testimony in their stability responses, $t(122)=-1.59, p=.114$. See Table 2 for tests against chance by age.

Table 2

Descriptive Statistics and Tests Against Chance for Stability and Trait Attribution by Age

Age	Stability		Trait Attribution	
	<i>M (SD)</i>	Test against chance	<i>M (SD)</i>	Test against chance
4	0.83 (1.01)	$t(23)=-0.81, p=.426$	1.79 (0.59)	$t(23)=6.59, p<.001$
5	0.92 (0.91)	$t(24)=-0.44, p=.664$	0.76 (0.60)	$t(24)=6.36, p<.001$
6	0.92 (0.95)	$t(24)=-0.42, p=.679$	1.60 (0.82)	$t(24)=3.67, p=.001$
7	0.84 (0.91)	$t(24)=-0.88, p=.388$	1.66 (0.64)	$t(24)=5.15, p<.001$
8	0.81 (0.97)	$t(23)=-0.95, p=.351$	1.63 (0.77)	$t(23)=3.98, p=.001$

Note. Stability and trait attribution dependent variables were combined for both informants. Dependent variable scores: 0 = chose consistent with testimony for both informants, 1 = chose consistent with testimony for one informant or consistent with trait for the other informant, 2 = chose consistent with trait for both informants.

Participants were split into groups based on their responses for endorsement and ask question. Participants predicted that the informants would systematically provide the same testimony in the future when they endorsed, $t(96)=-2.44, p=.017$, or asked, $t(79)=-2.93, p=.004$, the mean, positive informant. Participants did not differ in relying on testimony or trait information in their future predictions when they endorsed, $t(25)=1.15, p=.262$, or asked, $t(42)=1.27, p=.210$, the nice, negative informant.

Trait attribution. To examine if children relied on testimony valence or trait valence in their trait attributions, children were assigned a score of 0 for a response that matched the valence of the informant's testimony, a score of .5 for a response of "not nice or mean", and a score of 1 for a response that matched the valence of the informant's trait. A total trait attribution score ranging from 0 (i.e., responses consistent with the valence of both informants' testimonies) to 2 (i.e., responses consistent with the valence of both informants' traits) was compiled by adding each child's trait attribution for both informants. A chi-square test revealed no association between age and compiled trait attribution, $\chi^2(16, N=123)=17.10, p=.379$. A two-tailed t-test against chance revealed that children relied on informants' given traits in their trait attributions greater than would be expected by chance, $t(122)=11.18, p<.001$, by responding with a trait attribution that was consistent with each informant's trait. See Table 2 for tests against chance by age.

Participants were split into groups by their responses for endorsement and ask question to examine differences in trait attributions. Children relied on trait information in attributing traits greater than would be expected by chance, regardless of whether they endorsed the mean, positive informant, $t(96)=8.59, p<.001$, or endorsed the nice, negative informant, $t(25)=10.46, p<.001$. The same pattern was found when children were split by who they preferred to ask, where children systematically relied on trait information in their trait attributions regardless of whether they preferred to ask the mean, positive informant, $t(79)=6.83, p<.001$, or the nice, negative informant, $t(42)=12.94, p<.001$.

Secondary measures. Children received a score of 0 to 3 on the Dimensional Change Card Sort task (Zelazo, 2006). Children received a score of 0 if they failed the pre-switch dimension (i.e., sorted less than five cards correctly), a score of 1 if they passed the pre-switch dimension but failed the post-switch dimension (i.e., sorted less than five cards correctly), a score of 2 if they passed pre-switch and post-switch dimensions but failed borders (i.e., sorted less than nine cards correctly), and a score of 3 if they passed all three dimensions.

Children received a combined score for their performance on the nice and mean essentialism measures and the essentialism comparison measure. Sociomoral stability, born, change (reverse-coded), environment (reverse-coded), cross-situation generality, and blood measures were combined for nice and mean characters, as was the brain comparison measure (see Appendix C for questions) to create a total essentialism score ranging from 0 to 13.

Correlations between children's performance on both the DCCS (Zelazo, 2006) and trait essentialism (Gelman et al., 2007; Heyman & Dweck, 1998) measures with performance on each of the dependent measures (endorsement, ask question, affiliation, honesty, stability and trait attribution) were conducted. No correlations were significant between main dependent variables and secondary measures (See Table 3).

Table 3

Correlations Between Main Dependent Variables and Secondary Measures

Dependent Variable	Inhibitory Control	Essentialism
Endorsement	.09 ^a	-.09 ^c
Ask question	.01 ^a	-.12 ^c
Affiliation	-.13 ^b	.01 ^d
Honesty	.06 ^e	-.15 ^e
Stability	.00 ^a	-.02 ^c
Trait attribution	.01 ^a	.10 ^c

Note. Endorsement, ask question, affiliation and honesty scores: 0 = selection of nice, negative informant 1= selection of mean, positive informant. Stability and trait attribution dependent variables were combined for both informants. Stability and trait attribution scores: 0 = chose consistent with testimony for both informants, 1= chose consistent with testimony for one informant or consistent with trait for the other informant, 2 = chose consistent with trait for both informants.

^aN=115. ^bN=113. ^cN=92. ^dN=90. ^eN=75.

When analyzed by age, very few correlations were significant. Among 4-year-olds, inhibitory control was correlated with affiliation, $r(23) = -.42, p = .048$, and stability, $r(23) = .42, p = .046$. The only other significant correlation was between trait essentialism and endorsement for 8-year-olds, $r(21) = .81, p < .00$

CHAPTER IV

DISCUSSION

Children are thoughtful consumers of information in nonsocial domains; they are sensitive to differences in information that come from those who are reliable (e.g., Jaswal & Neely, 2006), those who are knowledgeable (e.g., Robinson, Champion, & Mitchell, 1999), and those who have expertise (e.g., Kushnir et al., 2013; Landrum et al., 2013, Experiment 1). When they are given information in the social domain, however, they show some biases in social learning. The current study evaluated the way that these biases function. Children's selective trust and affiliation preferences were assessed regarding a mean informant who provided a positive evaluation about a peer's painting and a nice informant who gave the painting a negative evaluation. The current study is the first to examine how these concurrent characteristics influence children's epistemic vigilance and social affiliation preferences. Additionally, it is the first to examine children's perceptions of stability, honesty and trait attributions when presented with these concurrent characteristics.

In the past, studies have examined children's preference for nice and mean informants and informants who provided positive or negative information separately. This work revealed that children prefer to endorse and ask those who provide positive judgments (e.g., Boseovski, 2012) and those who are nice (e.g., Lane et al., 2013). In the

current study where these dimensions of trait and testimony competed, children preferred to endorse and ask the mean, positive informant over the nice, negative informant. There was an age-related trend in children's preference to endorse the mean, positive informant such that older children preferred to endorse this informant more than younger children. In the context where both characteristics are presented concurrently, children appear to rely on positive testimony in their selective trust, as their explanations relied heavily on this positive dimension. In the more social domain, children preferred to be friends with the nice, negative informant over the mean, positive informant. Children reported preferring this informant due to her positive trait. Children prefer to be friends with people who are nice over those who are mean (e.g., Lane et al., 2013), but the current study was the first to investigate the way that children make friendship decisions based on the testimony of an informant. This finding suggests that children rely on nice traits in the social domain of affiliation.

Contrary to expectations, children preferred positive content of speech over positive traits in the context of who they believed was right and who they would prefer to ask in the future. Despite evidence that social trait information is especially salient to children from a young age (e.g., Heyman et al., 2003), perhaps in their epistemic decisions (i.e., who they prefer to endorse and ask) children focus more on the informant's contents of speech than benevolence information about the informants themselves. Indeed, Boseovski (2012) found a positivity bias pattern such that the majority of 3- to 7-year-olds showed a preference for the informant who provided positive testimony more than they showed a preference for the reliable informant in their

endorsements. A similar pattern was shown when children favored positively-valenced testimony in the face of both expertise and consensus information about informants (Boseovski et al., 2017). These findings, along with the findings of the current study, suggest that when children practice epistemic vigilance in scenarios where valence is incorporated, they weigh the actual content that informants provide more than other characteristics such as trait information and expertise.

One explanation for these findings could be that children who preferred positive testimony showed a positivity bias that impacted their belief in valenced testimony. Children were not told if the painting was good or bad, and instead were told it was completed by the informants' peer who painted every once in a while. Although all children demonstrated that they accepted the testimony by passing the manipulation check, it is possible that children placed less emphasis on negative testimony in favor of positive testimony due to their expectations that the painting was indeed good. Literature in the realm of positivity bias supports this explanation, given that children have a generally positive outlook on others (Boseovski, 2010), and would likely assume that most paintings are good. Both Boseovski (2012) and Jaswal, McKercher and Vanderborcht (2008) suggested that even when an informant has demonstrated reliability, children are unwilling to accept the informant's testimony that conflicts with their own expectations. In accord with the selective skepticism hypothesis (Heyman et al., 2013), children may be skeptical of negative feedback and unwilling to accept it in their endorsements and who they would like to ask in the future.

Indeed, in the current study, children who endorsed and asked the mean, positive informant believed that she was more honest. In their explanations of why they chose to endorse and ask the mean, positive informant, the majority expressed a preference for this informant because of her positive testimony. The same pattern was found when children were asked for their explanations of who they believed was more honest. This supports the notion that children who endorsed and asked the mean, positive informant may have been skeptical of the negative information provided by the nice informant, and thus believed the mean, positive informant was more honest. Thus, these children relied on testimony information more than trait information in their perceptions of honesty and in their epistemic vigilance. In this case, despite remembering and accepting the negative testimony, perhaps children were so unwilling to believe negative testimony that they preferred positive testimony even in the face of a negative trait.

Another possible interpretation is that children who showed a positivity bias may have been prone to forgive negative trait information because they did not believe that it was lasting. Indeed, children believe negative traits to be more malleable and less stable than positive traits, and infer negative traits less readily than positive traits (Heyman & Giles, 2004). Children who endorsed and asked the mean, positive informant relied on informants' testimonies to decide what each informant would say about a future painting. Specifically, these children predicted that informants would behave consistently with their previous testimony than with a behavior that would be consistent with their trait. These children did not show this pattern in their trait attributions, and attributed traits based on the given trait information of each informant. That is, children who relied on

positive testimony in their endorsements and who they preferred to ask did not rely on this positive information in their trait attributions. Instead, they relied on trait information to attribute traits to the informants. Thus, it is unlikely that children forgave the negative trait information, as they used trait information in their attributions, regardless of its valence. Further, children who preferred the mean, positive informant in their endorsements and who they preferred to ask did not show this preference for affiliation. This demonstrates that children considered trait information where it was more clearly relevant rather than showing a forgiveness for trait information when it was negative.

A third interpretation is that children placed trust in the mean, positive informant over the nice, negative informant due to a negativity bias, or preference for negative information. This is unlikely for several reasons. Primarily, in their explanations, children overwhelmingly expressed their preference for positive attributes in their preferred informant for all dependent measures. That is, children who selected the nice, negative informant for these variables chose this informant because she was nice (as opposed to a preference due to her negative testimony), and children who selected the mean, positive informant for these variables chose this informant because she said her peer's painting was good (as opposed to a preference due to her mean trait). Second, if children had a negativity bias, they likely would have exhibited this for all of their social and epistemic preferences. Children who preferred the mean, positive informant only did so in their epistemic preferences, and did not show a preference for either informant in their affiliation preferences. For these children, preferences were different based on the domain. Children who preferred the nice, negative informant in the epistemic domain,

however, could have demonstrated a positivity bias for positive traits, as they did indeed select the positive informant in their affiliation preferences. Lastly, the consistent-valence baseline condition established that children preferred both positive traits and testimony over negative traits and testimony, which weakens an argument that children preferred negative traits or testimony.

Although the finding that endorsement of the mean, positive informant increased with age is once again inconsistent with predictions, it is unsurprising given children's preference for the mean, positive informant in their endorsements and who they preferred to ask. Boseovski and Thurman (2014) found that older children were more influenced by positive testimony than younger children in their endorsements, and focused more heavily on this information than on expertise information. Perhaps with age children become more skeptical of the valence of testimony and disregard negative information in favor of positive information. Boseovski and colleagues (2017) found that despite an increase in age that is associated with an increase in positivity biases, 6- to 9-year-olds were more willing to assign negative trait labels to someone who provided negative testimony than 4- and 5-year-olds. Given the impact that positivity has on children's decision-making, this finding reveals the impact that negative testimony has on older children's perceptions, such that they are willing to attribute negative traits where they would typically be biased toward positive traits.

Another explanation could be that older children were more willing to overlook the negative trait information of the mean, positive informant in endorsements than younger children. Older children are able to look past information about benevolence to

endorse informants that may have more knowledge as compared to younger children (Lane et al., 2013). This interpretation should be taken with hesitation, as the ability to do so would likely be correlated with inhibitory control, which was unrelated. Further, older children did not perform differently than younger children on any other dependent measures, which would likely occur in their trait attributions or affiliation preferences if they overlooked any trait information. With age, children differentiate positive characteristics and are able to distinctly recognize that possession of a positively-valenced characteristic (e.g., nice) in one realm does not necessarily mean that a person possesses a positively-valenced (e.g., smart) characteristic in another realm (Stipek & Daniels, 1990). Perhaps instead, older children were better able to focus on the relevant positive testimony information to endorse the one instance of positivity.

Although children preferred the mean, positive informant greater than would be expected by chance in both their endorsements and who they would prefer to ask, children did not show any age-related changes in their preferences of who they would ask. This could reflect a willingness of older children to endorse the one-time instance of positivity that was not reflected in their decisions of who to ask based on their advanced trait understanding. Indeed, with age children are better able to differentiate positive characteristics by domain (e.g., Stipek & Daniels, 1990), in this case, a differentiation of the importance of traits and testimony in endorsement and who they would ask. Whereas endorsement reflects a preference based on a one-time instance, the ask question may incorporate children's beliefs about the stability of the informant's behavior. Future

studies should investigate this finding further to help answer why children do not show age-related differences in who they would choose to ask in a future scenario.

Consistent with predictions, from 4 years of age and onward children show a bias toward positive traits in their affiliation preferences. Trait labels infer stable characteristics that may be more valuable in social preferences such as affiliation than preferences in domains that are less socially implicated. Perhaps children were able to appreciate this stable positive trait and apply it to a social realm. Although previous work has shown that older children are better at use of relevant characteristics to problem solve (e.g., Danovitch & Keil, 2007), the lack of age-related changes in affiliation preferences could reflect children's knowledge of benevolent and malevolent traits at a young age (Bretherton & Beeghly, 1982). Indeed, from a young age, children are heavily influenced by social trait information (e.g., Heyman et al., 2003), and rely on this information in their affiliation preferences above and beyond other trait information (i.e., intellectual ability). Children's preference for the nice, negative informant throughout childhood demonstrates the importance of social characteristics such that young children are able to use this information in its appropriate affiliation domain.

An interesting finding from the current study is the differences in children's epistemic (i.e., endorsements and who they preferred to ask) and affiliation preferences. The current study rejects the hypothesis that the ask question and affiliation measure are closely related (Lane et al., 2013); when asked who they would prefer to be friends with and who they would like to ask in a similar scenario, children weigh different characteristics of informants in their preferences. Children used social trait information in

its appropriate social domain to determine their friendship preferences. Further, children who relied on positive testimony information in their endorsements and who they preferred to ask also relied on testimony information in their predictions of how both informants would behave in the future. This demonstrates that children who are able to focus on testimony information weigh it more heavily in scenarios where it is warranted, such as their predictions for future behavior. Children who did not focus on positive testimony information in their endorsements and who they preferred to ask (i.e., those who endorsed and asked the nice, negative informant) did not weigh this information in their predictions for future behavior. The current study demonstrates that children are not only sensitive to different aspects of informants and information, but value them differently based on domain; positive testimony is more important than positive trait information in who they believe is right and who they would ask in a future scenario, whereas trait information is important in their social affiliation preferences.

It is unclear why inhibitory control and essentialism were unrelated to the dependent measures of this study. Cognitive functioning could be unimportant to the current study because there was not a distinct correct answer in children's preferences. Further, perhaps essentialist beliefs are more clearly related to scenarios where children are only presented with trait information. Future research should aim to find other individual differences that may contribute to children's epistemic vigilance, as there may be valuable differences between children who rely on testimony information as opposed to those who do not.

A methodological limitation of the current study is that it cannot definitively conclude that children relied on the positive testimony of the mean, positive informant. Though it is unlikely that children favored the negative trait information for the reasons discussed previously, future studies should investigate more clearly the impact that positive testimony may have. Extending this research to areas that investigate the way children view other characteristics (e.g., expertise) concurrently with testimony information may help strengthen the argument that children heavily rely on positive testimony.

Further, the current study only provided children with one instance of testimony. One instance of testimony that matches a previous first-hand experience may not mean that it will match a first-hand experience in the future, thus tracking the testimony of an individual may lead to more accurate endorsements (Harris, 2007). It would also be valuable to examine children's perceptions of negative testimony in more objective settings, where negative information may be more truthful than positive information. These findings could be compared to the current study to understand if and when children's perceptions of evaluations differ as a function of their subjectivity or objectivity. Finally, investigating positive and negative judgments in more social domains could demonstrate the extent to which children prefer positive testimony information. In their everyday social interactions, children may place less emphasis on a peer's negative opinion of a painting and more emphasis on their negative social evaluations and judgments. Future research should aim to investigate these different types of evaluative

testimony in different social and subjective scenarios to understand the way that children's preferential trust and social decisions may differ.

Research in selective social learning has established that children have biases when learning from others, and the current study shows the importance that valenced testimony has on these biases that are reflected in children's epistemic vigilance. Children's differential preferences in their trust and affiliation exhibit their ability to differentiate epistemic and social realms, and reflect their perceptions of relevant information of others in both. The current study demonstrates that children are sensitive to positive and negative traits of informants and positive and negative information that they provide. Information about informants is used differently based on the domain of children's judgments; positive testimony is important in epistemic decisions, and positive trait information is important for affiliation preferences. This information can help teachers and caregivers emphasize positive aspects of information in learning scenarios to improve children's acceptance of the information, especially in middle childhood. Further, teachers and caregivers can use this information to encourage prosocial behaviors among children, given that they capitalize on positive trait information in their friendships. The findings from the current study not only improves our understanding of the way that children practice epistemic vigilance and social decision-making, but should be applied contextually to improve learning experiences and social relationships.

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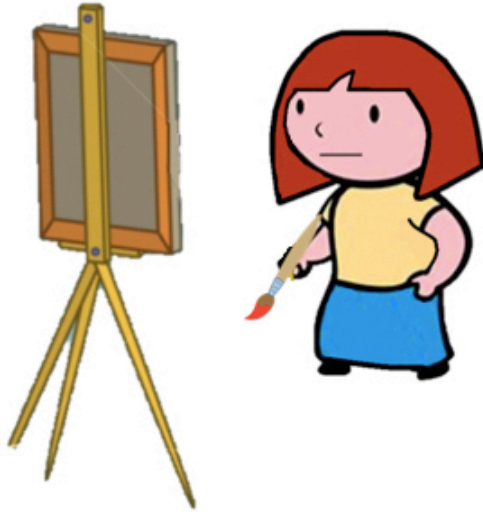
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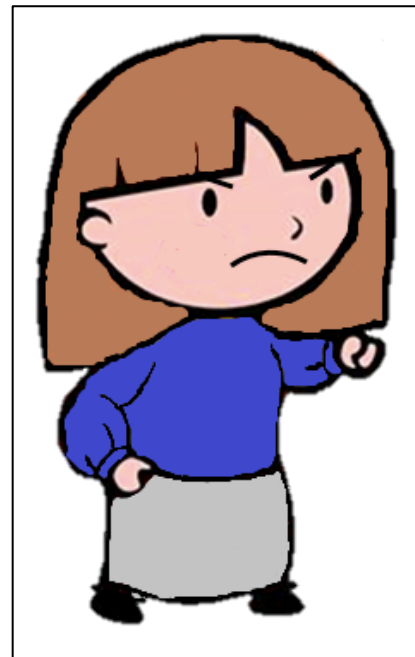
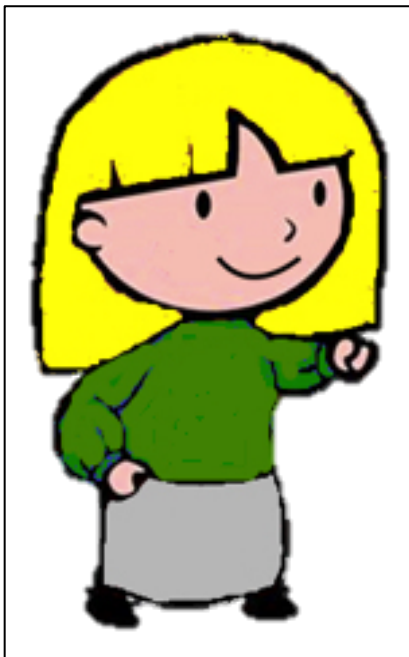
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APPENDIX A

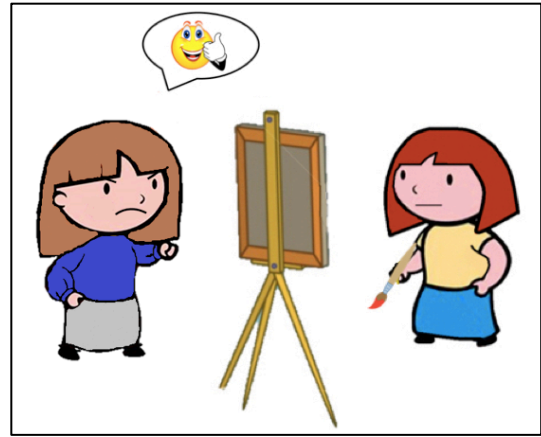
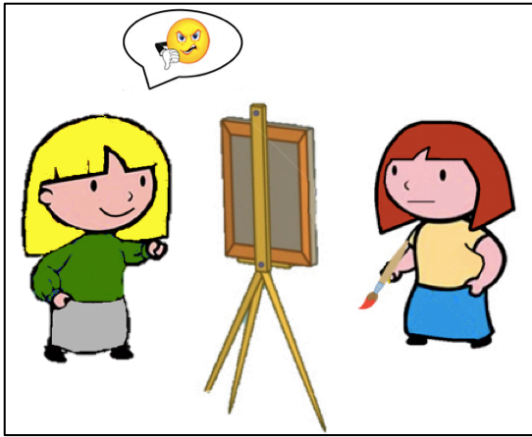
STIMULI



Artist and easel.



Nice and mean informants. Each informant was introduced prior to giving testimony information.



Informants with relevant testimony. This shows each informant and her testimony for cross-valence main condition.

APPENDIX B

DIMENSIONAL CHANGE CARD SORT PROTOCOL (FROM ZELAZO, 2006)

Set up: Have two boxes side by side in front of participant. Sit next to participant. Affix target cards to display panels on these sorting boxes.

1. Introduction: Pre-switch

Here is a blue bunny and here is a red boat. Now we are going to play a card game. This is the color game. In the color game, all the blue ones go here (*point to blue box*) and all the red ones go there (*point to red box*).

Choose a card from “pre-switch intro” deck – See, here is a blue one. So, it goes here (*place in blue box*). In the color game, all the blue things go in here (*point to blue box*) and all the red things go in here (*point to red box*).

Choose a card from “pre-switch intro” deck – Now, here is a red one. Where does this go?
If correctly places card – Very good. You know how to play the color game.
If child just points to correct box – Can you help me put this one down?
If child responds incorrectly – No, this one is red, so it has to go over here in the color game. Can you help me put this one down?

2. Pre-switch trial (use “pre-switch trial” cards)

Now it's your turn to play. So remember, if it's blue it goes in here, but if it's red it goes in there (*point to boxes*).

Randomly select test card Here's a ____*color*____ one. Where does it go?

Let's do another one **or** Let's do it again **or** How about another one?

Repeat 6 trials as described above

3. Post-switch trial (use “post-switch trial” cards)

Now we are going to play a new game. We are not going to play the color game anymore. We are going to play the shape game. In the shape game, all the bunnies go here (*point to bunny box*) and all the boats go there (*point to boat box*). Remember, if it's a bunny, put it here, but if it's a boat put it there. Okay?”

Select a test card Here is one with a ____*shape*____, where does it go?

Repeat 6 trials as described above- (Do not repeat rules, just mention shapes)

If participant does not pass 5+ post-switch trials, do not move on to the borders trials. End the game.

4. Borders Version (use “Borders Intro” deck of cards).

Okay, you played really well. Now I have a more difficult game for you to play, it's a little bit harder. In this game, you sometimes get cards that have a black line around it like this one (*show red bunny with a border*). If you see cards with a black line around them, you have to play the color game. In the color game, red ones go here and blue ones go there (*point to appropriate boxes*). This card is red, so I'm going to put it right there (*placing it face down in the appropriate box*).

But if the cards have no black line around them, like this one (*show them a red bunny without a border*), you have to play the shape game. In the shape game, if it's a bunny, we put it here, but if it's a boat, we put it there (*point to appropriate boxes*). This one's a bunny, so I'm going to put it right here (*place in appropriate box*). Okay? Now it's your turn.

Remind child of rules for each trial: Remember, if the card has a line we are going to play the color game, and if it has no line we are going to play the shape game. This one _____ a line, where does this one go?"

APPENDIX C

ESSENTIALISM QUESTIONNAIRE (ADAPTED FROM GELMAN ET AL., 2007; HEYMAN & DWECK, 1998)

Grab nice picture This is _____, and he/she is always nice. He/she shares things, he/she gives presents to his/her friends and family and he/she cares about other people's feelings. (Landrum et al., 2013)

	Y(1)	N(0)
1. Sociomoral stability: Do you think _____ will always act this way?		
2. Born: Do you think that _____ was born nice?		
3. Change: Do you think _____ can change whether or not he/she's nice, if he/she wants to?		
4. Environment: Is _____ nice because of things that people around him/her did?		
5. Control: Do you think _____ has a lot of friends?		
6. Cross-situation generality: Do you think _____ will be nice to other children?		
7. Blood: In the future, will scientists be able to figure out who is nice by looking at their blood under a microscope or x-ray?		

Grab mean picture This is _____, and he/she is always mean. He/she refuses to share things, he/she steals presents from his/her friends and family and he/she doesn't care about other people's feelings. (Landrum et al., 2013)

8. Sociomoral stability: Do you think _____ will always act this way?		
9. Born: Do you think that _____ was born mean?		
10. Change: Do you think _____ can change whether or not he/she's mean, if he/she wants to?		
11. Environment: Is _____ mean because of things that people around him/her did?		
12. Control: Do you think _____ has a lot of friends?		
13. Cross-situation generality: Do you think _____ will be mean to other children?		
14. Blood: In the future, will scientists be able to figure out who is mean by looking at their blood under a microscope or x-ray?		

15. Brain comparison: Remember, this other kid, _____ is not nice/mean. Do you think _____'s brain is different from _____'s?		
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